

***The Use of a Functional Behavioral Assessment-Based Self Management Intervention  
for Students with Emotional/Behavioral Disorders***

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***Abstract***

The research literature on the use of Functional Behavioral Assessments (FBA) to develop Behavior Intervention Plans (BIP) for students with emotional/behavioral disorders, who present problem classroom behaviors for use in the schools, is well documented. There are school-wide, district-wide, and state-wide plans that are currently being implemented to satisfy the requirements imposed by IDEA (2004). The results from this study indicate that both participants experienced a significant reduction in their problem behaviors. The FBA-based self-management intervention procedure was both less intrusive on the teacher's instructional time and effective, and can easily be incorporated into a student's BIP.

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Since the 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA), much has been made of the requirement to conduct Functional Behavioral Assessments (FBA) prior to developing or modifying a Behavior Intervention Plan (BIP). This requirement has generated an extensive body of research on the subject of conducting FBAs. While much of that work has focused on students with developmental disabilities, this article will focus on existing literature on the application of FBAs and intervention techniques to students with or at risk for emotional/behavioral disorders (EBD) who present problem behaviors. It will also focus on the new requirements for conducting FBAs under IDEA (2004) and the limited research base examining the use of FBA procedure with students with or at risk for EBD. Since one of the most important outcomes of FBA is using self-management to address problem behaviors, as they occur in the naturalistic environment of today's schools, the article will discuss self-management strategies as well as any trends in implementation procedures and

interventions derived from these skills for students with EBD. Finally, given the mandate under IDEA that local education agencies (LEA) conduct FBAs, this article will only identify those studies that were carried out in school-based, rather than clinical settings (Heckaman, ConAdam, Fox, & Chiat, 2000).

### ***Definitions of Functional Behavioral Assessment***

Functional Behavioral Assessment can be defined as a collection of methods for gathering information about antecedents, behaviors, and consequences in order to determine the reason (function) of behavior. Once the function of behavior is determined, this information is used to design interventions to reduce problems and to facilitate positive behaviors (Witt, Daly, & Noell, 2000). FBA is not a single test or observation, but rather a multi-method strategy involving observations, interviews, and review of records regarding student behavior, its antecedents and consequences. The central goal of FBA is to identify environmental conditions that are associated with the occurrence or nonoccurrence of problem behaviors. In this approach, the function of behavior is represented by a change in an independent variable (environmental conditions) and the effect is represented by a change in a dependent variable (behavior) (Skinner, 1953). It should be noted, however, that there are different kinds of functional relationships. Some functional relationships are correlational, meaning that certain environmental events are associated with the occurrence of certain behaviors. Other functional relationships may be causal in the sense that these environmental events are both necessary and sufficient for the occurrence of a behavior (Gresham, Watson, & Skinner, 2001; Johnson & Pennypacker, 1993).

The function of behavior refers to the purpose that behavior serves for the individual. Behavioral functions typically fall into five categories: (a) social attention/communication (positive social reinforcement); (b) access to tangibles or preferred activities (material or activity reinforcement); (c) escape, delay, reduction, or avoidance of aversive tasks or activities (negative reinforcement); (d) escape or avoidance of other individuals (negative social reinforcement); and (e) internal stimulation (automatic or sensory reinforcement) (Carr, 1994). Functional Behavioral Assessment and the Individuals with Disabilities Education Act of 1997

Functional behavioral assessments are addressed specifically in the section of the reauthorization of the Individuals with Disabilities Education Act (IDEA, 1997) regarding the suspension of students with disabilities who present problem behaviors. When school officials propose to take disciplinary action against a student that involves suspension in excess of 10 days, expulsion, or a change in placement, and if the local education agency (LEA) did not conduct a FBA and implement a behavior intervention plan for such a child before the behavior occurred, then the agency shall convene (the IEP team) to develop an assessment plan to address that behavior. Or, if the child already had a behavioral intervention plan in place, the IEP team shall review the plan and modify it, as necessary, to address the behavior (IDEA). The law requires an FBA and behavior intervention plan (BIP) when suspension, expulsion, or a change in placement is

contemplated. IDEA clearly anticipates that FBAs and BIPs will be included in the education programs of students with problem behaviors before such disciplinary procedures are needed (Yell & Shriner, 1997). This provision is the outcome of applied behavior analytic approaches and a strong research base that repeatedly has shown the utility of conducting functional assessments to develop effective intervention plans for students who demonstrate problem behavior.

### ***Research on the Use of Functional Behavioral Assessments***

Functional assessments provide information on environmental events that may predict the occurrence and nonoccurrence of problem behavior and the consequences that may be maintaining the problem behavior. In the functional assessment process, hypotheses typically are developed that describe the possible relationships between the predictor events, the problem behavior(s), and the maintaining consequences (O'Neill et al., 1997). Functional assessment procedures include indirect measures (e.g., interviews, rating scales, record reviews); direct measures (e.g., scatter plots; direct observation of antecedents, behaviors, consequences); and functional analysis, in which identified variables are manipulated experimentally to determine any functional relationships between the identified variables and the problem behaviors.

