

TEACHER IMPLEMENTED TREATMENT PROBES:
A CONSULTATIVE PROCEDURE FOR FUNCTIONAL ANALYSIS OF CLASSROOM
BEHAVIOR

By

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To all who have supported me in this work; especially those who have nurtured my dreams throughout my lifetime, my success is based on your belief

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This investigation extended the literature on classroom based assessments and interventions with disruptive behavior by training general education middle school teachers to conduct functional analyses, measuring the integrity with which they implemented functional analysis procedures in their classrooms, and evaluating the effects of functional analysis on students' rates of appropriate classroom behavior. Behavioral consultation procedures, including performance feedback, were used to support and maintain teachers' levels of integrity throughout the assessment process. Results indicated that teachers were able to implement functional analysis conditions with high integrity during the training phase of assessment. However, during classroom based functional analyses, two teachers demonstrated high procedural integrity and one teacher demonstrated variables rates of procedural integrity. Functional analysis yielded consistent results regarding the classroom behavior of one student. Factors contributing to valid functional analysis results appeared to include high procedural integrity by the implementing teacher and limited student reactivity to the assessment process. Social acceptability findings indicate that all teachers found the procedure to be useful for the assessment of behavior demonstrated by disruptive students, and that they valued the information obtained. However,

teachers raised concerns about the feasibility of using a highly time intensive process to reduce rates of disruption. Consultation was an effective way to support teachers in the implementation of a classroom-based functional analysis; highly collaborative consultation appeared to produce the best outcomes via both teacher integrity and student response to the functional analysis.

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Introduction

Functional analyses have been shown to be an effective tool in evaluating environmental contributors to aberrant behavior (Carr et al., 1999; Iwata, Dorsey, Slifer, & Bauman, 1982/1994). Functional analysis (FA) procedures provides a direct link between assessment and intervention that is both evidence-based and in concordance with the recent emphasis for school psychologists and other educators to conduct meaningful and useful assessments of student behavior and skills (Witt, VanDerHeyden, & Gilbertson, 2004). However, efforts to introduce FA technology into the classroom environment have been limited in their scope and efficacy (Broussard & Northup, 1995; Wright-Gallo, Higbee, Reagan, & Davey, 2006).

Classroom-based assessments of problem behavior, when conducted, have typically used various forms of functional behavioral assessment methodology, or FBA (Ervin et al., 2001; Murdock, O'Neill, & Cunningham, 2005; Shriver, Anderson, & Proctor, 2001). FBA is a descriptive assessment of the relations between student behavior and classroom events, typically involving the use of interviews, questionnaires, and/or observations to develop hypotheses about the potential function of an identified behavior (Murdock et al., 2005; Shriver et al., 2001). This differs from FA, which is an experimental manipulation of environmental events in order to measure the effects on individual behavior (Ervin et al., 2001). Both FBA and FA can be considered under the more general term, functional assessment. In a recent review of 11 empirical investigations of behavioral function in school settings, Kates-McElrath, Agnew, Axelrod, and Bloh (2007) concluded that the “general consensus seems to be that the term *functional assessment* is an overarching term that does not necessarily involve the experimental analysis phase owned by the term *functional analysis*,” (p. 53). Further, Stichter and Conroy

(2005) describe functional assessment as, “a set of assessment procedures used to identify variables that promote and maintain challenging behavior,” (p. 19). Thus, while functional assessment refers to the process of collecting information about a behavior and its possible environmental contributors, the terms functional behavioral assessment (FBA) and functional analysis (FA) provide greater specificity in describing the specific processes involved in such an assessment. For the purposes of this discussion, FBA will refer to the indirect and descriptive techniques (e.g., interviews, questionnaires, observation) that have been used to form hypotheses about behavior, while FA will refer more strictly to the direct experimental manipulation of environmental contingencies for a specific behavior. However, it is worth noting that some authors recommend the inclusion of FA into a school-based FBA process (e.g., Asmus, Vollmer, & Borrero, 2002; Kamps, Wendland, & Culpepper, 2006), while others restrict use of the term FBA to refer only to descriptive methods (e.g., Murdock et al., 2005; Shriver et al., 2001). At present, it seems that there is only clarity as to the definition of functional assessment being distinct from that of functional analysis (Kates-McElrath et al., 2007).

At the advent of a legislative mandate to conduct function-based assessments of problem behavior (Individuals with Disabilities Education Act, 1997), a plethora of research began on how to best accomplish this goal in schools, most of which has focused on descriptive FBA methods. However, little research has focused on the use of FA methodology in the classroom setting (Moore et al., 2002; Witt, Noell, LaFleur, & Mortenson, 1997). There is also a dearth of research that has extended the use of FA methodology to typically developing students, students with mild to moderate disruptive behavior, or adolescents (Boyajian, DuPaul, Handler, Eckert, & McGoey, 2001; Broussard & Northup, 1997; Ervin, DuPaul, Kern, & Friman, 1998; Flood, Wilder, Flood, & Masuda, 2002; Jones, Drew, & Weber, 2000; Moore et al., 2002; Northup et

al., 1997; Vollmer & Northup, 1996). Of the research that has been conducted with these populations, very little has been undertaken in the classroom context (Boyajian et al., 2001; Broussard & Northup, 1995; Ervin et al., 1998; Moore et al., 2002; Northup et al., 1997), and to date no such procedures appear to have been conducted with typically developing adolescents exhibiting problem behavior. Additionally, further research is needed to investigate the ability of teachers to manipulate and examine classroom environmental factors influencing students' behavior; most research in this area has been developed and conducted by researchers, with relatively little participation in design and/or analysis by classroom teachers (Ervin et al., 2001).

Functional behavioral assessment and functional analysis procedures have emerged out of the Applied Behavior Analysis (ABA) literature and have become increasingly present in school psychology and other intervention literature bases. ABA approaches to consultation and intervention within school settings are designed to increase teachers' awareness of the ways in which their behavior and the classroom environment affect student behavior (Erchul & Martens, 2002). As school psychologists increase their expertise and role in consultation within the school context, the ability to demonstrate and promote effective intervention strategies may be of increasing importance. Thus, more information is needed about the ways in which functional procedures for describing classroom behavior can be used in a variety of settings, with a variety of students, and by a variety of professionals. The purpose of this study is to explore the role of functional analysis techniques in the classroom setting with the contexts of teacher implementation and consultation in schools. The intent of this investigation is to examine a teacher implemented functional analysis procedure that can be used in general education middle school classrooms.

Literature Review

Targeted Populations

Adolescence is a sensitive period of development that is defined by the transition it encompasses between childhood and adulthood and is characterized by a number of changes in an individual's biology, cognitive characteristics and abilities, and emotional and behavioral expression (Santrock, 2001). During this period, students are uniquely affected by the contexts in which they are placed, such that the environments of school, the family, and peer groups take on special importance. Normative adolescent development is thought to benefit from a complex interaction of all of these settings in order to produce successful outcomes. Similarly, problems in adolescence are perceived to be due to an interaction of individual and contextual characteristics that adversely affect an adolescent in some noticeable manner (Santrock, 2001). Thus, the period of adolescence merits special attention to the manner in which relevant developmental contexts (e.g., schools) affect adolescent behavior and overall adjustment.

While students who meet criteria for a disruptive behavior disorder are not exclusively responsible for demonstrating problem behavior, they tend to demonstrate the most pervasive and disruptive behaviors within the classroom context (Boucher, 1999). Students who demonstrate disruptive behavior in the classroom (e.g., shouting out, noncompliance, using materials inappropriately) are frequently identified by teachers and referred to outside personnel for additional assistance or services (Rusby, Taylor, & Foster, 2007), and students with highly disruptive behavior are most likely to be noticed and perceived as problematic by teachers (Reddy, 2001). The prevalence of disruptive behavior disorders may range between one and 16 percent, depending on the disorder under study and the method of classification (DSM-IV TR, 2000). Disruptive behavior disorders include such classifications as Attention Deficit

Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD).

According to special education classification criteria, some students with disruptive behavior disorders are likely to be placed in the general education classroom. While many students who are identified as meeting criteria for Severe Emotional Disturbance (SED) are placed in highly restrictive settings, such as hospital, residential, or homebound settings, approximately 16% receive services in general education classrooms (Reddy, 2001). However, determining the prevalence of disruptive behavior in general education is impeded by a lack of congruence between the behavioral characteristics of disruptive behavior disorders and current definitions of SED, which do not always seem to adequately fit the behavior patterns of disruptive behavior disorders, especially if students are considered socially maladjusted (Boucher, 1999). For example, in a survey of 397 students classified with SED in San Diego, California, of which approximately 308 students were between the ages of 12 and 18, 65.6% met criteria for a disruptive behavior disorder (Garland et al., 2001). Thus, while there is considerable overlap in identification of ED and disruptive behavior disorders, there is not complete agreement. Furthermore, while prevalence rates of disruptive behavior disorders, such as ADHD, may be as high as 16% of the population (DSM-IV TR), the prevalence of students receiving services for ED in public education settings is less than 2% of the total school population (U. S. Department of Education, 1998). These findings indicate that there are many students demonstrating disruptive behavior who are not placed in special education classrooms, but rather, are part of the general education population, in addition to students identified with SED that may be receiving services in a general education setting.

General education teachers may be ill-equipped to handle disruptive behaviors, as few have received the training and resources necessary to meet the needs of students demonstrating problem behavior (Reddy, 2001). Furthermore, disruptive behavior in the classroom setting is associated with poor social and academic outcomes, especially among students who demonstrate pervasive conduct problems in addition to symptoms of hyperactivity or inattention (Gresham, Lane, & Beebe-Frankenberger, 2005). Such negative outcomes are likely to be associated with decreased opportunities for academic instruction and appropriate social interaction due to engagement in inappropriate behavior and its sequelae (Gresham et al., 2005). For example, not only does disruptive behavior preclude the opportunity for academic engagement and/or appropriate social interaction, it is often likely to result in students being removed from the classroom for disciplinary purposes.

