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FUNCTIONAL ASSESSMENT OF SELF-INITIATED MALADAPTIVE BEHAVIORS: A CASE STUDY

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ABSTRACT: This study sought to perform a Functional Behavioral Assessment (FBA) and develop a data-based behavior intervention plan (BIP) in order to address a student's maladaptive behaviors as exhibited in the regular education classroom setting. Of particular interest in this study was the finding that the FBA failed consistently to identify many of the environmental variables that interacted with the student's likelihood of demonstrating a wide range of severe problem behaviors. Nevertheless, interventions based on social skills and self-control strategies were sufficient to reduce the frequency of most problem behaviors and concurrently improve the student's level of academic performance. During a reversal-of-treatment, the student showed elevated levels of problem behavior; however, with the reinstatement of the treatment protocol, the student's behavior improved substantially. The role of private events and rule-governed behavior is discussed within the context of conducting FBAs and developing data-based treatment protocols.

KEYWORDS: maladaptive behaviors, functional behavior assessment, self-initiated behavior, behavior intervention plan, self-control, social skills training

A Functional Behavioral Assessment (FBA) is a systematic strategy for observing and recording variables that may interact with and maintain maladaptive behaviors. The majority of research on the efficacy of functional behavior assessment (FBA) has been conducted in an attempt to identify the variables interacting with maladaptive behavior in disabled populations (Ervin et al., 2001). Literature reviews show relatively fewer attempts to conduct FBAs in regular education settings (Nelson, Roberts, Bullis, Albers, & Ohland, 1999), and there have been particular concerns about the feasibility of using these procedures in regular education settings (Hanley, Iwata, & McCord, 2003).

Nevertheless, regular education settings are now being required to implement the FBAs and data-based treatments (Quinn et al., 2001). Moreover, as a result of the Individuals with Disabilities Education Act (IDEA) Amendment of 1997, and forwarded by the most recent reauthorization in 2004, schools are required to conduct a functional

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behavioral assessment for children who violate school rules or codes of conduct either before or not later than 10 days after disciplinary action is taken.

In an examination of the prevalence of functional analyses published between 1961 and 2000, Hanley, Iwata, and McCord (2003) found that of 277 functional analysis studies, 87 were performed in school settings. This was second only to 90 published assessments conducted in medical facilities. Interestingly, the federal law does not provide much guidance regarding the actual components of an FBA (Council of Parent Attorneys and Advocates [COPAA], 2005; Miller, Tansy, & Hughes, 1998; Yell & Katsiyannis, 2000), and the practice and procedures related to conducting a functional assessment may be markedly different across and within school districts. In fact, there has been extensive dispute in the professional literature as to how, why, and if an FBA should be conducted. For example, Johnston and O'Neill (2001) contend that an FBA is an outcome-based process that produces five unique but particularly critical elements: 1) a description of the problem behavior, 2) the identification of the special conditions (e.g., locations, times, or persons) that are connected and not connected with the target behavior, 3) the isolation of consequences that maintain or interact with the target behavior, 4) the generation of a hypothesis that may or may not function to support the target/problem behaviors, and 5) the systematic collection of data that determines which of the hypothesized conditions is most critical to maintaining the problem behavior. Conversely, Nelson, Roberts, Bullis, Albers, and Ohland (1999) state, "The products of a functional assessment are the: (a) identification of an individual's strengths and weaknesses in a number of functional areas and (b) identification of environmental demands and support services and practices" (p. 8). Thus, there appears to be considerable variability among authorities as to what elements are critical to performing an FBA correctly.

Some of the argument and inconsistency regarding the approach to an FBA appears to be related to the variability existing in the behavioral/psychological literature (Ninness, McCuller, & Ozenne, 2000) concerning the best way to collect direct-observation data. In fact, the term FBA is used interchangeably with other descriptors such as functional analysis, descriptive analysis, and descriptive assessment (Ninness et al., 2000). Presently, the term, FBA, carries with it a very wide range of meanings, implications, and many methods of implementation.

The level of experimenter control seems to be one of the primary distinctions. With descriptive processes, the experimenter has very little control over the sustaining environmental variables. Instead, descriptive assessments often employ observations in the subject's natural setting and attempt to determine the antecedent and consequent events contributing to a behavior. However, one drawback to this type of analysis is that the data obtained are only correlational in nature (Sasso et al., 1992). Extended functional analysis, on the other hand, employs highly controlled analogue (simulated) conditions to assess variables that maintain a particular type of maladaptive behavior. While this approach allows for more precision of the functional relationships, the degree of stringent control required in the simulated environment may cause the actual maintaining variable in the natural environment to be masked (Iwata, Vollmer, & Zarcone, 1990).

Consequently, contingencies and stimuli in the analogue conditions must match those of the natural environment if an intervention based on the results is to be effective (Mace, Lalli, & Pinter-Lalli, 1991).

FBA's have received criticism from several directions. In general, some have criticized functional assessment research for its heavy focus on people with developmental disabilities, as well as that there are few investigations of published FBAs performed by faculty in natural school settings (Gresham, 2004; Hanley et al., 2003; Hoff, Ervin, & Friman, 2005). For example, Hanley et al. found 253 of the 277 functional analyses they reviewed involved subjects with developmental disabilities, and all of these were extremely labor and time intensive. In response to accusations of being too time consuming, complex, and labor intensive (Axelrod, 1987), Iwata et al. (2000) developed a two-hour program to train others to implement a three-condition functional analysis. Mace and Lalli (1991) report the use of a combination of descriptive and functional analyses to overcome the limitations of each. They suggest first conducting a descriptive analysis to narrow the variables to be assessed more thoroughly in a functional analysis.