The research base on functional assessment, however, primarily reflects studies that have been conducted with students who have developmental disabilities (Blakeslee, Sugai, & Gruba, 1994; Nelson, Roberts, Mathur, Rutherford, & Aaroe, 1999). Fewer studies have been published extending this work to students who are higher functioning intellectually and/or at risk for emotional and behavioral disorders (EBD) (Dunlap et al., 1993; Fox, ConAdam, & Heckaman, 1998; Lewis & Sugai, 1996). Recently, a number of articles (Gable, 1996; Lane, Umbreit, & Beebe-Frankenberger, 1999; Nelson et al.; Sugai, Horner, & Sprague, 1999), books (Repp & Horner, 1999), and instructional manuals (McConnell-Fad, Patton, & Polloway, 1998; O'Neill et al., 1997) concerning the application of functional assessment procedures with students identified as having EBD have been published. While determining the application of functional assessment procedures and protocols for their use with this population of students certainly is important, of critical concern is the validation of these procedures. In other words, do interventions derived from functional assessment procedures result in positive outcomes for students with EBD; and, more specifically, are the interventions derived from functional assessment procedures more effective than interventions that are not based on these procedures (Nelson et al.; Schill, Kratochwill, & Elliot, 1998).

There is substantial research on the use of FBAs in the area of problem behavior, especially for individuals with developmental disabilities (Neef, 1994). Moreover, there is ample evidence that using FBAs to guide interventions is an extremely effective approach for reducing problem behavior in this population. For example, Didden, Duker, and Korzilius (1997) conducted a meta-analysis of treatment effectiveness for problem behavior of people who have mental retardation. Their meta-analysis included 482 empirical studies that addressed 34 distinct types of problem behavior (e.g., aggression, hyperactivity, and stereotypy). The results of this meta-analysis clearly indicated that

FBA's make an important and significant contribution to treatment success outcomes. Interventions derived from the results of an FBA that address the purpose (e.g., avoiding task demands) of problem behavior rather than the form (e.g., aggression) of the behavior are effective approaches for reducing problem behavior in people with developmental disabilities (Bird, Dores, Moniz, & Robinson, 1989; Carr & Durand, 1985).

Although procedures have been applied successfully in problem behavior interventions for people with developmental disabilities, FBA procedures have been used only recently with higher functioning students who exhibit problem behaviors (Dunlap et al., 1993; Gable, 1996; Kamps & Tankersley, 1996; Kern, Childs, Dunlap, Clark, & Falk, 1994; Reed, Thomas, Sprague, & Horner, 1997). Extending FBA procedures to higher functioning students with problem behavior may require some changes and refinements in the assessment process because of the differences between these students and students with developmental delays (Dunlap & Kern, 1993; Dunlap et al.; Reed et al.). For example, Dunlap et al. note that higher functioning students with problem behaviors often have average intelligence and well-developed language systems. Their challenges may be mainly in the areas of interpersonal relations, emotionality, and control over inappropriate behaviors. This makes the FBA of these students more difficult than the FBA of developmentally delayed, whose problem behavior often serves a communicative function (Carr, 1994; Carr & Durand, 1985; Sprague & Horner, 1995). The behavior of high functioning students with problem behavior may be quite complex, diverse, and variable, and therefore, identifying and defining the function(s) of their problem behavior is much more difficult. The application of FBA to higher functioning students with problem behavior can move teachers away from a punishment-oriented perspective and towards a proactive educational perspective (Horner, 1999).

A related area of needed analysis, however, is whether it is always necessary to conduct a functional assessment. In other words, do all behavioral challenges require the time and effort involved in conducting a functional assessment? Sugai et al. (1999) noted that simple behavior problems could often be resolved with an increased emphasis on preventative strategies and interventions that address those behavior problems; they do not require the more extensive functional assessment process. How we determine which behavior problems require a functional assessment to develop an effective intervention is an area that is not yet clearly defined.

Finally, the process by which interventions are developed from functional assessments needs further research. In the studies reviewed, it was not always clear how the functional assessment results led to the hypotheses and interventions that were developed. Both Horner (1994) and Heckaman et al. (2000) have addressed this issue, noting that we are better at describing the process involved in conducting a FBA than we are in describing how to develop an intervention based on the results of the assessment.

### ***Defining Self-Management***

The term self-management is sometimes used synonymously with the term self-control, a hypothetical construct sometimes referred to as will power, suggesting an internal source

of control (e.g., John has a great deal of self-control). In the discussion that follows, self-management refers to strategies that a person uses to alter his/her behavior, frequently to make a behavior less aversive to others and possibly to replace it with behavior more likely to be reinforced.

Self-management generally refers to actions designed to change or maintain one's own behavior (Shapiro, McGonicle, & Ollendick, 1981). Self-management interventions in the classroom involve teaching a child to engage in some behavior, such as self-monitoring, self-instruction, etc., in an effort to change the target behavior, e.g., completing a math problem, talking out in class, paying attention, etc. Although all self-management interventions assume that a child's behavior reflects a skill deficit, the broad umbrella of self-management encompasses a variety of approaches. These approaches vary from Applied Behavior Analysis (ABA) procedures emphasizing contingency management to cognitive behavioral approaches designed to teach children various mediational strategies (Kendall & Finch, 1978; (Robertson, Simon, Pachman, & Drabman, 1979)). Generally, contingency-based approaches target the consequences of the behavior, whereas cognitive-based procedures focus more on the antecedents of behavior (Shapiro & Cole, 1994).