While the strictly defined disorders discussed above are not the exclusive focus of this investigation, the similarity of these profiles to the behaviors targeted by this investigation makes an appropriate comparison. For example, the defining characteristics of ADHD, ODD, and CD include behaviors that can be disruptive to a classroom environment (e.g., fidgeting, leaving one's seat, excessive talking, physical or relational aggression, destruction of materials, arguing, defiance, annoying others) (DSM-IV TR). As previously mentioned, children and adolescents who receive the diagnoses of ADHD, ODD, and CD often are placed in restrictive and institutional placements (Nickerson, 2003; Reddy, 2001; Sholevar & Eichelman, 1998). Thus, adolescents who receive treatments sensitive to the occurrence of disruptive behaviors may avoid the potentially restrictive effects of stigmatizing classifications (e.g., poor academic and social outcomes). Additionally, the districts that serve these students may avoid the costs of more

intensive supports necessary for serving students with severe behavior disorders later in adolescence (Reddy, 2001).

The lack of congruence between special education and clinical diagnosis means of disruptive behavior, as well as the presence of students considered “at-risk” for developing behavior problems, has led some to argue that a population-based approach to describing and approaching school-based behavior problems is more sensitive to and effective in addressing students’ behavioral needs (Baker, Kamphaus, Horne, & Winsor, 2006). In such an approach, students who demonstrate mild to moderate disruptive behavior can be served in the second tier of a three tier prevention and intervention model, in which the first tier represents well-executed behavior management for all students, the second tier represents selected, or secondary, interventions for students at-risk for further difficulties, and tertiary interventions are put into place for students with severe and pervasive behavioral excesses and deficits (Baker et al., 2006; Sugai & Horner, 2006). In such a system, students’ needs are defined by behavior rather than eligibility for diagnosis or identification, and assessment of problem behavior becomes tantamount to providing function-based intervention services (Sugai & Horner, 2006). However, more information is needed about how contextual assessments are a part of and inform a tiered model of behavior management in schools.

Functional Behavioral Assessment

Functional evaluation methodologies in school settings cannot be investigated without considering the frequency with which functional behavioral assessment (FBA) techniques are used. While functional analysis methodology is considered more rigorous for its ability to empirically demonstrate the environmental phenomena maintaining a targeted behavior, descriptive FBAs are often preferred for their ease of implementation and speed of execution.

Recently, investigators have become interested in the validity of the use of FBA, as well as the degree to which such procedures accurately identify the factors at work in determining classroom behavior. In an investigation of the use of functional assessment in the schools, Ervin et al. (2001) conducted a meta-analysis of 100 intervention studies using functional assessment procedures, which may or may not have included an experimental functional analysis component. A total of 278 students, with and without disabilities, referred for a variety of behavioral and academic problems were included. The results highlighted several weaknesses in the extant literature on functional assessment procedures. Perhaps most surprisingly, at the time of publication, no students without disabilities above the age of 12 were included in any article examined. Furthermore, less than 11% of the total number of students did not have a disability. Reported disabilities included severe developmental and cognitive delays, language disorders, learning disabilities, and behavioral disorders. Intriguingly, Ervin et al. reported that over 90% of participants were examined via an experimental phase that involved direct manipulation of antecedent variables, consequences, or both. However, the authors did not indicate how the determination of experimental manipulation was made.

Students without disabilities were more likely to receive consequence manipulations, while those with disabilities more often received antecedent manipulations. Finally, one of the most important findings of this study demonstrated that, when working with students without disabilities, school personnel (teachers or paraprofessionals) were unlikely to conduct the manipulations (10%) and more likely to work collaboratively with an investigator (30%), or be involved in a study where the investigator alone conducted sessions (53%). Thus, teachers of students without identified disabilities may be receptive to the opportunity to participate in a collaborative process of intervention with an agent acting in a consultative role. Similarly, this

greater propensity toward collaboration provides potential consultants with an increased opportunity to provide indirect services to students demonstrating problem behavior, potentially facilitating an eventual decrease in the degree to which teachers rely on an investigator alone to provide intervention services. However, this finding also indicates that teachers of students without disabilities (e.g., general education teachers) might need further training in order to be able to independently conduct empirical analyses of student behavior and implement data-based interventions.

The above findings regarding the degree to which teachers participated as intervention agents were not consistent among teachers of students with one or more disabilities, in which the investigator (52%) or the teacher (23%) was more likely to manipulate classroom conditions alone than to work collaboratively (12%). This effect may be due to the classroom settings in which students with disabilities are typically studied. In those settings, teachers are likely to be trained in special education and familiar with experimental manipulation of environmental variables, perhaps making them more comfortable with independently conducting empirical analyses. Furthermore, the smaller classes in which students with disabilities are often placed may make it easier for teachers to create a time and place to conduct such analyses, while teachers of students with disabilities may be more motivated to participate in functional assessment procedures when problem behaviors are severe. Ervin et al. (2001) also noted that few studies addressed the issue of developing functional procedures with teachers and instructing them in their use. This is perhaps especially true with regard to more complex functional analysis procedures. Finally, very few studies reported data as to the integrity with which teachers implemented assessment procedures.

Other investigations in which FBA procedures have been used in schools and classrooms lend support for their use. For example, Broussard and Northup (1995) found that the hypotheses generated by descriptive assessments were validated via functional analysis for three elementary school boys. Similarly, Murdock, O'Neill, and Cunningham (2005) found that teachers effectively identified hypotheses and were pleased with the outcomes of FBA for eight adolescent boys demonstrating disruptive behaviors. The participating students were all being served in special education under the classification of a behavior disorder, with the exception of one student who was identified as meeting criteria for a learning disability. Each student received some instruction in a resource room (between one and four class periods per day) and the rest in a general education classroom. Hypotheses about students' behavior and its likely antecedents and reinforcing consequences were developed in a team meeting format with each student's junior high school teachers. Similar hypotheses were also obtained during an interview with each participating student. Each student was then observed between one and three times in each of his/her classes over a three week period, resulting in a total of four to fourteen observations per student. Results were conceptualized in terms of four common functions of behavior, social attention, escape from task demands, access to a preferred tangible item or activity, or automatic reinforcement (self-stimulation). The most commonly identified functions were escape from task demands (five students) and social attention (three students). However, it was not specified whether social attention included teacher attention, peer attention, or both. There was 64% agreement between teacher, student, and observation with regard to identified functions, a finding which the authors interpreted as indicative of consistency across each form of assessment. If this finding is indeed an indication of the strength of FBA as an assessment tool, those results may be due in part to the considerable amount of observation time spent in the

classroom. The authors state that total time in observation ranged from five to fifteen hours per student. However, at the conclusion of the study, the teachers reported that the procedures did not have a significant impact on the way in which they managed student behavior and did not clearly state that the process was useful in identifying antecedents and consequences to student misbehavior. Given the amount of time spent in meeting with teachers, and interviewing and observing students, a more dramatic effect on teachers' ability to respond to problem behavior might be expected. While this FBA procedure demonstrates evidence of having reliably identified the function(s) of each student's problem behavior, the high ratio of time spent in assessment before beginning intervention planning or development calls into question the feasibility of such a procedure in schools settings without extensive external (e.g., researcher) support.

Recently, efforts to improve FBA procedures have included investigations of the potential of calculating conditional probabilities of a particular form of reinforcement given a particular behavior (Eckert, Martens, & DiGennaro, 2005). For example, rather than summing the total reinforcers allocated for each behavior observed and calculating percentages, conditional probabilities provide information about the contingent relation between the occurrence or non-occurrence of an identified behavior and a certain consequence. According to the procedures employed by Eckert et al. (2005), observation periods are divided into intervals; each time the behavior (B) and a certain consequence (C) occurs within the interval the probability is calculated as ($p[C/B]$). During intervals in which the identified behavior does not occur, but the consequence of interest is delivered, the probability is calculated as ($p[C/no B]$) (Eckert et al., 2005). Conditional probabilities can also be used to determine powerful

antecedents by calculating the probability of the identified behavior given the occurrence of a particular antecedent (Eckert et al., 2005).

Other research has compared the conditional probability of reinforcement to the background probability of reinforcement, in which the probability of reinforcement is measured at random points during the observation session. In such a comparison, the background probability describes the likelihood of reinforcement independent of the occurrence (or non-occurrence) of the behavior, providing a general description of the overall likelihood of reinforcement (Vollmer, Borrero, Wright, Van Camp, & Lalli, 2001). Subsequent comparison of the conditional probability and the background probability yields a description of the contingency between the target behavior and identified form(s) of reinforcement, which can be either neutral (conditional probability equal to background probability), positive (conditional probability greater than background probability), or negative (conditional probability less than background probability; Vollmer et al., 2001). In this way, conditional probabilities more precisely describe the availability of certain reinforcers in the classroom environment. This effort is considered an improvement over other forms of FBA (which rely on percentages rather than probabilities), in that the data obtained from the assessment describes the likelihood of a particular consequence or antecedent being predictive of a target behavior independent of the occurrence of the identified target behavior.

FBA has also been recommended for use within a Positive Behavior Support (PBS) framework, in which FBA results are typically used to develop Behavior Intervention Plans (BIP) to address students' problem behavior. In such a system, FBA is considered a cornerstone of providing intervention to students at a Tier III, or tertiary, level of intervention. Blood and Neel (2007) investigated the extent to which FBAs were used to inform planning and instruction

for students identified with emotional and/or behavioral disorders being served in self-contained classrooms. They found that students were slightly more likely to have a BIP if an FBA had been conducted. However, not all of the FBAs that had been conducted referenced a hypothesized function of the student's behavior, obviating the opportunity to implement function-based interventions. Furthermore, teachers had little to no knowledge of the contents of the BIP, if one existed, nor any specific behavioral goals written in conjunction with students' FBAs or IEPs. These findings indicate a lack of congruence between FBAs and instructional planning and the necessity for future research regarding the application of functional assessments to school-based intervention.