Sasso et al. (1992) used the suggestion of Mace and Lalli (1991) to compare the effectiveness of both a descriptive and functional analysis in a school setting while assessing the maintaining variable in aberrant behavior. Investigators first conducted a thorough experimental functional analysis outside of the school as a method to determine the precision of the subsequent assessments. Teachers were then trained to conduct the descriptive analysis and the classroom experimental analysis. Investigators found that all three procedures yielded the same result of negative reinforcement sustaining the unwanted behavior. This study supports the utility of functional analysis procedures in school environments.

In addition to the study by Sasso et al. (1992), several others have concluded that the combination of both descriptive and functional analyses resulted in successful outcomes. Kern, Childs, Dunlap, Clark, and Falk (1994) furthered the notion of preceding a functional assessment with a descriptive assessment to develop an effective intervention. These authors conducted a study in which they first used a descriptive assessment to generate hypotheses about maintaining variables. The classroom functional assessment outcomes supported the preceding findings, and the resulting intervention was successful in increasing on-task behavior. In 1995, Broussard and Northup used a descriptive assessment to narrow the possible controlling variable for each of three students to one of three possibilities: teacher attention, peer attention, or escape from academic tasks. For all three students, the functional analysis supported the initial hypothesis. Furthermore, contingency reversal substantially reduced target behaviors and increased academic work.

Hoff, Ervin, and Friman (2005) used direct and indirect observation procedures to formulate hypotheses regarding the variables controlling one student's disruptive behavior. These hypotheses then guided a teacher-administered classroom functional analysis. Using this data along with the results of a teacher interview, both the experimenter and teacher formed three hypotheses regarding possible variables controlling the student's behavior: (a) disruptive behavior produces peer attention when certain peers are in close proximity, (b) in the absence of teacher attention, the

presentation of certain books produces academic escape, and (c) the combination of the previous variables produces both academic escape and peer attention. Using an alternating treatments design, the teacher created these three conditions in the classroom. The results were as predicted: The combined effects produced the highest rate of disruptive behavior, and furthermore, the reading material was found to be a greater predictor of disruptive behavior than peer proximity. Following the study, the teacher reported that the procedures were easy to implement and that she would recommend them to others.

Based on the above findings, it appears that FBAs conducted by direct observations are most effective when behaviorally handicapped students demonstrate aberrant behaviors correlated with salient environmental events. However, for some individuals, the environmental maintaining variables may not be sufficiently conspicuous to permit reliable identification and recording during real time observations of classroom behavior. This does not preclude the necessity of employing direct observation as part of the FBA data-based decision making process. It is possible that even when a student's maladaptive behaviors are not conspicuously correlated with environmental antecedents or consequences, protocols may be developed around the very subtle variables termed "self-initiated," or similarly nonspecific descriptors that allude to the observer's difficulty in identifying salient antecedents or consequences correlated with the occurrence of problem behaviors. This category is not employed in an attempt to equivocate functional control of behavior. It is simply to point out that there are occasions in which problem behaviors emerge in the absence of salient environmental correlates. Since maladaptive behaviors that fall in this category may be, at least, partially a function of a student's self-generated rules (Ninness, Ellis, Miller, Baker, & Rutherford, 1995) and/or various forms of private events (Skinner, 1974), strategies that emphasize teaching social skills in conjunction with self-control/self-management procedures may be useful in developing treatment for students who exhibit elusive FBA outcomes (cf. Neef, Bicard, & Endo, 2001).

METHOD

Participant and Setting

The student was referred for assessment and treatment based upon the following criteria: 1) the student demonstrated an inability to learn that appeared to be associated with a wide range of behavior problems according to teacher interviews and classroom observations, 2) teachers were willing to participate and implement interventions, and 3) the parent or guardian provided written informed consent and permission for the student to participate. The school psychology intern obtained permission from the parents and IEP team to employ additional behavior intervention plans (BIPs) that had not been attempted previously.

The student, identified here as Jerome (fictitious name), presented as a 10-year-old male exhibiting a wide range of problem behaviors in the classroom. He was not under the care of a physician or diagnosed with any medical or psychological disorder at the

time of referral for pre-intervention assessment and treatment. He was enrolled in special education and identified as learning disabled in the area of reading, according to the guidelines provided in IDEA and the DOE policies and procedures in the State of Texas. Jerome attended a regular classroom setting for the majority of the day. Jerome's IEP specified he was to attend two 45-min class periods for language arts and math, respectively, within a special education classroom setting. He received instruction in 3 additional classes within the general education setting, including reading (which focused on the subject matter for which he was identified as learning disabled).

Instruments and Observation Procedures Utilized by the IEP Team

1. *The Behavior Evaluation Scale-3* (BES-3) is a behavior rating instrument for children in grades kindergarten through 12.

2. *Focal Point* is a software package designed to provide tools for conducting FBA procedures using notebook computers (Ninness et al., 2000).

3. *Automatic graphing* (Alessi & Kaye, 1983) is a procedure that enables an observer to record ongoing behavior while simultaneously creating a graph representing the distribution of problem behaviors in the classroom context.

4. *Informal interviews* were conducted with Jerome's parents and members of the IEP team.

5. *Counseling logs* were obtained from the special education counselor, who had been working with the special education and regular education teachers to address Jerome's academic and social needs.