A significant technology has been developed to teach self-management skills to children and adolescents. Examination of the literature shows that self-management strategies have been applied to children across assorted developmental levels, including preschool-age, elementary-age, and secondary-age students (Brigham, 1989; Connell, Carta, & Baer, 1993; Fantuzzo & Polite, 1990; Miller, Strain, Boyd, & Jarzynka, 1993). These strategies have been effective in working with students with a wide variety of handicapping conditions, such as severe, moderate, and mild levels of mental retardation, learning disabilities, and serious emotional disturbance (Hughes, Kornieck, & Gorman, 1991; Nelson, Smith, Young, & Dodd, 1991; Reid, 1996; Shapiro, Browder, & D'Huyvetters, 1984). Further, self-management strategies have been applied across a wide range of academic and nonacademic behavior problems (Shapiro & Cole, 1994).

It is helpful to conceptualize self-management interventions as existing on a continuum. At one end of it, the intervention is completely controlled by the teacher or other external agent. This individual provides feedback regarding whether the student's behavior met the desired criteria and administers the appropriate consequences for the behavior. At the other end of the continuum, the student engages in evaluating his or her own behavior against the criteria for performance, without benefit of teacher or external agent input. The student also self-administers the appropriate consequences for his or her own behaviors. In working with students with disruptive behavior problems, the objective should be to move the student as close towards the self-management side of the continuum as possible. Although some of these students may not be capable of reaching levels of independent self-management, most are certainly capable of approximating this goal (Shapiro, DuPaul, & Bradley-Klug, 1998).

### ***Establishing a Behavioral Objective and Program Considerations***

In a self-management program it is important that the target student accepts the behavioral objective as a personal goal. Since self-evaluation is a major aspect of this behavioral change program, self-assessing (recording) behavior and comparing it to a pre-selected criterion are two critical tasks of the target individual (Packenham, Reid, & Shute, 2004). If a student does not accept the goal of improving that particular behavior and reaching the performance standards, the self-evaluation process will have limited therapeutic benefits.

Once the treatment objective is established, an intervention program must be developed. With a teacher-managed change program, some of the common elements that might be included in an intervention are the establishment of specific classroom rules, development of a feedback system, instructions, a reinforcement system (e.g., token reinforcement program), and/or procedures to eliminate inappropriate behaviors (e.g., the use of time-out, response cost) (Packenham et al., 2004). Some self-management procedures may be included in an intervention include self-instructions, self-recording, self-evaluation, selecting one's own reinforcement, goal setting and/or goal option. It may be awkward or difficult to have students manage their own reinforcers inasmuch as they may be obtained even though the contingencies have been violated; therefore, many self-management programs require the external management of reinforcers. Regardless of how they are managed, reinforcers should be selected only after careful consideration (Packenham et al.).

A final consideration in the development of a treatment plan is assigning responsibility for elements of the program to individuals involved. It is not necessary for every activity to be managed by the individual whose behavior is to be changed in order for the program to be considered a self-management program. Some activities may be managed appropriately by an external agent. Ideally, self-management is developed best by a combination of teacher managed and self-management activities which are shifted from the teacher to the student (Young, Smith, West, & Morgan, 1997).

Self-management involves teaching an individual two behaviors: the target behavior, if the individual has not acquired it, and the specific self-management behavior being used. The self-management behavior taught can be a variety of specific procedures designed to promote student awareness of his or her own behavior or specific procedures designed to promote student awareness of his or her own behavior and/or independent functioning (Nelson et al., 1991). Typically, self-management interventions combine more than one of four general types of self-management categories: self-monitoring, self-assessment, self-instruction, and self-reinforcement (Nelson et al.). Self-monitoring involves training students to discriminate and to make a permanent record of the occurrence/nonoccurrence of antecedent conditions or target behaviors (Kamps & Tankersley, 1996). Self-monitoring has been used to help students identified as serious emotionally disturbed increase their on-task behavior and academic efficiency, and to minimize talk-outs (Ninness, Fuerst, & Rutherford, 1995). Self-assessment or self-evaluation can include students with emotional and behavioral disorders, comparing their performance to a set

trained criterion, and it has been used to maintain on-task behavior across settings (Rhode, Morgan, & Young, 1983). Self-assessment procedures are necessary for students to make discriminations involved in self-monitoring. Self-instruction requires students to prompt themselves to perform certain behavior. Self-reinforcement involves an individual providing or arranging for delivery of a reinforcer for him or herself for achieving a designated level of performance and often is termed self-recruitment of reinforcement. As mentioned earlier, however, self-reinforcement may not be practical unless monitored to determine whether all contingencies have been complied with before self-reinforcement can be allowed (Rhode et al.).

A new development in the use of self-management strategies in behavior support planning is the use of functional assessments to understand the problem in context and to suggest specific target behaviors for self-management. Using the strength of functional assessment technology to identify the antecedents to, and functions of problem behavior, the selection of replacement or alternative behaviors can become the target behaviors of self-management training. Todd, Horner, and Sugai (1999) used functional assessment-derived information concerning the consequences that maintain the problem behavior of an elementary school student. This information guided the development of specific target replacement behaviors that served as the focus of a self-management intervention, and making substantial changes in teacher perceptions of student success in the classroom.