As indicated above, the utility of functional assessment in schools is undermined by a lack of shared understanding of the procedures it encompasses. Shriver, Anderson, and Proctor (2001) identified several criteria that should be used to examine the procedural strength of a given functional assessment procedure. These procedures include the content of the assessment, the process through which it is conducted, the demonstration of empirically supported functional relations, the reliability and generalizability of the measure, and evidence of its external, treatment, and social validity. At the current time, such stringent evaluation criteria are not in place to examine the quality of a chosen procedure. While Shriver et al.'s (2001) research indicates that a consensus is being reached among researchers with regard to the ideal components of an FBA, it is yet unclear whether practitioners are employing recommended best practices when implementing functional assessment in the schools. Relatedly, Weber, Killu, Derby, & Barretto (2005) examined the level of support that State Education Agencies (SEAs) give school districts and local education agencies regarding procedural best practices for carrying out an FBA. They found that the majority of states supply information regarding and/or

stipulating the use of a defined target behavior, direct observation and/or an A-B-C format, assessment in the ecological context, interviews, record reviews, hypothesis development, student interviews, and team meetings. Further, a smaller number of states supplied information regarding scatter plot data, using an FAO form and/or checklists, conducting analog experiments (FAs), or including a process for identifying effective reinforcers (p. 741). However, no information is available regarding how or to what extent local agencies used these guidelines to inform FBA practice (Weber et al., 2005).

The lack of clarity surrounding functional assessment procedures represents a major concern in the successful identification of functional relations between the classroom environment and student behavior. Murdock et al. (2005) indicated that the teacher teams of middle school students did not always agree on the behaviors to target during FBA. For example, in the assessment of a student with externalizing behavior, one middle school teacher may select disruption as the target behavior of concern, while another may choose noncompliance as the primary concern. This indicates that FBA procedures may be describing idiosyncratic phenomenon rather than consistent functional relations. Further, Thompson and Iwata (2007) point out that because of the ubiquitous nature of attention as a form of responding to problematic behavior, attention may be over identified as a potentially maintaining consequence during descriptive assessments of problem behavior. Such an effect may be especially problematic when using conditional probabilities to describe possible consequent relations (Thompson & Iwata, 2007). At the very least, more research is needed in the assessment of functional relations, especially at the middle school level, so that those maintaining variables most relevant to students can be identified and addressed within the classroom context.

Functional Analysis in the Schools

Functional analysis (FA) in the school setting traditionally occurs in one of two possible setting formats, analog or natural. Analog settings typically refer to a location outside the classroom where the student interacts with researchers, teachers, or paraprofessionals under a variety of predetermined conditions to identify those factors maintaining the target behavior. Analog settings are useful because they provide excellent control over all environmental factors affecting the integrity of the evaluation process. However, Sterling-Turner, Robinson, and Wilczynski (2001) have identified several important limitations when using analog FA procedures. The ability of the analysis to validly describe behavior in outside settings is compromised by the artificial nature of the experimental environment, which is often foreign to the student. It may be difficult to evoke the target behavior in conditions different than those that exist in the classroom, where the target behaviors typically occur. Students' behavior may be functionally related to peer or teacher behavior that is unique to the classroom environment, or may be related to the history of available reinforcement that is signaled by a particular stimulus in the classroom setting. If the classroom environment itself is a discriminative stimulus (SD) for the availability of a particular type of reinforcement (e.g., teacher attention), an evaluation conducted in an analog setting may not accurately describe the behavior of interest and the environmental events that maintain that behavior. Additionally, Sterling-Turner et al. (2001) note that most empirical evaluations of analog procedures have been conducted with students who are developmentally delayed, calling into question the utility of the findings of such evaluations for typically developing students or students with mild disabilities.

Sterling-Turner et al.'s (2001) overview summarizes the various types of functional analysis procedures that have been used in the classroom setting, including a traditional multielement design (Iwata et al., 1982/1994). Other procedures that have demonstrated strong

empirical support and treatment efficacy include contingency reversals and brief FA procedures (Northup et al., 1991). Furthermore, all of these approaches can be implemented using a hypothesis-driven approach, wherein only those factors suspected of being functionally related to the problematic behavior are evaluated (Sterling-Turner, Robinson, & Wilczynski, 2001). This approach may be especially powerful when multiple factors are hypothesized to maintain the behavior. For example, a hypothesis-driven approach has been used to evaluate the combined effects of escape and attention in maintaining tantrums at school (Mueller, Sterling-Turner, & Moore, 2005). Such an approach helps to abbreviate the assessment process, making FA procedures more suitable for the classroom environment.

When FA is conducted in a classroom setting, concerns exist about the degree to which the internal validity that exists during an analog assessment can be maintained in a less controlled environment. The greatest limitation of any classroom-based FA procedure is the degree to which experimental control over all sources of reinforcement may be impaired by the presence of other students and stimuli in the classroom environment. In an analog setting, it is possible to control sources of reinforcement by limiting involvement to highly trained personnel and carefully planning social and tangible stimuli to be included. During a classroom-based FA, though protocols may be developed for measuring and limiting unintended delivery of reinforcement, the presence of other students and unexpected classroom events makes such rigorous experimental control improbable.

There are other limitations inherent to many of the classroom-based FA procedures that have been developed to date. For instance, brief FA procedures do not examine all possible functions of the identified behavior. In a hypothesis-driven brief FA, if disruptive behavior is hypothesized to be maintained by teacher attention, contingent escape from academic demands

and peer attention are not examined. Results of such an FA may be limited by a lack of information about other reinforcers maintaining the behavior. Furthermore, many classroom procedures may more closely resemble structural analyses, in which the independent variables being manipulated are actually antecedents to behavior, and not consequences. Such an effect is often seen in evaluating escape or demand conditions, in which the number of demands given or the difficulty of academic work is increased in order to show a related increase in problem behavior. In a reversal design, empirical evidence for an escape function is provided when the demands are lessened in later sessions and the behavior decreases. However, without contingent reinforcement of the problem behavior when it occurs (e.g., providing escape from the demands when the identified behavior occurs) such a design is not truly a functional analysis and does not identify the environmental variable maintaining the behavior. Contingent reinforcement of the target behavior, when it results in an increase of that behavior, provides a demonstration of the functional relation between a particular form of reinforcement (e.g. escape) and the identified behavior.

The methodological variations described above have developed in an attempt to circumvent many of the challenges associated with working in natural settings. However, what appears to be needed is an FA procedure that is flexible enough to meet the demands of naturalistic settings without sacrificing the empirical rigor of analog procedures. By carefully considering the environment in which an analysis is to take place before beginning an assessment procedure, FA of problem behavior can successfully identify relevant reinforcers in classroom settings. Such a consideration should include the target behavior(s), the availability of reinforcement for that behavior, and the feasibility of manipulating classroom contextual factors. In order to meet the challenges of natural settings, successful FAs will be sensitive to the unique

needs of each classroom without sacrificing procedural integrity. For example, classroom-based functional analyses have traditionally focused on problem behavior, which may explain the limited extent to which FA has been applied in those settings, as teachers may be resistant to temporarily increasing rates of problem behavior for the purposes of assessment. Investigations of the use of FA to determine the function of appropriate classroom behavior have not been conducted to date. However, manipulating the conditions under which appropriate behavior is likely to occur may increase teachers' willingness to participate in classroom-based FA procedures and make such manipulations more amenable to a general education classroom environment.

Conducting functional analyses in natural settings may provide teachers and other care providers with more relevant information concerning students' behavior. As many problematic classroom behaviors may be functionally related to classroom phenomena (e.g., escape from task demands or obtaining teacher attention), it follows logically that the classroom itself is the best place to evaluate those conditions. Furthermore, although fewer investigations have been conducted of the use of functional analysis with typically developing students, much of it has focused on developing useful classroom-based procedures in the general education classroom. These procedures are summarized in Table 1-1.

In each of the studies presented in Table 1-1, a function for the identified problem behaviors was successfully identified. In several cases, the identified function was used to implement interventions with the target student that resulted in decreased problem behavior. There are some interesting points to note in the procedures described above. Primarily, a full multielement design was only used when the researcher or personnel within the university research setting were responsible for conducting the functional analysis itself. In the three

studies in which classroom teachers participated, a hypothesis-driven approach was used. In the Ervin et al. (1998) study, the teacher compared antecedent conditions that were thought to evoke the problem behavior to those that were not. These comparisons were based either on task difficulty (indicating a presumed escape function) or the availability of peer attention (indicating a presumed peer attention function). These decisions were made on the basis of descriptive assessments, and the strong differences noted between all evaluated conditions appear to verify the selected hypotheses. Similarly, Newcomer and Lewis (2004) conducted antecedent manipulations of classroom factors hypothesized to predict problem behavior for three general education students. After conducting extensive descriptive assessments, they carried out alternating treatments comparisons of potential setting events for problem behavior. The factors selected for comparison were ability to choose desired peers versus being assigned disliked peers (potential peer attention function), hard versus easy task (potential escape function), and high levels of noncontingent teacher attention compared to no teacher attention (potential teacher attention function). A different participating student received each of these manipulations. While both antecedent investigations produced moderate to strong results, without direct comparison across possible functions, remaining reinforcing contingencies for the targeted behaviors may be overlooked.