6. *A review of records* included all the discipline reports, achievement testing, and academic assessments compiled on Jerome during his school history.

General Procedures for the Development and Testing of FBA Hypotheses

IEP team members included the following: assistant principal, diagnostician, special education teacher, regular education teacher, school psychology intern, and supervising school psychologist. The team reviewed the following assessment data, as described above, to develop hypotheses regarding variables that might be interacting with Jerome's problem behaviors.

BES outcomes. As previously noted, the BES-3 is a behavior rating instrument for children in grades kindergarten through 12. This scale measures five dimensions corresponding to the five characteristics of behavior disorders/emotional disturbance in IDEA: learning problems, interpersonal difficulties, inappropriate behavior, unhappiness/depression, and physical symptoms/fears. Somewhat analogous to many intelligence tests, this instrument employs standard scores having a mean score of 10 and a standard deviation of 3 for each of the five subscales. Jerome's scale scores and percentile ranks are listed in Table 1.

The rating scale outcomes indicated Jerome exhibited high rates of behavior problems across all dimensions. All five scales pointed to severe behavior problems; however, of particular concern were the scales that indicated Unhappiness/Depression

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TABLE 1. JEROME'S BES-3 SCALE SCORES AND PERCENTILE RANKS

Behavior Dimensions	SS	%tile
Learning Problems	5	25
Interpersonal Difficulties	2	10
Inappropriate Behavior	3	15
Unhappiness/Depression	1	5
Physical Symptoms/Fears	1	5

and Physical Symptoms/Fears. Although the BES-3 does not provide information regarding the circumstances in which such problems are most likely to emerge, it does provide support for the IEP team's determination to provide immediate supplementary interventions for Jerome.

Automatic graphing outcomes. The automatic graphing procedure (Alessi & Kaye, 1983) enables the observer to record ongoing behavior while simultaneously creating a graphic presentation of what occurs throughout a session, or even across multiple sessions or days of observations. The rotation scan is used when the comparison group and targeted student are seated close to each other. In this procedure, the observer attends to only one of the comparison students in addition to the targeted student during each observation interval. In each interval, the observer rotates to the next comparison student but sustains concurrent observation of the target student. During observation, the graph can be easily drawn by hand or on a computer spreadsheet.

To build an automatic graph (histogram), it is necessary that the observer mark an "X" for the occurrence of the problem behavior, starting at the bottom of each column. The nonoccurrence of problem behavior during an interval is marked with an "O." These begin at the top of each column and move down with each nonoccurrence of the target behavior for a given interval. When a 2.5-min column is finished, the observer moves to the next column and repeats the process until all eight columns are completed. When the graph is finished, it is an easy matter to shade in the cells containing X's and represent the entire observation as a graphic illustration of the targeted student's behavior in comparison to that of three normal/average functioning students within the same classroom setting. At the end of each interval, the target student's behavior is recorded on the graph and the comparison student's behavior on a separate graph.

The automatic graphing/rotation scan procedure enables the observer to sequentially sample the behavior of comparison students while continually monitoring the targeted behavior. Composite recording of the comparison behavior furnishes a reasonable local "norm" for appropriate classroom behavior during the same time under the same conditions that exist for the target student's behavior. Such local norms can be especially valuable in determining the extent of a student's problem behavior, then comparing that target student to a nationally averaged normative reference group. It is important to men-

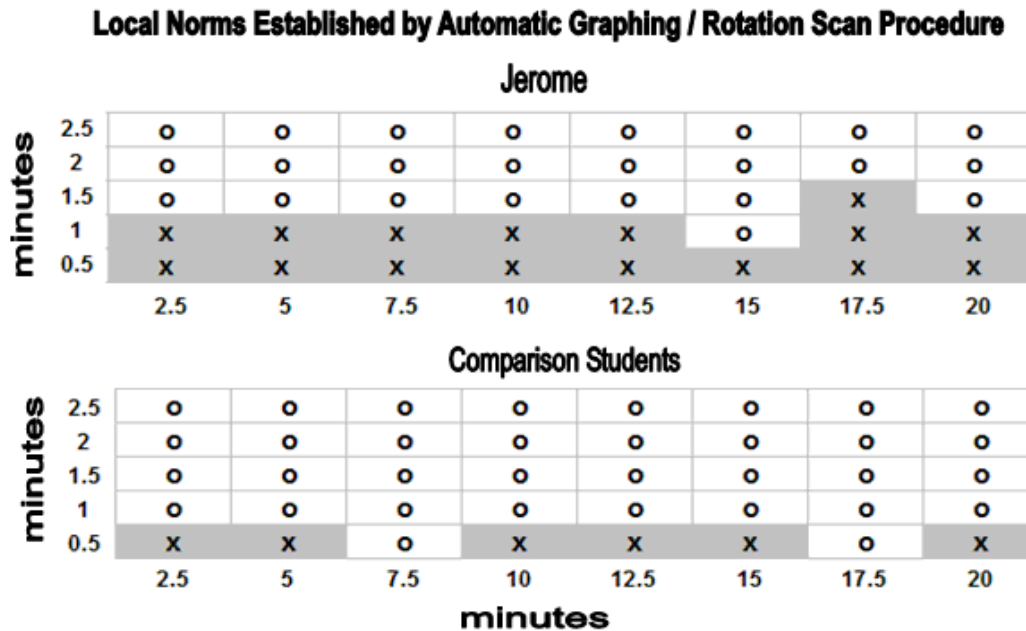


Figure 1. A comparison of Jerome's level of off-task behavior with students in his immediate proximity during class time.

tion that this procedure is only employed as a preliminary observation tool, and that outcomes from this procedure are only used in the development of hypotheses to be tested in the FBA direct observation procedure. Graphed outcomes from Jerome's automatic graphing/rotation scan procedure are illustrated in Figure 1.