The substantial documentation of successful uses of self-management strategies and their low effort requirement in implementation suggest their adoption as a promising practice in providing behavioral support (Todd et al., 1999). When based on functional assessment data, self-management strategies may offer educators an effective approach to assisting students to acquire and maintain pro-social skills.

### ***Generalization of Self-Management Skills***

One of the often touted advantages of self-management procedures is the potential for these procedures to facilitate generalization (Stokes & Baer, 1977). In particular, it is reasoned that, if the individual gains control over his or her contingencies, he or she will be likely to use such procedures across settings, times, and activities. As such, it is anticipated that behavior change in various areas of life will become evident once self-management procedures are learned.

It is, however, of significance that in almost all of the studies where generalized self-management occurred, it occurred only if the self-management procedures were specifically trained or prompted to be used in the alternative setting or with the alternative behavior. This should not be surprising, given the known variables that most likely foster generalizing behavior change (Stokes & Baer, 1977).

Future studies are clearly needed that continue to provide a better and more comprehensive understanding of the dimensions under which self-management will result in generalization. It is also clear, however, that achieving generalization by using self-

management skills is still a process in its infancy. Further, additional efforts need to be made at demonstrating the generalization of these skills (Shapiro & Cole, 1994).

### ***Methodology***

#### *Participants*

The participants in this single subject study included two members of a middle school self-contained class of students with EBD. Both students are males whose ages are 11 and 13, representing grades six (6) and eight (8). They scored within the average-to-low average range on the Weschler Intelligence Scale for Children (WISC-IV-R). In addition to EBD, both students maintain a clinical diagnosis of attention deficit disorder (ADD) and/or attention deficit/hyperactive disorder (AD/HD) as assessed by the Diagnostic Statistical Manual of Mental Disorders (*DSM-IV*). One student has been diagnosed with oppositional defiant behavior disorder (ODB) (see Table 1).

Table 1

#### **Participant Information**

<b>Name</b>	<b>Age</b>	<b>Grade</b>	<b>Exceptionality</b>	<b>Classes</b>	<b>OHI</b>
Adam	11-6	6	EBD*	self-contained	AD/HD** ODB***
Sam	13-9	8	EBD	self-contained	AD/HD

OHI = Other Health Impairment

\* Clinical diagnosis of Emotional Behavioral Disorders

\*\* Clinical diagnosis of Attention Deficit/ Hyperactive Disorder

\*\*\* Clinical diagnosis of Oppositional Defiant Behavior

#### *Setting*

The study was conducted in a suburban Atlanta middle school. The participants were observed in two separate self-contained classroom environments. The rooms are equal in size. One participant was observed between 9:30 - 10:00 a.m. during first period. The other student was observed between 12:45 - 1:15 p. m. in the afternoon. There are two certified teachers of students with EBD and one teacher paraprofessional, making the student-to-staff ratio approximately four-to-one. One teacher and at least one other adult staff assistant were in the classroom during all data collection times. Approximately six (6) to eight (8) other students identified as EBD were in the classes during data collection times.

#### *Design*

This study used an ABAB reversal single-subject design to demonstrate the functional relationship between the self-management intervention and the reduction of talking-out

behaviors. The ABAB reversal design showed a functional relationship between the strategy and a reduction of inappropriate classroom behaviors.

### **Dependent Variable**

The dependent variable used in this study was talking-out behaviors. Operationally, the talking-out behaviors were defined as follows. Talking-out is any talking to peers, teachers or anyone without raising the hand and waiting for permission from the teacher or adult in charge.

An occurrence of talking-out behavior will be considered as such when the student emits a word or utterance that is not related to the present or immediate task. Talking-out is any speaking by the student that disrupts the class. Disruption is any act, which prohibits instruction from taking place. Talking-out behavior is further defined as any extraneous noises or utterances that is above a whisper and causes others to be distracted. Talking during open discussion, talking when recognized by the teacher or adult in charge, or talking when answering or responding to the teacher will *not* be considered as an occurrence of the target behavior.

### **Independent Variable**

The independent variable used in this study was teaching the students how to raise their hands, and wait for teacher recognition, in order to speak in class. Talking out behaviors and raising hands while waiting for teacher recognition are two mutually exclusive behaviors which could not occur simultaneously either while paying attention or working quietly during class. For purposes of this study, the participants were instructed to mark a self-monitoring sheet when the researcher either taps the participants unobtrusively or used other non-verbal cues to indicate to the participant that they have been signaled to mark the self-monitoring sheets. The researchers cued the students at random intervals.

### *Materials*

Observers used a pilot software program called Timerdata. The program was used to collect and organize direct frequency and durational data from the participants. In addition, the observers used the Problem Behavior Questionnaire (PBQ) and the functional assessment interview (FAI) to collect indirect data. Individualized self-monitoring sheets were made from standard 8 1/2 x 11 inch sheets of paper laminated with each participant's name on them. The question "*Was I working quietly?*" was printed on one of the sheets, while on a second sheet, the question, "*Was I paying attention?*" was printed. The sheets were divided into columns and contained the words "*Yes*" and "*No*" on them and were laminated. Dry erase markers were used so the participants could use the same sheet for each session. An identical sheet containing the statement, "*I will raise my hand and wait to be recognized before talking*" was used also to passively reinforce/remind the students of the new behavior.

## *Implementation*

### **Phase 1: Functional analysis.**

In the present study various FBA materials were available for use in determining the function of the target behavior. Once an agreement had been reached as to the function, the self-management intervention was developed to address the target behavior.