In the Moore et al. (2002) study, an alternating treatments design was used to compare the relative effects of escape from a difficult activity and teacher attention for disruption (yelling). While the observed differences between those conditions across students indicates that yelling was more strongly reinforced by escape than by attention, without comparison to other possible conditions, findings derived from these conditions remain relative. Furthermore, as this study focused on teachers' integrity rather than on student changes, data on student behavior is

presented as mean frequencies rather than graphically, making definitive interpretation of these findings difficult. Finally, in a study conducted by Kamps et al. (2006), hypotheses developed during descriptive assessments (observation and teacher interviews) were used to design conditions comparing potential sources of reinforcement for inappropriate behavior to potential intervention conditions (e.g., delivering praise and points on a token economy system for appropriate behavior). Based on the resulting data, interventions were developed that resulted in a decrease in problem behavior. While these analyses again appeared to lead to effective interventions, without a complete multielement design it is difficult to form definitive conclusions about the functions of the behaviors under study. Additionally, mixed measurement methods, overlapping sessions (in which two conditions appear to have been conducted during the same session), and limited data in regard to some conditions further limit the results of this study. Methods of measurement were not consistent across the two participants (one is a brief FA; the other is an extended design), providing little information as to the generalizability of these procedures for assessing the function of student behavior.

Also of note in the above studies is the age of participating students. Only two studies have evaluated the efficacy of functional analysis in assessing problem behavior demonstrated by adolescents, one of which was not conducted in a general education setting. Thus, while there is a substantiated research tradition that points to the efficacy of using functional analysis in natural settings when evaluating typically developing students and those with mild disabilities, more information is needed. Specifically, procedures that rely on both the experimental rigor of a multielement design and the naturalistic power of teacher implementation should be examined. Furthermore, greater emphasis is needed on the application of FA with adolescent populations to better understand the strengths and weaknesses of FA as an assessment tool for school personnel.

Research has demonstrated the potential of functional analysis as a method of assessing problem behavior in the general education classroom. However, more research is needed to identify the most efficient ways in which to use FA in that setting. Furthermore, while brief FA and hypothesis-driven approaches are promising, more stringent evaluation procedures that are equally time- and resource-efficient offer the most accurate possible identification of the environmental factors maintaining problematic classroom behavior. In pursuit of that goal, any discussion of the use of functional analysis in the classroom setting must also consider research on teacher behavior and the nature of consultation.

Student Involvement in Functional Assessments

Some research has investigated the potential benefits of more directly involving students in the functional assessment process. Most of this research has been aimed at increasing the validity of the assessment process by confirming the environmental variables identified by caregivers as those most relevant to the student being assessed. For example, Reed, Thomas, Sprague, and Horner (1997) investigated the use of the Student Guided Functional Assessment Interview with 5th, 6th, and 8th grade students. Eight male and two female students participated, three of whom were identified with ADHD. Their responses were compared to teachers' responses on the corresponding Functional Assessment Interview. Both students and teachers were questioned about predictors for problem behavior (e.g., difficult task, peer teasing), potential setting events, (e.g., lack of sleep), potential reinforcing consequences (e.g., teacher attention, escape from the task, peer attention), and support strategies and potential intervention techniques that might reduce the behavior. While students and teachers had high rates of agreement on predictors and reinforcing consequences for behavior, they demonstrated low agreement on setting events for problem behavior and potential intervention strategies.

Research conducted by Wehmeyer, Baker, Blumberg, and Harrison (2004) also investigated the amount of agreement between teachers and students on a descriptive functional assessment interview. Teachers were interviewed using the Functional Assessment Interview; while students were interviewed using a tool designed by the authors, titled the Person-Guided Functional Assessment (PGFA). Ten students in grades one – six were interviewed, six of whom were identified with a behavioral disorder, two with mental retardation, two with an autism spectrum disorder, and one with a learning disability (sic). The PGFA was developed to include person-first language regarding students' problem behavior, and an analysis of common routines that might be setting events/antecedents to problem behavior. Similar to the research conducted by Reed et al. (1997), there was strong agreement between students and participating school professionals on all elements of the interview with the exception of setting events, for which agreement was very low. This effect is hypothesized to be related to students' greater knowledge of outside factors that may be influencing their behavior.

Murdock et al. furthered this strain of research in a 2005 study investigating the degree of agreement between teacher and student interview and classroom observations. Eight junior high school students aged twelve – fifteen years participated, as well as their classroom teachers. The researchers reported that teacher responses, student responses, and classroom observation resulted in concordant findings approximately 64% of the time. When results were discordant, teacher report and observation were most likely to agree. While only problem behavior definition and potential function were assessed, the results regarding potential function were consistent with previous findings, and strong agreement was observed. However, students and teachers demonstrated low agreement on the identified problem behaviors themselves, as

students reported a number of behaviors that took place outside the classroom (e.g., smoking, skipping class) as most problematic; this information was presumably unavailable to teachers.

The investigations described above represent a first effort to include student information regarding problem behavior and its potentially maintaining consequences in the functional assessment process. However, none of the above mentioned studies included an intervention effort tied to the functional assessment process, providing little information as to the ultimate utility of student involvement in descriptive assessment processes. Furthermore, experimental confirmations of the hypotheses during descriptive assessment (interviews and observations) would further support the utility of student involvement. Nonetheless, this research does suggest that students in upper elementary and middle school grades can contribute reliable information regarding their classroom behavior that may be useful during functional assessment.

Teacher Implementation and Treatment Integrity

Initial research into the possibility of using FA in classroom settings has yielded encouraging results, including findings related to teachers' ability to implement FA procedures with integrity (e.g., Iwata et al., 2000; Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). An investigation conducted by Iwata et al. (2000) demonstrated that undergraduate students could be trained to conduct FA with integrity. Prior to training, students were given a written description of FA procedures taken from Iwata et al. (1982/1994), asked to read them, given an opportunity to study them, and then asked to conduct an FA of problem behavior with a research confederate acting as the target individual. Integrity to the procedures was slightly higher than expected but variable, ranging from 50% to 89.5%. Students then received training, which included additional written materials, oral discussion by a graduate student trainer, video modeling, and a brief quiz. Second phase sessions then began, during which students had written outlines available to them and received performance feedback after

every third session. During this phase, participants demonstrated an increase in their overall adherence to the FA procedures to 90% or higher. Several important limitations to this study include the selected participants and the context of the FA settings. While upper level undergraduate psychology students were selected for their presumed similarity to individuals working in applied settings with a bachelor's degree (e.g., teachers), it is unclear that these two groups are indeed as similar as they are presumed to be in this research. The participating undergraduates had all taken one course in applied behavior analysis prior to their participation in this study, indicating that their understanding of and enthusiasm for the principles underlying FA procedures may be quite different than that possessed by teachers (a supposition that may be supported by the relatively high level of integrity observed during baseline sessions). A more appropriate selection may have been undergraduate teachers-in-training or individuals already working in educational/therapeutic settings. Relatedly, the training and FA sessions having been conducted in an analog, university setting may limit the generalizability of these findings to work with teachers and other intervention agents.

Similar findings were obtained in a follow-up study conducted by Wallace et al. (2004) which indicated that one teacher and two school psychologists who participated in the study were able to implement FA procedures with high integrity. Training took place in a workshop format, during which participants were exposed to a description of FA and its purposes, video modeling, and role playing opportunities. Baseline sessions were conducted prior to the workshop, during which the only information available to the participants was a brief review of the Iwata et al. (1982/1994) procedures. The workshop lasted three hours and 35 other educators also participated. At the conclusion of the workshop, the participants engaged in simulated sessions designed to assess the function of head-hitting (with a researcher confederate acting as the target

individual). Participants were provided feedback about their performance only if they demonstrated integrity below 90% during an assessment session. Each of the participants demonstrated increases to acceptable levels of integrity during the training/feedback phase, and one participant successfully conducted an FA of head hitting (with strong procedural integrity) 12 weeks following the initial training workshop.

Moore et al. (2002) examined the extent to which three elementary teachers were able to carry out functional analyses of disruptive behavior in their classrooms. Two of the student participants were typically developing, while one had been identified with specific learning disabilities. Teachers were evaluated for their ability to respond correctly to behaviors issued during the analysis conditions. Two conditions were examined, attention and demand/escape. Teachers were provided with performance feedback throughout the experimental phase. Performance feedback included presenting the data on percentage correct teacher responses (PCTR) to each teacher, praising them for correct implementation where appropriate, and reviewing elements of the protocol that had not been implemented correctly. The results demonstrated that all three of the teachers were able to implement FA procedures with high integrity during in-class sessions (Moore et al., 2002). This research has promising implications for conducting further classroom-based functional analyses of problematic behavior. As noted by the authors, this research did not include a control condition. The presence of a control condition more soundly establishes that observed rates of behavior are functionally related to the reinforcers being manipulated by providing a comparison context in which reinforcement is not delivered contingent on the occurrence of the target behavior(s). Common control conditions might include a “free play” or an “alone/ignore” condition, during which any occurrence of problem behavior is not socially reinforced (Iwata et al., 1982/1994). A free play condition is

typically set up as an enriched environment, in which desirable items and attention are readily available, and task demands are absent. An alone or ignore condition is one in which there are no desirable items or attention available, nor are there task demands. Problem behavior demonstrated during either of these conditions is considered functionally independent of the social context in which it occurs, and thus may be an indication of automatically reinforced behavior (e.g., self-stimulation, Iwata et al., 1982/1994). School-based research involving a control condition will be an important step in developing in-class FA procedures that are as functionally sound as analog functional analyses or those conducted by highly trained practitioners.