Jerome's level of inappropriate and off-task behavior was clearly in excess of the comparison students' behavior throughout this 20-min observation (at least once, usually twice, and for one 2.5-min interval three times). This preliminary observation suggests that peers in Jerome's immediate proximity (comparison students) were not exhibiting off-task or socially inappropriate behaviors more than once per 2.5-min observation interval across the session. This supports the teacher's contention that other students in her classroom were in compliance with her general classroom management procedures.

Although the automatic graphing procedure provides only an overview of a student's level of exhibiting problem behaviors relative to other students who are in his proximity, it does allow the observer an opportunity to take preliminary note of the conditions possibly associated with a student's problem behaviors. During this time, the observer noted Jerome occasionally seemed to respond inappropriately to gain peer attention as well as negative attention from his teacher.

Outcomes from interviews. During an interview with Jerome's mother, it was noted Jerome had a history of academic and behavior problems and that the mother had very little control over Jerome in the home. Jerome's mother participated in the IEP meeting

and was fully in favor of developing a treatment package that included social skills training. Moreover, she indicated she might be interested in learning how to adapt these strategies to the home environment.

Counseling logs. Logs from the special education counselor seemed to confirm a lack of consistency and structure in Jerome's home environment. These logs noted that the school had considerable difficulty initiating or maintaining contact with Jerome's parents.

Review of records. Jerome's most recent assessments, including intellectual and achievement testing, were reviewed by the school psychology intern and her field-based supervisor. In general, these records confirmed Jerome had weak academic skills, particularly in the area of basic reading, reading fluency, and reading comprehension. On his most recent report card, he earned a failing grade in reading.

Jerome had several discipline reports stating he was unwilling to initiate and sustain academic tasks. These records appeared to support the possibility that Jerome's maladaptive behaviors might be at least partially a function of his weak academic skills and general reluctance to engage in school work.

FBA Outcomes and Data-Based Decision Making Steps

The FBA included a series of individualized steps that allowed data-based decisions with the objective of helping Jerome realize his academic and social potential. This process included the following: 1) general assessment of the student's behavior, 2) development of hypotheses, 3) direct observation of the student's behavior, 4) implementation of treatment (a brief reversal and reinstatement was included in this study), and 5) development of a maintenance program.

Step 1. General Assessment of the Student's Behavior: Prior to conducting functional assessment and baseline observation, an automatic graphing/rotation scan procedure (Alessi & Kaye, 1983) was conducted. This observation system allowed the observer to monitor and record the student's behavior while using a comparison recording of all other students sequentially. This preliminary observation system allowed the observer/s to compare Jerome's behavior with the behavior of others in the classroom and to establish a 'local norm of behaviors' in that setting. As previously mentioned, Jerome's level of inappropriate and off-task behavior was clearly in excess of that of the comparison students throughout this 20-min observation. Outcomes from this preliminary observation suggest that peers in Jerome's immediate proximity were not "continually" contributing to his target behaviors. However, the observer noted a few occasions on which this might have been a variable. Generally, this observation system supported the teacher's contention that other students in her classroom were in compliance with her classroom management plan, albeit there were occasions during which Jerome appeared responsive to negative attention.

Step 2. Operational Definitions and Development of Hypotheses: The compilation of all assessments and preliminary observations suggested Jerome was most likely to demonstrate inappropriate and off-task behavior that fell under the general heading of

disruptive, non-compliance, and general "fidgeting" during class time. The operational definition of targeted behaviors included the following: aggravation of peers by poking them, talking out without permission, throwing things or making noises with his mouth that disrupted others, calling others inappropriate names, and making inappropriate comments that were not acceptable in school. General off-task behaviors included fidgeting or squirming in his seat for longer than 5 s, playing with materials, or engaging in non-academic activities (e.g., playing with school supplies) for longer than 5 s.

Based on a review of assessments, preliminary observations, and a review of existing records, the IEP team hypothesized that Jerome's problem behavior might be related to at least four different variables occurring in the classroom context. These might be maintained by one of the hypothesized variables of peer attention, teacher attention, academic escape, or "self-initiated," as listed by the IEP team. If off-task or disruptive behavior were being engaged in during the course of a specific academic assignment by the teacher, the behaviors were to be recorded as "academic escape." If the student's behavior appeared to be related to an effort to entertain or gain the interest of peers, "peer attention" was to be recorded. "Teacher attention" was to be recorded if it appeared that the target behavior was a function of trying to gain the teacher's attention inappropriately. The "self-initiated" condition was to be recorded if the target behavior occurred when no other environmental variables were apparent to the observer/s.

Step 3. Systematic Direct Observation of the Student's Behavior: In the next step, a series of computer-facilitated direct observations were conducted in an attempt to identify the actual conditions that were most likely to be maintaining Jerome's problem behaviors. Subsequent to these direct observations, the FBA/baseline outcomes were to be graphed such that a treatment protocol could be developed by the IEP team.

Step 4. Implementation of Treatment (a brief reversal and reinstatement was included): Treatment procedures were determined subsequent to conducting the FBA. Following a six-week period, a meeting of the team was held again to assess Jerome's progress.