School records often contain a great deal of useful information for FBAs. A first step in conducting the FBA was a systematic review of these records, especially disciplinary records. In the present study, these records were used to identify patterns of behavior or behavior chains that might provide descriptive, indirect data that was used in the FBA. The researchers conducted an initial functional assessment interview (FAI) of both the participants and the parent(s) regarding the topography and setting of problem behaviors.

Before any baseline data was collected in the present study, initial interobserver agreement (IOR) data was taken using the Timerdata software in determining the function of the target behaviors for each participant by the EBD staff. The PBQ gives an indirect analysis of the function of the participant's behavior.

The FBA data was collected and analyzed by the researchers. When the analysis of all the above data was completed, a hypothesis statement on the function of the target behavior for each participant was developed. This information was used in the development of self-management interventions for each of the participants, based on the function of the target of the students' behaviors.

### **Phase 2: Self-management intervention.**

The intervention procedures were evaluated with each of the participants using a reversal design (ABAB). All sessions, throughout the baseline and intervention phases, were approximately 30 minutes long or one class period in duration. One or two sessions was conducted daily. Baseline and intervention sessions were collected in the following manner.

#### **Baseline**

Baseline data was collected continuously during at least five (5) sessions on the target behavior of talking-out. The participants were seated in their assigned seats and worked independently on assigned tasks during the data collection periods. The paraprofessional was conducting the class during the data collection. During inter-observer reliability the second data collector was seated at a table on the opposite side of the classroom. The data was collected during the academic class in the morning (9:30 - 10:00 a. m.) and during an academic class in the afternoon (12:45 - 1:15 p. m.).

## **Intervention**

Before beginning this phase of the study, a summary statement of the total number of observed inappropriate talk-out behaviors was graphed and shown to each participant, individually. Two self-monitoring sheets were distributed to the participants at the beginning of the period. The participant students were instructed that, when they were cued (randomly), they should place a check mark in the correct *Yes* or *No* column, the one asking whether they were doing their work and the other whether they were paying attention when cued. The researcher said, "Ask yourself, at the exact moment that I am signaled/cued, am I doing my work quietly or, in the alternative, was I paying attention?" The students had been directed beforehand that, if they were, or were not, doing their work quietly or paying attention, then they should check the box under the appropriate column. Although the new behavior was taught, and used through this conscious prompt/reminder, it still allowed the student self-manage their talking-out behaviors. The self-monitoring procedure was conducted for at least five sessions.

## **Return to Baseline**

This phase lasted for approximately five sessions. The self-monitoring sheets were used. The procedure was the same as during the initial baseline.

## *Data Collection and Analysis*

This study used a frequency data collection procedure. The dependent variable was the number of talk-outs per 30-minute class monitoring period. The researcher established the operational definition of talk-out behavior. Once established, the IOR person was allowed to collect frequency data.

The data was analyzed through visual inspection. The visual inspection consisted of the following criteria: The means was used to show a change in the treatment mean from the baseline mean. Level refers to the last and first data points in adjacent conditions (phases). Finally, trend analysis was used to see if there was a change in the trend.

In order to determine whether the baseline and self-monitoring data are stable, the occurrences for each collection phase were totaled and the average (mean) was determined. A factor of 0.5 was used to determine the stability of the data. That product was added to and subtracted from the mean to establish a range within which the data must fall to be considered stable.

## **Social Validity**

The participants, teachers and parents were asked to complete a questionnaire. The questionnaire asked about their satisfaction with the self-monitoring intervention and whether it effectively reduced talking-out behaviors to the satisfaction of the teacher, the student, and the parent. The results from the questionnaire indicated that all three parties had noticed improvement in the participants' behaviors. The talking-out behaviors had been dramatically reduced using the procedure (see Table 2).

*Table 2*

**Social Validity Questionnaires**

Teacher (before)

1. The student's behavior affects your teaching behavior.
2. The student's behavior is severe enough to use this intervention.
3. This intervention is an appropriate procedure to address the student's problem behaviors.

Teacher (after)

1. The intervention was not too intrusive on my teaching behavior.
2. This intervention has reduced the student's problem behavior.
3. I will use this intervention again, as needed.

Student (before)

1. Your behavior causes problems in class.
2. Your behavior causes problems at home.
3. You are willing to improve your behavior.
4. You will cooperate with this procedure to improve your behavior.

Student (after)

1. You have noticed an improvement in your behavior
2. You like your level of improvement.
3. You will continue to use this procedure, as needed.

Parent (before)

1. Your child's behavior is a problem.
2. You are willing to allow this procedure to help with your child's behavior problems.

Parent (after)

1. You have noticed an improvement in your child's behavior.
2. You are willing to use a modified intervention procedure in your home.
3. You will encourage your child to continue to improve his/her performance.

*Feasibility*

This project was undertaken because of the task currently faced by most teachers whose job it is to teach students who display problem behaviors. Current research in the area of functional assessment-based self-management interventions suggests that these procedures, if applied in the natural school setting, can shift the responsibility for managing problem behaviors from the teacher to the student. This procedure, if successful, would also allow the teacher to spend more time teaching and less time

managing these problem behaviors. In the current climate of increasing teacher accountability, this procedure can provide the classroom with another effective tool. This research will further those efforts.