When using FA techniques for a classroom evaluation, teachers are often not involved in the assessment process. In fact, most research surrounding the integrity with which teachers implement behavior analytic principles is related to intervention implementation, rather than the integrity of analysis (Moore et al., 2002; Noell et al., 2000; Witt et al., 1997). However, the integrity with which teachers implement a set of classroom-based procedures, be they assessment or intervention related, is essential to the success of the given procedure. Wood, Umbreit, Liaupsin, and Gresham (2007) examined the impact of teacher integrity on the improved classroom behavior of a student who frequently disrupted the classroom. The teacher demonstrated variable performance throughout the intervention, which was based on differential delivery of teacher attention and extinction of escape. However, when teacher behavior was analyzed across intervals, it was found that the student was much more likely to be on-task during intervals in which the teacher was delivering the appropriate contingencies with integrity. In contrast, when the teacher did not deliver the contingencies accurately, the students demonstrated correspondingly lower rates of on-task behavior (Wood et al., 2007). Thus, the

integrity with which teachers carry out complex classroom contingencies may have a large effect on student behavior.

It has been found that, under certain conditions, teachers can implement intervention procedures with good integrity. Witt et al. (1997) examined the degree to which four general education elementary teachers were able to implement an academic intervention for an individual student. They found that providing the teachers with performance feedback enhanced the integrity of intervention implementation, and also seemed to strengthen the effects of the intervention for the students. Noell et al. (2005) reported similar findings in a comparison of three strategies for maintaining treatment integrity to selected interventions following behavioral consultation concerning 45 elementary school students. They compared three conditions of follow-up to intervention implementation within a behavioral consultation model: weekly follow-up, commitment emphasis, and performance feedback. The results indicated that the provision of performance feedback strengthened treatment integrity and child behavior above the effects of brief weekly interviews or a commitment emphasis. They defined performance feedback as meeting weekly with the teacher, reviewing student progress, graphing intervention implementation, praising correct implementation, reviewing the importance of any missed steps, and problem-solving when appropriate. While teachers across conditions did not perceive that they implemented the intervention with differing levels of integrity, both visual analysis (graphic) and statistical analysis (ANOVA) revealed a significant effect of providing performance feedback on teachers' integrity to the intervention procedures. Furthermore, statistical analysis also indicated a difference in student outcomes; the students whose teachers received performance feedback during intervention implementation showed the greatest gains.

In another recent study, Codding, Feinberg, Dunn, and Pace (2005) found that bimonthly observation and performance feedback were adequate to increase and maintain treatment integrity of teachers implementing behavior support plans. This finding, though yet to be replicated, may indicate that daily or weekly follow-up is not always required to maintain strong treatment integrity. Interestingly, research on treatment integrity has also recently incorporated the use of negative reinforcement for correct implementation of intervention steps (DiGennaro, Martens, & McIntyre, 2005). Teachers who achieved 100% integrity to the intervention on a given day of observation received performance feedback via a written note, and were able to avoid a meeting the next day. Teachers who did not achieve 100% integrity attended a traditional performance feedback meeting the next day, including discussion, review, and practice of any missed steps (DiGennaro et al., 2005).

A strong body of evidence indicates that performance feedback is necessary to maintain teachers' integrity of intervention implementation. The consistent findings that performance feedback improves the integrity of intervention implementation argue for the need for similar procedures during assessment and analysis. The strong outcomes of teacher intervention implementation, when given performance feedback, indicate that teachers may be able to implement classroom-based functional analyses with similar types of support.

The Role of Consultation in Intervention

Intervention efforts within school settings often involve an extended collaboration between an intervention agent (e.g., a teacher) and an individual external to the classroom who brings to bear his/her knowledge of intervention techniques on the process. This pattern is repeatedly observable in the empirical literature that has hitherto been presented to discuss various elements of functional assessment and intervention in schools, as evidenced by such research as that conducted by Noell et al. (2005). Classroom-based activities, such as FBA/FA

and intervention implementation, often occur as only part of a larger consultative process. However, research into the use of FBA and FA procedures has rarely investigated the role of such procedures within a consultative framework (Schill, Kratochwill, & Elliott, 1998). As professionals seek to provide services to a variety of individuals with different needs, consultative services have become increasingly necessary. Many individuals serve as consultants in school settings, among them are school psychologists, special education teachers, behavioral consultants, and behavior analysts. However, consultants do not necessarily possess all of the knowledge with which to effectively intervene with a student; teacher involvement is necessary to ensure that the intervention selected is appropriate given the classroom context, the student's individual needs, and the demands of the particular school or curriculum in which the teacher and student are functioning. The collaborative nature and shared knowledge that necessitates consultation is, in fact, characteristic of its very nature (Bergan & Kratochwill, 1990), making consultation an appropriate avenue through which to explore factors affecting the use of FBA and FA procedures in the classroom.

Behavioral consultation has emerged as a valid and time efficient way in which to assess and treat students' academic, social, and behavioral challenges (Wilczynski, Mandal, & Fusilier, 2000), though it is certainly not the only way in which consultation is practiced in school settings. For the purposes of the current discussion, however, the BC paradigm (Bergan & Kratochwill, 1990) is emphasized for its theoretical alignment with the principles of Applied Behavior Analysis. As FBA and FA procedures have emerged out the same empirical bases, the use of BC provides the most parsimonious manner through which to explore the unique impact of consultation on assessment processes. These techniques appear to be especially successful

with individuals displaying discrete and/or externalizing behaviors (Shapiro & DuPaul, 1996; Wilkinson, 1997).

BC emerged from efforts to extend the procedures of applied behavior analysis to consultative interactions in a systemized and clearly defined manner (Bergan, 1977; Kratochwill & Bergan, 1978). Defined as a problem-solving process, BC was originally developed to address the needs of both individuals and organizations engaged in serving clients (Kratochwill & Bergan, 1978). Over time, BC has taken on a more individual focus, emphasizing the ability of successful consultation to increase the knowledge and skills of consultees in order to effectively meet the needs of many potential clients. Nevertheless, the original structure of BC remains; it is a four-step problem-solving process including problem identification, problem analysis, plan implementation, and plan evaluation (Kratochwill & Bergan 1978, 1990).

Behavioral consultation is delineated by Bergan and Kratochwill (1990) as an indirect problem-solving process in which a consultant interacts with a consultee in order to identify and treat any problem that arises in the consultee's interactions with a client. Erchul and Martens (2002) point out that a behavioral approach to consultation assumes that both appropriate and problematic behaviors are maintained by the environmental principles that surround them. In this way, behavioral consultation is as much an assessment of the environment in which problems occur as it is of the individual client.

In an effort to systematically identify and treat those aspects of the client's behavior that are problematic to the consultee, behavioral consultation proceeds sequentially through several steps. Simultaneously, the consultant is concerned with consultee behavior and behavior change throughout the consultative process (Erchul & Martens, 2002). While the consultant guides the process, and may use strategies to influence consultee behavior, the consultee is considered an

active participant in all stages of the process. The consultant is assumed to be responsible for listening and attending to suggestions and concerns that the consultee brings to their interactions, as well as to nonverbal indications of the consultee's comfort with each phase of consultation. When problems arise, careful analysis and further planning is warranted to ensure that integrity of analysis and treatment are maintained (Bergan & Kratochwill, 1990).

Schill et al. (1998) investigated the utility of FBA procedures within a BC format. Working with eleven Head Start teachers, they provided consultative services to address problem behavior among preschool students within a BC framework. Intervention services were either provided within a FBA format or what the researchers titled a "technological approach," in which the intervention was not based on an assessment of the potential functions of problem behavior. Rather, the technological intervention was delivered as a standardized set of self-help materials targeting either externalizing or internalizing behavior problems according the needs of the target child. The FBA group participated in the problem identification interview (PII), problem analysis interview (PAI, following a functional assessment observation), and the treatment evaluation interview (TEI; Bergan & Kratochwill, 1990). The technological group did not participate in problem analysis activities or the PAI, but was given the treatment package with an explanation of how to use it in a brief meeting conducted after the PII and before intervention implementation. The results revealed moderate positive intervention effects for both groups, indicating that the provision of descriptive analyses of problem behavior did not significantly improve treatment outcomes over the administration of a non-function-based intervention. The researchers attributed their findings to the power of the comparisons made across groups. However, the inability of a descriptive functional assessment to improve intervention outcomes above those of a nonfunctional intervention, presumably due to the

inability of descriptive FBAs to correctly identify the operant function in all cases, has previously been discussed. Indeed, the authors also noted that the lack of observed differences in statistical outcome may have been because the implemented interventions were highly similar across groups. Most students received interventions based on differential reinforcement, irrespective of whether a hypothesis regarding the function of their behavior was developed. However, these findings also indicate the supportive role of consultation in obtaining positive outcomes, albeit moderate ones, for students with minor problem behaviors. Most importantly, this study provides an excellent illustration of the ways in which BC can support a functional assessment process.

Using an indirect method of service delivery, such as consultation, enables practitioners and others to provide services to more students than is possible in direct service delivery models. Many consultation procedures may also produce changes in the behavior of the consultee, resulting in an additional preventative effect (Bergan & Kratochwill, 1990). However, there are a number of divergent opinions about how consultation optimally is conducted, in addition to several important limitations in its use. While these complex issues cannot all be covered in this format, a review of the issues most salient to the current investigation is presented.

BC and the strict application of ABA principles to classrooms have been called into question for several reasons. Many have cited the difficulty that teachers often have in identifying and describing the specific aspects of a student's behavior that are problematic (e.g., Murdock et al., 2005). Teachers are often resistant to intervention and may not implement the procedures decided upon during problem analysis and plan implementation phases, especially if there is not systemic support for innovative interventions within the school (Piersel & Gutkin, 1983). It may also be unrealistic to expect that teachers will be able to sustain the amount of

time that is required by individual interactions with students, especially in crowded classrooms or for teachers who are already taxed by the demands of managing their students (Erchul & Martens, 2002). However, the need for consultation with a focus on skill-building in consultees continues, as research reveals that teachers may not have the necessary knowledge and skill to intervene effectively with students who present unique teaching challenges within the classroom (e.g., specific learning disabilities, mild mental handicaps, behavior disorders) (Wilkinson, 1997; Wilson, Gutkin, Hagen, & Oats, 1998).