Step 5. Development of a Maintenance Program: When the intervention strategies were determined to be effective, the treatment team initiated procedures for fading out much of the structure of Jerome's IEP with the target of making these skills a part of his school repertoire. Details regarding the development of this maintenance plan were discussed and arranged to be carried forward in the coming school year.

FBA and Baseline

Baseline observational data were gathered in this student's regular education classroom setting. Data were collected by direct observations at randomly scheduled times using the Focal Point software (Ninness et al., 2000) on a laptop computer. During 15-min sessions, 10 s partial interval observations were conducted and any feature of the target behavior that occurred during a 10 s interval was recorded as an occurrence.

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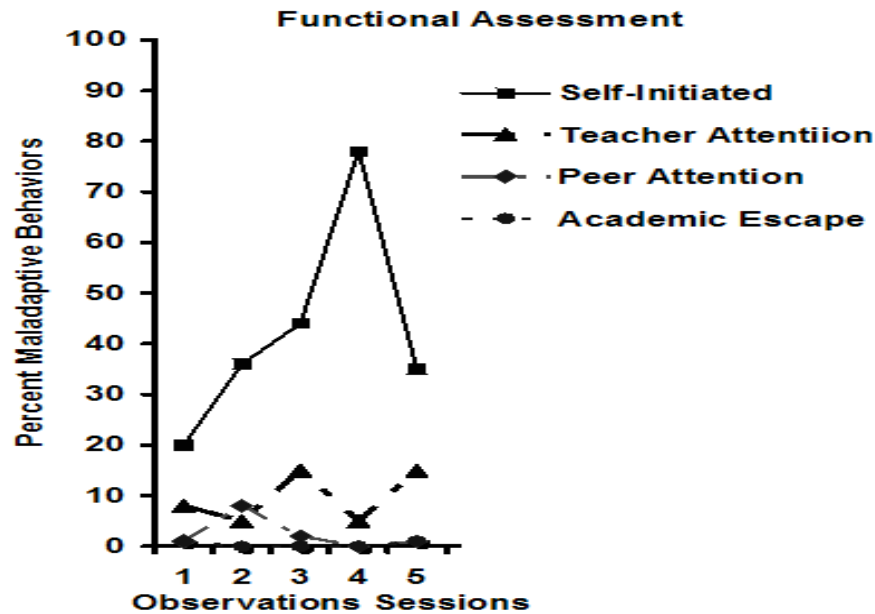


Figure 2. Outcomes from Jerome's FBA conducted during 5 consecutive days

The graphed outcomes from the FBA in Figure 2 illustrate that in most of the episodes in which Jerome exhibited behavior problems, the observers were unable to isolate and record particular antecedent or consequent events in the classroom environment. Although he demonstrated a high level of problem behaviors (55% of the observed intervals), the self-initiated condition was recorded during 42.6% of all intervals.

Treatment by teaching self-control strategies. The social skills training procedures were adapted from scenarios from the Father Flanagan's Boys Town skills streaming package (Dowd, Tobias, Connolly, Criste, & Nelson, 1993). The self-control (self-management) protocols were based on techniques described by Ninness et al. (2000). The school psychology intern and supervising school psychologist reviewed the intended social skills training, self-control, and classroom management strategies with the IEP team, and upon approval by the team, the protocol was initiated. Social skills such as "accepting no to a request," "accepting criticism," "asking for assistance politely," and "organizing work materials" were instructed by the school psychology intern, modeled by the intern, and then role-played first by the intern and then by Jerome (see Dowd & Tierney, 1992, for similar types of skill streaming strategies employed at Boys and Girls Town).

During these role-playing exchanges, the school psychology intern provided specific self-control strategies in conjunction with each of the above skills. In the context of each rehearsal, Jerome was given instructions regarding how to correctly assess his own

performance. Rather than using a numerical scoring system, Jerome was asked to provide a brief verbal description of what he had done well and poorly during the rehearsal of each social skills scenario. The intern provided feedback regarding the accuracy of these descriptions.

These social skills and self-control procedures were instructed, modeled, rehearsed, and role-played for approximately 15 minutes each school day. Contingent upon improving rehearsal and accurate descriptions of his own behavior, reinforcers such as rubber bracelets (and similar trinkets) were given at the end of each session. Jerome was asked to attempt to continue practicing his newly learned prosocial skills in the context of his general education setting. It is important to note, however, that no formal assessment strategies were implemented within the regular education classroom setting.

Concurrent treatment with classroom management strategies. The school psychologist intern trained the classroom teacher to employ a classroom management system to supplement the social skills and self-control training sessions. The system was designed to generate more opportunities for Jerome to engage in appropriate interactions with his peers and allow him to have more opportunities to practice the skills he was acquiring during social skills and self-control sessions.

Following training by the school psychology intern, the teacher implemented a dependent group-oriented (collaborative) contingency (Slavin, 2006). In this classroom management system, all members of the class were required to meet a particular behavior standard. For example, designated teams were allowed to share diversified rewards if they exhibited the following types of behaviors: 1) brought materials to class; 2) worked quietly at their requested assignment; or 3) raised their hands for questions and to talk. The types of reinforcers employed changed daily throughout the duration of this treatment condition. If one or both teams fulfilled the specified requirements, additional reading time, computer time, and "reduced homework passes" were distributed at the end of the period.