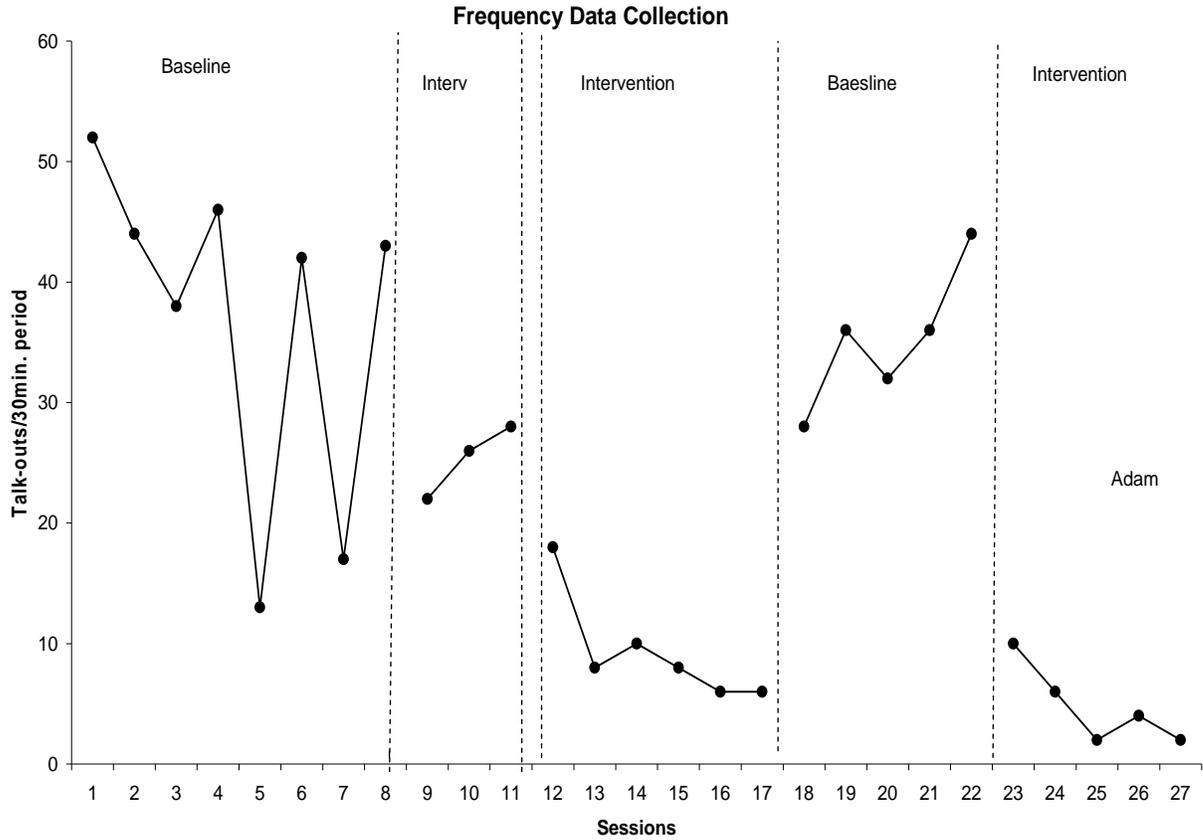
## **Results**

### **Adam**

During the first baseline for number of talk-out behaviors, eight data points were collected (see Figure 1).

Frequency Data Collection Graph

Figure 1. The number of talking-out behaviors by Adam in a 30 minute period. After an additional training phase was used, the intervention phase illustrates a significant reduction in talking-out behaviors.



The data path was extremely variable, with no discernible trend. The data began at 52 talk-outs per 30-minute class period, dropping to lower levels of 13 and 17 by the fifth and seventh data points, respectively ( $M = 36.88$ ). During baseline, two of the eight data points did not meet these criteria of 50% around the mean. The addition of three data points did not add a stable baseline.

During the self-monitoring phase the first three points met criteria for stability. However, a visual analysis of the trend indicated a movement in the opposite direction of the expected outcome. To test the hypothesis that the participant did not understand fully the self-monitoring procedure, a training phase was inserted to provide instruction of the initial self-monitoring procedure. After the training phase, an additional six points were collected. A visual inspection of these data points, while still not meeting stable criteria, have shown a discernable trend by reversing the direction of the data points after the training session was inserted into the self-monitoring phase of the study. The data indicates an immediate change in level (22 points) from baseline to the first self-monitoring intervention in spite of the upward trend in the first three self-monitoring data points. The performance across phases between the baseline and self-monitoring intervention does however indicate a 40% overlap in the data points from baseline to intervention phase. However, the intervention data points collected after the training phase (six points) shows only a 12.5% overlap in data points.

During the return to baseline phase, the data indicate stability ( $M = 35$ ). The range (28 – 44) is well within the criteria for phase stability or steady state within the phase. There was an immediate change in level of 22 points from the self-monitoring intervention to return to baseline. There was no apparent overlap in data points from self-monitoring phase to return to baseline.