Furthermore, debate continues concerning the optimal level of consultant control within the format of behavioral consultation. While some argue that there should be little to no use of consultant control, others argue that outcomes are enhanced by a decreased emphasis on collaboration in favor of providing greater consultant-directed expertise and guidance (e.g., Graham, 1998). Research findings intended to clarify this issue have thus far been mixed, with empirical studies supporting both stances (Brown et al., 2001; Graham, 1998; Gutkin, 1999; Kratochwill & Van Someren, 1985).

Witt, Gresham, and Noell raised questions about the efficacy of behavioral consultation in their 1996 work, “What’s behavioral about Behavioral Consultation?” In particular, they criticized behavioral consultation’s dependence on consultee report and indirect measures of assessment rather than on direct, experimental manipulation. Witt et al. wondered if behavioral consultation was truly able to identify and treat the primary behavior of concern without empirical evidence to support teachers’ statements. With the primary outcome of interest in behavioral consultation being behavior change in both the client and the consultee, these authors argued for a more empirical approach to applying behavioral techniques to the classroom. Subsequently, they present an alternative behavioral consultation model that uses functional

analysis rather than descriptive FBA techniques to verify the function of the identified problem behavior in order to develop intervention plans. They further advocate for the use of more stringent behavioral training techniques to enhance teachers' abilities to implement intervention appropriately, and the continuation of such techniques throughout the monitoring and feedback phases of intervention implementation. The authors are particularly critical of behavioral consultation's tendency to heavily rely on verbal exchanges in order to produce consultee and client change; they present their model under the assumption that behavioral consultation would be strengthened by following more closely to the lines of behavior analysis, rather than less so. It should be noted that while their concerns regarding the problem identification, problem analysis, and intervention development processes remain largely unaddressed, recent research into the use of performance feedback to increase teachers' intervention integrity appears to answer their call for teacher training and feedback procedures based on behavior analytic principles.

Zins and Erchul (2002) give a definition of consultation that is intended to provide school psychologists with a synthesis of what are currently considered 'best practices' in the field. They define consultation as "a method of providing preventively oriented psychological and educational services in which consultants and consultees form cooperative partnerships and engage in a reciprocal, systematic problem-solving process enhanced by eco-behavioral principles. The goal is to enhance and empower consultee systems, thereby promoting students' well-being and performance," (p. 626). Though this definition operates within the paradigm of eco-behavioral consultation, which extends behavioral consultation by including an ecological and systems focus, it provides a useful framework for discussing what have hitherto been considered the strengths and weaknesses of BC. A critical review of these issues is helpful in

examining how BC can be improved by more rigorous analyses. For example, Zins and Erchul begin their definition of consultation by classifying it as a ‘preventively oriented’ activity, and end by stating that the goal of consultation is to ‘empower’ consultees to promote students’ overall functioning. The implication, as has been discussed in the literature, is that BC does not plan or encourage generalization of skills by the consultee to other clients with similar presenting problems. The need, then, is for BC and related intervention strategies to offer increasingly analytic and skill-based services to teachers and other consultees, such that positive outcomes are generalized to more than one client without repeating the process of consultation which, though time-efficient for consultants, may be time-intensive for consultees.

Time is a central issue to any form of consultative service delivery. After all, consultation is presented to professionals as a time-efficient way in which to disseminate their knowledge and services to as large a group as possible. In contrast to traditional assessment models, in which one student is assessed at a time, consultation allows school psychologists to work with several teachers in order to maximize outcomes for as many students as the teacher chooses. Originally, BC in the schools identified teachers as the primary agents with the responsibility of conducting assessments and implementing interventions (Bergan, 1977). Over time, however, some psychologists and others have found themselves spending more time involved in consultation activities than was originally suggested. Subsequent research supported this phenomenon and found that many teachers appreciated and rated more highly those consultants who were more active and participatory throughout the consultative process (Wilczynski et al., 2000). Witt et al. (1996) cited consultant’s increased use of direct observation and involvement with clients as a way of increasing the content validity of behavioral consultation by verifying teachers’ reports of problem behavior and its

antecedents/consequences. By augmenting consultees' time in this way, consultants have been able to expedite and improve outcomes achieved for clients and consultees.

Conclusion and Research Questions

Adolescents who engage in disruptive behaviors face unique challenges in the classroom and often pose difficulty for teachers and other students, which can result in their being placed in restrictive educational settings. Several empirically supported methods are available to assess and intervene with problem behavior in the general education classroom, including functional behavior assessment (FBA) and functional analysis (FA). Research findings regarding the utility of FBA procedures are mixed. The primary limitation of FBA is its reliance on indirect assessment and observation without experimental manipulation to verify the impact of certain antecedent and/or consequent factors on student behavior. Functional analysis meets these demands, and has recently been extended into the classroom setting. However, applications of FA are typically limited, and teachers have very rarely been trained to conduct FA within the classroom setting. Furthermore, very little research has examined the use of FA techniques in assessing the classroom behaviors of typically developing adolescents.

Research into the utility of FBA and FA has often been conducted within the framework of behavioral consultation (BC), a procedure that is widely used to develop function-based interventions for students demonstrating problem behavior in the classroom. Research concerning the use of FA in classroom settings is strengthened by using a BC format because it mirrors the way in which such intervention services are typically provided in schools. Furthermore, the use of BC provides an opportunity and a structure through which to address issues of teacher integrity. Procedural integrity has been found to be a vital component of effective intervention implementation, and, thus, should be no less important to the successful implementation of a sophisticated analysis procedure, such as FA, in the classroom setting.

Initial research into this area indicates that teachers are able to conduct FA with strong integrity when they are provided with adequate training and performance feedback regarding their progress.

The purpose of this study was to explore the role of FA in a general education middle school classroom setting. Additionally, teacher integrity to assessment procedures was measured. The intent of this investigation was to examine the following questions:

- 1) Given training and performance feedback, at what level of integrity do general education middle school teachers implement FA procedures?
- 2) When FA of appropriate behavior is conducted with integrity in middle school classrooms, are there clearly identified experimental functions of students' appropriate classroom behavior?

Table 1–1. Functional analysis in general education classroom settings

Authors	Student(s)	Age	Problem Behaviors	Teacher	Conditions evaluated
Broussard & Northup, 1995	3 boys, 1 identified with ADHD	6 – 8 years	Disruption, off-task, out of seat, aggression, destruction, crying, non-compliance	Researcher	Hypothesis-driven contingency reversal: escape
Broussard & Northup, 1997	4 boys, 2 identified with ADHD	7 – 9 years	Excessive activity, disruption, destruction	Researcher	Multielement: teacher attention, peer attention, escape
Northup et al., 1997	1 boy, identified with ADHD	8 years	Disruption, out of seat, playing with objects	University summer program for students with ADHD, teacher background not noted	Multielement: teacher attention, peer attention, escape
Ervin, DuPaul, Kern, & Friman, 1998	2 boys, identified with ADHD and ODD Setting: not specified	13 – 14 years	Off-task, disruption	Classroom teacher	Brief reversal of baseline and intervention conditions: escape and peer attention
Jones, Drew, & Weber, 2000	1 boy, identified with ADHD	8 years	Disruption, out of seat, playing with objects	Clinic-based summer academic program, teacher background not noted	Multielement: teacher attention, peer attention, escape
Boyajian et al., 2001	3 boys, at-risk for ADHD	4 – 5 years	Aggression	Researcher/consultant	Multielement: free play, attention, tangible, escape
Moore et al., 2002	3 boys, 1 identified with SLD	4 th – 5 th grades	Disruption	Classroom teachers	Alternating treatments: teacher attention, escape
Newcomer, & Lewis, 2004	1 boy identified with OHI, 1 boy, 1 girl	9 – 11	Aggression, off-task	Classroom teacher	Alternating treatments comparison of function- and non-function-based interventions (e.g., activity choice/no choice, hard task/easy task, attention/no attention)
Kamps, Wendland, & Culpepper, 2006	1 boy and 1 girl identified as at-risk for emotional/behavioral disorder	7 years	Non-compliance, disruption, off-task	Classroom teacher	Participant 1: Hypothesis-driven multielement (teacher attention, escape) Participant 2: Brief hypothesis-driven multielement (teacher attention, ignore)

CHAPTER 2

METHOD

Participants and Recruitment

Participants included middle school teachers and students at a university-based research school. All recruitment procedures took place between November 2007 and January 2008. Three teacher/student dyads were recruited for participation. Specific procedures used for obtaining teacher and student participants are described below.

Teachers

Consent to conduct research was obtained from the middle school assistant principal at a developmental research school. After consenting to allow the research project to go forth, the assistant principal disseminated a flier describing the project (Appendix A) to three teachers he thought appropriate for participation. Following his initial discussion with those teachers, the principal investigator approached each of them and introduced the research project in greater detail. Teachers were told that the PI was evaluating ways to examine and treat disruptive behaviors in the classroom, such as shouting out, out of seat, and non-compliant behaviors, through the assessment of appropriate behavior. Each of the three teachers gave his/her verbal consent to participate, whereupon they were given written consent forms to sign (Appendix B). Subsequently, teachers nominated a student in their classroom for participation among those students who met the criteria described below, and completed a demographic form describing their years of experience, previous experience working with students demonstrating problem behavior, degree and level of education, certifications, etc. (Appendix C). During initial contact with the assistant principal, preference was indicated for teachers who had been teaching one or more years, as first year teachers may be unable to meet the additional demands of participation in this research. However, the assistant principal indicated greater consideration for teachers

who had indicated a need for additional support services regarding disruptive students in their classrooms. Further demographic information on each teacher is provided below.