In this context, Jerome was encouraged by the school psychology intern and the classroom teacher to practice employing his social skills and self-control techniques during regular class hours. While no structured self-assessment system was implemented for the management of these skills during regular class time, Jerome described his classroom behaviors each day to the school psychology intern. In consulting with the classroom teacher, the intern made continuous veracity checks to verify the accuracy of Jerome's descriptions of his own behavior in the classroom setting. Important to note is that, in the general education classroom context, the only immediate reinforcement provided was in the form of intermittent verbal praise from the teacher and descriptions by the teacher of the forthcoming reinforcers to be distributed to team winners at the end of each school day.

Reversal. During the reversal condition, the social skills training and group-oriented contingencies were temporarily discontinued. The school psychology intern continued to conduct observations in an effort to identify conditions in which Jerome's problem behaviors might emerge.

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Reinstatement of treatment. After five days, the intervention system was reinstated. During the last three days, the frequency of social skills and classroom management strategies were systematically faded. During the final 2 days of treatment, the group contingencies were terminated. On the last day of this treatment condition, the regular education teacher was absent throughout the entire school day, leaving the class under the supervision of a teacher's aide.

Interrater Reliability

Direct observational data were recorded by a second observer for approximately 15 percent of the sessions. Reliability was calculated by obtaining the number of intervals in which both observers agreed that the problem behavior occurred. Using a Microsoft Excel spreadsheet, this value was divided by the total number of intervals and multiplied by 100 to obtain the percentage of agreement. Overall reliabilities (percentage agreement) were found to range from a low of 88% to a high of 100%. Occurrence and nonoccurrence reliabilities were somewhat lower, ranging from 77% to 94%. (Rounded to the nearest whole number).

RESULTS

The results of this case study suggested that Jerome's behavior changed in accordance with the prevailing contingencies.

Changes in Target Behavior Across Conditions

The first panel of Figure 2 (Baseline) shows the functional behavior assessment that occurred during baseline observations. During these five sessions, Jerome was found to demonstrate maladaptive/off-task behaviors during 55% of the observed intervals. Generally, the direct observations suggest that during most of the episodes in which Jerome demonstrated maladaptive behaviors, the observers were unable to identify correlated antecedent or consequent events. Observations were scheduled randomly in order to preclude obtaining biased samples. The graphs of the functional assessment outcome conducted during baseline suggest that these problems were related to teacher attention during approximately 9.6% of the observations. Peer attention and academic escape constituted 2.4% and 0.4% of the observations, respectively. As previously noted, the self-initiated condition was identified during 42.6% of the observed intervals. The second panel of Figure 3 (Intervention) shows a clear reduction in the previously high level of target behaviors exhibited by Jerome. During the first five treatment sessions, Jerome exhibited maladaptive/off-task behaviors at a conspicuously decreased level. His average level of problem behavior fell to an average of only 17.2%. Nevertheless, during most of these intervals, the observers were unable to identify correlated antecedent or consequent events. Problem behaviors correlated with teacher attention were recorded in only 2.4% of the intervals. Peer attention and academic escape averaged only 1.8% and 0.2% of these observations, respectively. Maladaptive behaviors that appeared to be "self-initiated" averaged 12.8% of the observed intervals.

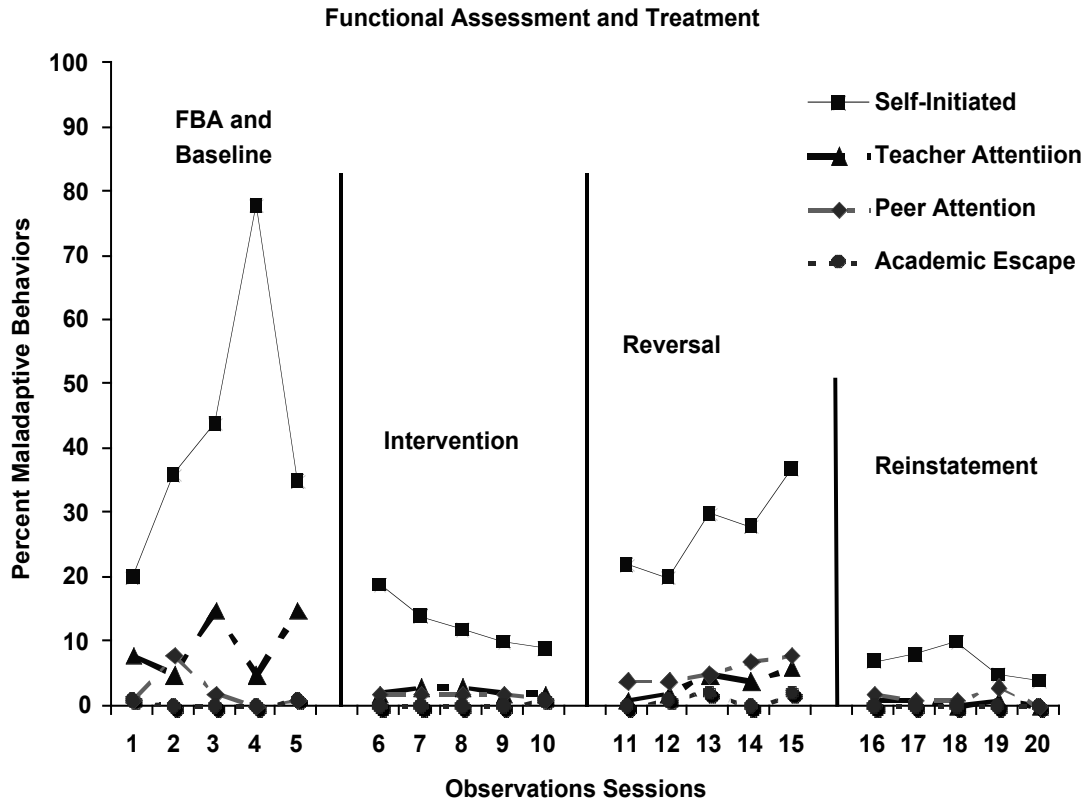


Figure 3. Showing a clear reduction in the previously high level of target behaviors during Intervention and Reinstatement of intervention conditions