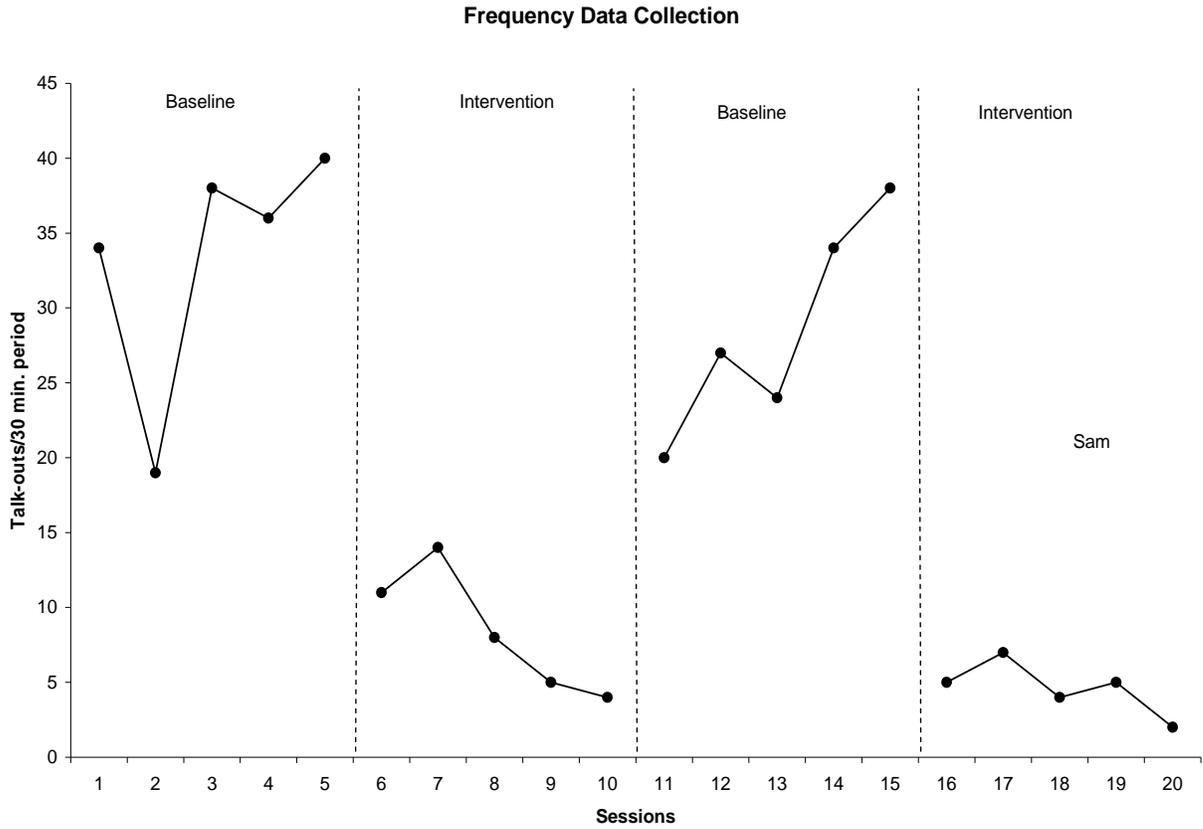
In the final self-monitoring intervention phase the data also indicate stability ( $M = 4.8$ ). There is a change in level between the previous baseline and the self-monitoring intervention of 34 points. There was no overlap in data points (see Figure 1).

### **Sam**

During the baseline measuring the number of talk-out behaviors for Sam, five data points were collected (see Figure 2).

Frequency Data Collection Graph

Figure 2. The initial number of talking-out behaviors by Sam in a 30 minute period were significantly reduced with the introduction of the self-management intervention.



The data are stable within the established criteria ( $M = 33$ ). Sam's baseline variability was moderate, beginning at 36 talk-outs. Despite the variability in data points, a discernible upward trend was apparent. All of the baseline data points were within 50% of the mean for this phase and had achieved a steady state.

An immediate change in level when a phase change occurs is generally a visual indicator that the intervention is having some effect. During Sam's intervention phase, there is an immediate change in level. Between the baseline and self-monitoring phase, there is a level change of 29 points. This level change also indicates that there is no overlap in the data between these two phases.

During the return to baseline phase, five data points were collected. The data were apparently stable ( $M = 29$ ) within the criteria range for stability. The range of data had attained a steady state within the phase. The visual analysis of the trend of data indicates a movement in the opposite direction of the self-monitoring intervention data. The level of change between phases was immediate, with data during this phase moving in the opposite direction from the intervention phase. There was no overlap in the data during this phase.

In the final phase with Sam, five data points were collected. A steady state was established within the phase. The data were also stable within the established criteria ( $M = 4.6$ ) for this phase. The range indicates a change in level between the return to baseline and final self-monitoring intervention of 33 points.

As demonstrated with both participants in this study, the use of an ABAB reversal design has shown a functional relationship between a reduction of talking-out behaviors and the use of a self-monitoring intervention. Even with variability in the baseline for both participants, the level of performance behavior was significant and immediate. As the phase changed, the significance was evident during a visual analysis. For Adam, the change in level of behavior was 22, 22, and 34 data points respectively. For Sam, the change in level of occurrences was 29, 16, and 33, respectively (see Figure 2).

### ***Discussion***

The development of a behavior management system that would keep students, who are disruptive, on-task and reduce problem behaviors, while at the same time shifting responsibility for managing behavior from the teacher to the student, would enable the teacher to spend more time teaching. Such a system would allow teachers to better focus on their students' academic and social development. Learning these skills could benefit the students throughout their lives. The issue explored in this study then, is to what extent are self-management interventions effective for students with emotional/behavioral disorders (EBD)?