Teacher A

Teacher A was a Hispanic female teaching 6th grade science. She obtained a Ph.D. in pharmacology and was teaching with a temporary certificate in middle school science. The year during which she participated in this study was her first as a full-time teacher. She reported no previous experience working with students with disruptive behavior or participating in assessments of problematic classroom behavior.

Teacher B

Teacher B was a Caucasian female teaching 8th grade math. She obtained a Ph.D. in educational anthropology and a M.Ed. in math education, and had certifications in secondary math and women's and gender studies. The year during which she participated in this study was her first as a middle school teacher; she had previously taught at the high school level for 24 years. She indicated extensive experience teaching students with disruptive behavior, including students identified with emotional/behavioral disorders who were included in general education; she did not have previous experience conducting an assessment of problematic classroom behavior.

Teacher C

Teacher C was a Caucasian male teaching 7th grade social studies. He obtained a M.Ed. in elementary and secondary education, and was certified in middle school instruction and secondary social studies. Prior to the school year during which he participated in this study, he taught for one year at the high school level. He reported no previous experience working with students with disruptive behavior; he reported that other school personnel had come in to the

classroom to observe students in order to formulate IEPs and 504 plans regarding classroom behavior.

Students

Participating teachers completed a brief form (Appendix D) identifying students who demonstrated disruptive behavior in their classrooms, accompanied by a verbal explanation of its purpose. Teachers were encouraged to identify all students in their classes exhibiting disruptive behavior and to fill out a form on each student. Students identified by their teachers were selected for participation according to the following criteria:

- 1) A clear description of disruptive behavior according to the information provided by the teacher. Preference was given to those students demonstrating low intensity, high frequency, discrete instances of disruptive behavior, as verified by observation.
- 2) Observation by the PI to independently verify the occurrence and rate of disruptive behavior (Appendix E). One to two 15-minute observations was conducted of each student. The specified disruptive behaviors had to have occurred at least twice during each observation for that student to be selected for participation.
- 3) A preference was given for students for whom evidence was available that disruptive behavior was persistent across contexts, including school environments (e.g., math class, language arts instruction) and, if possible, academic year. (Provided via teacher report and file review of all participating students.)
- 4) Parental consent to participate (Appendix F).

After parental consent for student participants was obtained, participating teachers identified peers who met the appropriate criteria for participation as peer confederates (Appendices G, H). Teachers were prompted to identify five peers who might meet criteria for participation based on being socially mature and cooperative with teacher instructions. Teachers rated each of the five students according to the criteria listed in Appendix G. Those students who teachers rated as having the highest number of desired characteristics were recruited to participate; preference was given to students who were friendly with the target student. If the parents of an identified peer or the peer did not consent/assent to participate, another peer was

selected from the list. Finally, students who met the above criteria and the teachers referring them for participation participated independently in problem-identification interviews (Appendices I, J), the purpose of which was to form a consensus about the problem behavior and develop an operational definition of all targeted behaviors (e.g., problem behavior and targeted appropriate replacement behaviors). Students were included in the problem identification process in order to increase the reliability of problem identification and the level of student involvement in the consultation and intervention process. However, in order to reduce reactivity to the researcher's presence as an observer during FA sessions, all student interviews were conducted by school psychology graduate students who were not present in the classroom during FA sessions.

Student A

Student A was a Caucasian male in the 6th grade. He was not identified for special education services regarding academics nor behavior. A review of his school records revealed that his academic performance was average in most areas. Upon initially referring this student for participation in this study, Teacher A reported that he frequently spoke to peers and shouted out during class, had difficulty staying in his seat, and was, "hyperactive." She reported that he demonstrated this behavior in all of his classes.

Student B

Student B was a Caucasian male in the 8th grade. He was not identified for special education services regarding academics nor behavior. A review of his school records revealed that his academic performance was average in most areas. Upon referring this student for participation, Teacher B reported that he frequently shouted out during class, was off-task, and would loudly bang his hands, feet, pencil, and chair against other nearby objects.

Student C

Student C was an African American female in the 7th grade. She was not identified for special education services regarding academics nor behavior. A review of her school records revealed that her academic performance was average to above average. Upon referring this student for participation, Teacher C noted that she frequently shouted out during class and was often out of her seat.

Settings

All training, assessment, and feedback procedures occurred in the general education middle school classrooms to which each participating teacher was assigned. Participating students sat in a seat assigned to them, chosen for its proximity to the teacher and potential to decrease the availability of peer attention. Peers were sometimes asked to move seats to ensure the accurate delivery of attention. No other modifications to the classroom environment were made.

Experimental Design

A multi-element design was employed for the FA conditions (Iwata et al., 1982/1994). However, to address the primary research question and evaluate teachers' ability to implement FA, data on teacher integrity before training (baseline), immediately following training, and during classroom implementation of FA conditions, is reported using a nonconcurrent multiple baseline across participants design (Watson & Workman, 1981). A nonconcurrent design was preferred for this study because it allowed training to occur immediately before FA session implementation for each participating teacher. Due to the extended time necessary to consult with each teacher during this investigation, classroom FA implementation could not occur with all participating teachers simultaneously. In order to avoid an extended period of time between training and FA implementation, it was necessary to conduct initial mock FA sessions and

training temporally close to the implementation of classroom FA sessions. Therefore, baseline sessions conducted with this group(s) could not be concurrent.

Non-concurrent multiple baseline designs are recommended for use when concurrent baselines are not feasible, and are appropriate given that certain requirements are met. Requirements include that baselines are of different lengths and that the implementation of intervention (in this case, training followed by classroom FA implementation) is planned and not serendipitous (Harvey, May, & Kennedy, 2004). Therefore, this design is appropriate for this study. During multiple baseline analyses, phase changes are made when data demonstrates a stable trend within each phase. In this study, there were three phases of analysis: (1) baseline prior to teacher training, (2) training sessions, and (3) FA session implementation. During the baseline phase, data were collected on each teacher's level of integrity during one, two, or three sessions of each condition. The decision to discontinue baseline sessions during analysis is typically made on the basis of the stability of baseline data, such that a reasonable expectation of future performance can be derived from an analysis of baseline performance (Kazdin, 1982). However, in this study baseline performance was measured for a predetermined number of sessions, according to the procedures used by Iwata et al. (2000) and Wallace et al. (2004).

Measurement Procedures

The dependent variable in this manipulation was the amount of procedural integrity with which teachers implemented FA procedures during the assessment of appropriate classroom behavior. Teachers' procedural integrity was measured as the percent of correct steps per FA session, as well as the number of times each teacher delivered reinforcement noncontingent on student behavior (an incorrect response). A secondary dependent variable was the variation in the rate of appropriate behavior by the target student according to the manipulation of FA conditions. Appropriate behaviors were individually identified for each student in consultation

with the participating teacher. Preference was given to discrete behaviors that were plausible replacements for the identified problem behavior. For example, raising one's hand was considered an adequate replacement behavior for a student who frequently shouts out during class. Each appropriate behavior was operationally defined in consultation with the participating teacher and reviewed during training (Appendix L).

Independent variables included FA procedural training and performance feedback (for teachers' integrity) and the differential reinforcement of appropriate behavior provided by each FA condition (for students' behavior). Data were collected on the identified appropriate behavior of the student, disruptive student behavior, and correct implementation of FA procedures, including accurate delivery of the contingencies. Data on the accurate delivery of contingencies included integrity measurement of behavior directed toward peer confederates during the peer attention condition (e.g., prompting the peer to respond, when necessary, when the target student initiated during peer attention conditions). While disruptive behavior was not observed in order to determine function, data on inappropriate behavior was collected in order to determine any commensurate effects on disruption associated with each condition (e.g., disruptive behavior decreases as appropriate behavior increases).

Data were collected by the PI in a frequency-by-interval paper and pencil format. Each 15 minute session was divided into one-minute intervals, providing a more precise and accurate estimate of interobserver agreement (IOA) than is allowed by a frequency only method. When a target behavior occurred, the minute was noted, the behavior was recorded according to pre-defined codes for each student, and teacher integrity was evaluated according to responses relevant to the condition and the behavior. Criteria by which teacher integrity was evaluated during each condition are presented in Table 2-1. Additionally, data on noncontingent

reinforcement were collected during each condition. During the control condition, noncontingent attention delivered by the teacher on a fixed-time schedule of one minute was recorded as correct (delivered at the appropriate time) or incorrect (not delivered or delivered at the wrong time). These data points, because they were evaluated using a frequency method, were totaled with the other data regarding teacher integrity and included in the total percentage of steps completed with integrity by the teacher. During teacher attention, escape, and peer attention sessions, data on noncontingent reinforcement were taken using a partial-interval recording system, such that the number of minutes during which the relevant form of noncontingent reinforcement was observed was totaled and divided by the session length (15 minutes), then multiplied by 100 to obtain a percentage of intervals during which noncontingent reinforcement occurred (Kazdin, 1982). For example, if during a peer attention session, peer attention was delivered noncontingently at any time during 5 of the 15 total intervals, the rate of noncontingent reinforcement would be calculated as $(5/15 = .33) * 100 = 33\%$ of intervals.

Paper and pencil data were preferred to computerized methods of data collection (e.g., video analysis or handheld personal computing technology) to reduce the impact of reactivity to the observers' presence (Appendix M for data collection form). In the research school under study, paper and pencil data is frequently collected by consultants observing the classroom, making this method more amenable to the school context and less likely to distract students and/or teachers during data collection.