In the third panel of Figure 3 (Reversal), increases in self-initiated maladaptive behaviors become apparent. Likewise, there was a slight increase in the level of problem behaviors interacting with peer attention and teacher attention. During the reversal to baseline, Jerome began to exhibit increasingly higher levels of inappropriate behavior that approximate those seen during the first baseline sessions. Specifically, he demonstrated inappropriate behavior for an average of 37.6% of the observations. Again, the observers were unable to clearly identify environmental events "triggering" these episodes. Teacher attention was identified as a possible variable, averaging at 3.6% during these observations. Peer attention and academic escape constituted an average of only 5.6% and 1% of the reversal-to-baseline sessions. Consistent with the previous recordings of Jerome's behavior, the self-initiated condition was identified at an average of 27.4% during these observations.

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In the last panel of Figure 3, a final shift in the level of targeted behavior is evident. With the reinstatement of social skills and the opportunity to practice these skills in the classroom setting, Jerome was recorded performing maladaptive behavior for an average of only 8.8% of observations. These infrequent and sporadic episodes were evasive in terms of their environmental correlates. Teacher attention was recorded at an average of 0.6%, peer attention and academic escape averaged at 1.4% and 0.0%, respectively, during the final five observations, and self-initiated was recorded at an average of 6.8%.

Changes in Academic Performance

Six-week report cards were given just prior to and subsequent to the treatment protocol. Table 2 illustrates the academic changes that occurred concurrent with the implementation of social skills, self-control, and classroom management strategies.

Although Jerome's language arts grade dropped during this time period, his other class grades improved somewhat. Particularly in the area of reading (his major deficiency and area of eligibility for the handicapping condition of learning disabled), Jerome showed striking improvement. Important to note is that the intervention protocol was not directed specifically at reading; however, general on-task, time-management, and organizational skills were prominent components of the social skills and self-control/self-management strategies employed with this student (Dowd et al., 1993; Ninness et al., 2000).

Acceptability of the Intervention

Jerome's IEP team members responded to a four-item survey regarding satisfaction with the social skills, self-control, and classroom management program as implemented by the school psychology intern. The team's responses to these items are listed below:

1. Was your experience with the analysis, treatment, and follow-up favorable?

Response: All members indicated "yes."

TABLE 2. JEROME'S GRADES PRIOR TO AND SUBSEQUENT TO TREATMENT.

CLASSES	5 TH SIX WEEKS (PRIOR TO TREATMENT)	6 TH SIX WEEKS (FOLLOWING TREATMENT)
SCIENCE	70	73
LANGUAGE ARTS	80	72
MATH	72	76
SOCIAL STUDIES	63	72
READING	0	93

2. Did you feel you had adequate training for your participation in the treatment team process of analysis, treatment, and follow-up?

Response: Four members indicated "yes." One member indicated "no" and commented that she would have liked more training.

3. Would you recommend this process to others in the future?

Response: All members indicated "yes;" however, one member indicated that the procedure was very time consuming.

4. Were you pleased with the results? If not, do you have any recommendations for changes?

Response: All members indicated "yes." No changes regarding the program's implementation were provided at that time; however, the team will reconvene at the beginning of the next school year, and it is possible that suggestions for protocol change may be developed at that time.

DISCUSSION

Following a review of preliminary assessment data by the IEP team, an FBA was conducted in an attempt to identify the environmental variables that might be interacting with Jerome's problem behaviors. The IEP team reconvened to determine the most beneficial treatment strategy, and a treatment protocol was developed in accordance with the graphed outcomes of the FBA/baseline data. Jerome demonstrated clear reductions in problem behavior during this condition. To ascertain the efficacy of this protocol, intervention strategies were temporarily terminated and reinstated with the objective of gradually fading all treatment strategies and helping Jerome to learn to manage his own academic and social behaviors more productively. During the final condition, Jerome's behavior improved demonstrably in the classroom setting. Moreover, he demonstrated substantial improvements in several academic areas during this time. Due to the ending of the school year and due to the teacher's absence on the final day of treatment, observational data collection continued for only five additional days; however, during the last 2 days, the intervention procedures were faded, and the IEP team moved toward the development of a maintenance/generalization program with the intention of reemploying these treatment strategies during the coming school year and gradually fading the intervention procedures to a point at which Jerome might be able to sustain his prosocial skills and self-control techniques on a more independent basis. Additionally, the IEP team developed plans aimed at finding better strategies to work in conjunction with Jerome's family members during the implementation of the protocol in the coming academic year.

Self-Initiated Maladaptive Behaviors

FBA's provide critical information regarding the circumstances in which individuals are most likely to demonstrate problem behaviors. Behavior analysts and school psychologists have consistently demonstrated that graphing of behavior is particularly helpful in obtaining an understanding of many of the environmental conditions that

interact with and maintain a wide range of problem behaviors exhibited by humans. However, this becomes an increasingly complex task when observing the behaviors of verbal individuals. Clearly, the salience of antecedent and consequent conditions that interact with a verbally sophisticated student's probability of engaging in particular types of maladaptive behaviors may vacillate across and within settings. This issue, perhaps more than any other, has complicated the general acceptance and implementation of FBAs being conducted via direct observations in regular education and special education settings.