The results from this study indicate that, with proper instruction, both participants were able to significantly reduce talking-out behaviors using a self-monitoring intervention. The findings from this study confirm previous research in the use of self-management

interventions to reduce problem behavior. Shapiro et al. (1998) in a study applied self-management strategy to improve the classroom behavior of students with attention deficit/hyperactive disorder (AD/HD). Based on the work of Rhode et al. (1983), the intervention focused on teaching students to systematically rate their own behavior. Both of the participants in the present study have also been diagnosed with AD/HD. Adam and Sam were asked to systematically rate their behavior using the self monitoring sheets. This procedure reduced the rate of talk-outs for both. The results of the present study confirm the Shapiro et al. study.

Kern, Ringdahl, Hilt, and Sterling-Turner (2001), examined the efficacy of self-management procedures that were incompatible with the target behavior and extended the research of Frea and Hughes (1997) which applied these interventions to students of average functioning who engaged in challenging behaviors. The effective use of the self-monitoring intervention by Adam and Sam enabled them to maintain behaviors that were incompatible with the talking-out behaviors. As in the study by Frea and Hughes, Adam and Sam were average functioning students engaging in challenging behaviors (talk-outs).

Adam's initial baseline data was extremely variable. He had been diagnosed with AD/HD and was on medication during the study. Adam also had a history of not taking his medication regularly. Sam, also diagnosed with AD/HD, was not on medication, and this may also have affected the variability of his data during baseline. However, it must be noted that both participants eventually responded to the intervention phase with very little variability and both had stable data points within the established criteria.

It is reasoned that, if the individual gains control over his or her own contingencies, such as talking-out behaviors, he or she will be likely to use such procedures across settings, time, and activities. As such, it is anticipated that behavior change in various areas of life will become evident once self-management procedures are learned. Despite the logic of this argument, there has been limited empirical examination of this phenomenon. Although there have been fewer studies than expected that have actually aimed at assessing the generalized effects of self-management, the outcomes have been consistently positive (Shapiro & Cole, 1994). While not specifically within the scope of this study, these data would add to our knowledge in this area.

The social importance of this study is at least two-fold. First, to be able to use an intervention that will enable students to self-manage their problem behaviors will help to empower them to apply the techniques to the general education setting and beyond. Second, it will allow the teacher to spend more time teaching and less time managing these behaviors.

A hypothesis was developed identifying the target behavior for the participants in this study. Adam, Sam, and their parents identified talking-out behaviors as being problematic and were willing to try this intervention in an attempt to reduce these behaviors. After the study was completed they all were asked, informally, if they liked using the self-management procedure. They both answered in the affirmative. When asked if they

thought it helped them to control their talk-out behaviors, they also responded affirmatively. The parents expressed the hope that the effect would last. These positive responses, while certainly not formal, can form the basis of a social validity component.

Teaching adolescents who act out can be a difficult and frustrating task. This study was designed to confirm and extend previous studies that demonstrated the effectiveness of using a functional assessment-based self-management system that would reduce problem behaviors such as talk-outs. The ABAB reversal design was most appropriate for showing the functional relationship between the reduction of talk-out behaviors and the use of a self-management intervention. In spite of variable baseline data at the start, both participants responded well to the self-monitoring intervention procedure.

### ***Limitations***

There were several limitations of this study. To be truly effective for the participants, especially students with EBD in a self-contained environment, they must be able to generalize their success in other settings. This study did not address the issue of generalization. To address this limitation, the practitioner must provide a detailed explanation of procedures to the general education teacher, such that the latter understands the long-term benefits of the intervention (Shapiro et al., 1998). Another limitation of this study was the lack of an academic component. This study was not designed to show that a reduction in off-task (talk-outs) behaviors would result in an increase in on-task behaviors.

### ***Conclusions***

Research in functional assessment with students identified with or at risk for EBD has provided a preliminary data base attesting to the effects of functional assessment-based interventions in reducing problem behavior. However, we were unable to identify any specific trends in the research in terms of how or why specific interventions were selected and implemented. At present, the procedures used to assess the problem behavior of students with or at risk for EBD, as well as the interventions developed from the assessment outcomes, appear to be somewhat idiosyncratic to the specific researcher or situation. That is, different researchers use various procedures; thus, there does not appear to be a validated, integrated methodology for conducting functional assessments and developing interventions based on those assessments (Fox et al., 1998). Additionally, there is growing concern as to whether FBA procedures can be carried out by the classroom teacher. Ultimately, the success or failure of these procedures will eventually rest in the hand of the classroom teacher. The study by Pakenham et al. (2004) does address the issue of whether a truncated, less complicated version of FBA procedure can be useful for the classroom teacher. However, as indicated by the study, more research is needed in this area.

A functional perspective on problem behavior suggests that generality of behavior change would not be an automatic outcome of the intervention. The function of a specific

behavior may differ from one setting to another. An intervention based on the behavioral function in one setting would not address a different function in a different setting effectively. The review of literature indicates that more research and analysis is needed in this area. Another area of needed research focuses on examining whether interventions that are based on functional assessments are, in fact, more effective than interventions that are not derived from this process (Heckaman et al., 2000).

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