It is undeniable that there are technical complications inherent in attempting to conduct FBAs with direct observations in the absence of observable environmental antecedent and consequent events, and to some extent this dilemma has impeded experimental analyses of aberrant behavior (see Okouchi, 2006, for a discussion of an experimental analysis of private events). However, this challenge should not interfere with continued attempts to develop more sophisticated strategies for identifying the contexts in which students are likely to exhibit their problems.

Contrary to popular opinion (e.g., Slavin, 2006), radical behaviorism has long acknowledged unobservable events and rule-governed behaviors identifiable exclusively to the individual (Skinner, 1974). Unlike so called cognitive behaviorists (e.g., Grant & Cash, 1995; Mahoney, 1974), who characterize unobservable events or rules as intervening variables (or hypothetical constructs), or methodological behaviorists (e.g., Guthrie & Horton, 1946), who confine the study of behavior to the events exclusively observable by others, radical behaviorists have a long history of conducting applied and basic research in the experimental analysis of human behaviors that are not completely conspicuous by direct observation.

As Hayes, Zettle, and Rosenfarb (1989) have stressed, even when it appears that the behavior of humans is conspicuously under the control of immediate external consequences, other forces may be at work. To the extent that verbally sophisticated humans may be able to describe the relationship between their behavior and existing or anticipated antecedent and consequent events, they may be concurrently operating under the influence of unobservable (private) stimuli and/or socially mediated or self-generated rules. Ninness et al. (2000) forward a series of functional assessments conducted on students engaging in "bullying" behavior. Here, the self-initiated condition was used in conjunction with other hypothesized events in an attempt to identify the circumstances in which normal functioning students demonstrated episodes of disruption and aggression.

Particularly among students with good verbal skills, self-initiated aggression (or other maladaptive social behaviors) may be attributed to the development of self-instructed rules that are tied to a wide range of verbal antecedents and consequences (Hayes, Kohlenberg, & Melancon, 1989). Clearly, it was not possible to access the specific verbal repertoires of these students prior to treatment. We had no way of knowing what they were saying to themselves about their own aggressive behavior. However, we did learn something about the conditions in which they were most likely to act-out aggressively. Unbeknownst to us, prior to the filmed functional assessment, these students were not just responding aggressively to other people's taunting and

provocations. The students were just as likely, if not more likely, to initiate aggressive episodes whenever and wherever the chance presented itself. Moreover, once an episode began, it was very unlikely to stop. Most of the baseline and reversal intervals were composed of a combination of self-initiated, provoked, and continuing aggression. Therefore, it became eminently clear to us that our intervention needed to include equal amounts of emphasis in all three areas of potential volatility.

A functional analysis of maladaptive behaviors interacting with private events or an individual's covert verbal behavior may complicate an experimental analysis; however, this does not preclude the advantages of directly observing problem behaviors in the environments where they have some history of being exhibited (e.g., regular and special education classrooms, playgrounds, hallways, cafeterias, and many locations within the context of public and private schools).

Even when it is especially difficult to identify specific environmental correlates of maladaptive behaviors, graphed outcomes from FBAs may serve as a guide for developing efficient and prescriptive behavior intervention plans. For example, observers may record "self-initiated" by default when the actual circumstances maintaining a student's problem behavior is academic escape. However, academic escape is often difficult to isolate as a precipitating variable when the target student has not been given a conspicuous request to engage in a particular school-related task (Ninness et al., 1995). This might represent a technical/observation problem requiring better methods of differentiating variables. As a practical matter, irrespective of whether a referred student is behaving inappropriately in an attempt to escape specific academic tasks or as a function of verbal rules contradicting the teacher's management plan, providing training in social skills and self-control strategies may be one of several reasonable intervention protocols developed from a functional behavior assessment using direct observation procedures.

Federal Mandates and Best Practices

Schools are mandated by IDEA to conduct FBAs for handicapped students who violate school rules or codes of conduct; however, the federal law does not provide guidance regarding the actual components of an FBA or how it should be conducted (Council of Parent Attorneys and Advocates [COPAA], 2005; Miller et al., 1998; Yell & Katsiyannis, 2000). We believe that best practices in school psychology might extend to studies such as those conducted by Hoff, Ervin, and Friman, which were published in a recent issue of *School Psychology Review* (2005). To briefly revisit the FBA and data-based decision making procedures employed in their case study, these applied researchers at Boys and Girls Town employed direct and indirect observations to formulate hypotheses regarding the variables that might be interacting with a student's disruptive behavior. Using this data along with the results of a teacher interview, both the experimenter and teacher formed hypotheses regarding possible variables controlling the student's behavior, and they developed an innovative treatment that provided evidence based on direct observations to demonstrate the student's improved behavior. Moreover,

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the teacher reported that the procedures were relatively easy to conduct and that she would recommend them to others.

In our opinion, FBAs should be conducted with an eye toward graphically illustrating the variables that interact with and maintain the referred student's problem behaviors. If these variables can be clearly isolated during the FBA process, the required intervention plan becomes evident. Conversely, if the maintaining variables can only be classified as "self-initiated," there still exists a wide range of treatment protocols that may be adapted to serve the student's needs. Ultimately, the success of any treatment protocol is predicated on the referred student sustaining remediated academic and social behaviors under the same and more general conditions than those in which his/her problem behaviors were initially exhibited.

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