Interobserver Agreement

IOA data were collected on a minimum of 25% of sessions by a trained graduate student observer acting as a data assistant to the project. During FA implementation, criteria for IOA was set such that sessions on which IOA was less than 70% were not to be used to make decisions about the stability of student behavior or teacher integrity. IOA was calculated using the

proportional method of IOA, in which the smaller number of recorded events was divided by the larger number and multiplied by 100 to obtain a percentage of IOA (Kazdin, 1982) within each interval. IOA percentages were then totaled and averaged across each session to yield a percentage of total IOA. IOA was calculated within intervals to provide a more precise estimate of agreement than is offered by dividing the smaller number of events by the larger number across the entire observation period (Lannie & McCurdy, 2007). IOA data were taken and reported on student appropriate behavior, student disruptive behavior, and teacher integrity to FA procedures across sessions.

Baseline

During baseline sessions, IOA was obtained on 100% (4/4) of sessions with Teacher A, 50% (4/8) of sessions with Teacher B, and 42% (5/12) of sessions with Teacher C. Variability in percentages of sessions observed is an artifact of the necessity to observe at least one condition for each teacher during baseline. As Teacher A only participated in four baseline sessions (one of each condition), and each condition had to be observed for IOA, 100% of sessions were observed. IOA during baseline sessions with Teacher A averaged 82% and ranged from 72% to 92%. During baseline sessions with Teacher B, IOA averaged 78% and ranged from 65% to 90%. The lower IOA noted during these sessions was hypothesized to be related to the fact that these sessions had to be videotaped (for which Teacher B gave consent), owing to scheduling constraints which prevented a data assistant from being present to take IOA data in vivo. Videotaped IOA sessions provided a limited view of the classroom, obstructing some mock student behaviors and/or making verbal utterances difficult to hear. Finally, IOA during baseline sessions with Teacher C averaged 92%, and ranged between 87% and 96%.

Across conditions, total IOA averaged as follows: IOA for Teacher Attention sessions was 79% (range 65% to 92%), for Escape sessions was 85% (range 69% to 96%), for Peer Attention sessions was 85% (range 72% to 92%), and for Control sessions was 91% (range 90% to 100%).

Training

During training sessions, IOA data were taken on 79% of sessions with Teacher A, 75% of sessions with Teacher B, and 100% of sessions with Teacher C. IOA averaged 86% during training sessions with Teacher A, and ranged from 67% to 96%. During training with Teacher B, IOA averaged 86% and ranged from 73% to 98%. IOA during Teacher C's training averaged 89% and ranged from 81% to 100%.

Across conditions, total IOA averaged as follows: IOA for Teacher Attention sessions was 96% (range 90% to 100%), for Escape sessions was 85% (range 74% to 94%), for Peer Attention sessions was 86% (range 73% to 92%), and for Control sessions was 88% (range 81% to 92%).

FA implementation

During FA implementation, IOA was collected on 38% of session with Teacher A. IOA averaged 94%, ranging from 92% to 99%. During Teacher B's FA implementation, IOA was collected on 33% of sessions. Average IOA was 89%, ranging from 79% to 100%. IOA was collected on 44% of Teacher C's FA implementation sessions. Average IOA was 93%, and ranged from 77% to 100%. One IOA observation of FA implementation by Teacher C yielded IOA less than 70%; consequently, data from that session was not used to represent teacher integrity levels or Student C's performance during that condition.

Across conditions, total IOA averaged as follows: IOA for Teacher Attention sessions was 92% (range 79% to 100%), for Escape sessions was 98% (range 96% to 100%), for Peer Attention sessions was 95% (range 92% to 99%), and for Control sessions was 83% (range 77% to 92%).

Procedures

Preassessment

Prior to data collection, a problem identification interview (PII) was conducted to identify the target inappropriate behavior(s) and inform the appropriate behaviors to be assessed. All interview procedures were conducted according to the procedures identified by Bergan and Kratochwill (1990) for behavioral consultation, and adapted to the current study. See Appendices I and J for the adapted teacher and student forms of the PII, respectively.

Teacher Training

Training procedures for the recruited middle school teachers occurred after all teacher and student participants were identified and consent had been obtained from the participating teachers and parents of the target students. Prior to training, teachers received and were instructed to read an outline of each FA condition, based on the procedures section of the Iwata et al. (1982/1994) study (Iwata et al., 2000), and adapted to the assessment of appropriate behavior (Appendix K). Teachers read only the description of the impending session to be conducted, and were given five minutes to read the description before conducting the first baseline session. At subsequent baseline sessions, some of which occurred several days after the first baseline sessions, teachers were given between 30 seconds and two minutes to review the condition description. After reading the relevant section (e.g., escape, teacher attention, peer attention, control), each teacher was instructed to conduct a mock FA session, with a trained graduate data assistant or the PI acting as the target student and/or peer confederate. A data assistant acting as a peer confederate was included in baseline and training sessions only during peer attention and control conditions, due to time constraints. Participating graduate assistants acting as the peer confederate during peer attention and control conditions were instructed to provide the teacher an opportunity to prompt at least once every session, but to otherwise

demonstrate reasonably good integrity to the procedures. The individual acting as the target student, who was typically the PI, was instructed to demonstrate at least three behaviors per minute, and to demonstrate each of the target appropriate and disruptive behaviors at least once per session. During mock sessions, a higher incidence of each specific target appropriate behavior was intentionally demonstrated during the condition in which that behavior might be expected to occur more frequently (e.g., raising hand during teacher attention conditions).

Teachers were observed by the principal investigator during mock FA sessions and their integrity to the FA procedures was measured as described above. All mock FA sessions followed the procedures for actual sessions described above, with the exception of shortening mock FA sessions to three minutes to allow for limited time. Following the training described below, teachers' integrity during mock FA sessions was again assessed, in order to measure the effect of training on teachers' procedural integrity (Iwata et al., 2000; Wallace et al. 2004). Performance feedback was delivered following each session, during which teachers were recognized and praised for correctly implemented steps, and corrective feedback was provided for each missed step.

Initial training occurred following the baseline mock FA sessions described above. Initial training procedures included:

- 1) A visual (e.g., PowerPoint) presentation describing the research aims and procedures, including video segments of mock FA conditions modeled by the PI and trained graduate data assistants and brief oral "quizzes" about previously presented material (Iwata et al., 2000).
- 2) An overview of the operational definitions of the disruptive behaviors exhibited by the identified student participants.
- 3) Discussion and development of operational definitions for student appropriate behaviors that were to be assessed during research implementation according to the classroom expectations of each teacher. Operational definitions of disruptive behavior also reflected the non-occurrence of appropriate behavior; instances of disruptive behavior constituted non-examples of appropriate behavior.

- 4) Discussion and development of peer attention conditions for each classroom according to the classroom expectations of each teacher (peer training is described below).
- 5) Additional mock FA sessions until each teacher reached a minimum of 80% integrity to research procedures at least twice in each condition and with an increasing or stable trend, with performance feedback from the PI following each session.
- 6) Scheduling and research timelines for each teacher.

Peer Training

Prior to implementation of FA conditions, identified peers met with the PI to review conditions to be conducted that day. Peers were told that they were helping the target student, who sometimes has difficulty behaving appropriately during class, and that they would sometimes act as a classroom “buddy” for that student when he/she needed help. Peers were instructed to recognize the target appropriate behavior, and appropriate forms of attention were reviewed for the peer to use in response. For example, when the target student spoke to the peer appropriately about his/her work during peer attention conditions, the peer was instructed to help the target student, but to speak only about the assigned activity. During control conditions, the peer was given a timer and instructed to “check in” on the target student every minute, ensure that he/she understood the work, and provide any necessary help. During escape and teacher attention conditions, the peer was instructed not to speak to the target student at any time. An index card, similar to that provided to the target student, also described expectations for peer behavior during each condition, and was delivered with the target student’s card at the beginning of each session.

Functional Analysis Conditions

After operational definitions were created and teachers were trained to implement procedures with integrity (e.g., 80% integrity during training sessions; see Appendix L for operational definition form), functional analysis conditions were implemented and data

collection on student behavior began. Analyses of student behavior were conducted using a multi-element FA design. Sessions were 15 minutes in duration, and data collection on each session continued until a stable three point trendline was observed in teacher integrity and, ideally, in student behavior. Three experimental conditions including escape from task demands, teacher attention, and peer attention were conducted, in addition to a control condition. Each condition is described below.

Escape from task demands

This condition was designed to identify behavior that occurred as a function of avoidance of difficult academic material. Teachers began this session by placing a card on the desk of the participating student that stated; “We’re going to work on material that may be difficult. Please do your best work. If you need a break, please ask for one by asking me for a break, and I’ll give you 30 seconds to yourself.” They then led the class into an activity that was previously identified as challenging for the target student. Data collection began when the instruction card was handed to the target student. Each time the target student requested a break, the teacher indicated to the student that it was time for a break. Breaks consisted of sitting quietly, putting one’s head down, or engaging with a “stress ball,” (Student B only, per the recommendation of Teacher B). At the conclusion of 30 seconds, the teacher indicated that the break was over and that the student should return to work. If the student again requested a break, one would be provided. No contingencies were provided for instances of disruptive behavior, unless the behavior escalated to a level of severity that the teacher perceived it must be addressed. During training, teachers were instructed that if such an escalation occurred, they should address it in a manner consistent with existing classroom procedures.

Teacher attention

This condition was designed to identify behavior that occurred as a function of attention from the teacher. Teachers began this session by placing a card on the desk of the participating student that read, “We’re going to work on some material you’re familiar with. Please do your best work. If you need help, let me know by raising your hand and I’ll come talk to you.” They led the class into an activity that was moderately challenging for the target student. Data collection began when the instruction card was handed to the target student. After explaining the activity to the class (if necessary), the teacher sat at his/her desk or engaged in some other activity that gave the appearance of not providing attention to the class. Each time the target student engaged in the identified behavior, the teacher walked to his/her desk and began speaking with the student. Teachers spoke to the student as they normally would (e.g., “Do you need help?” “What are you having trouble with?”), and then provided any necessary help. Teachers spoke to the student for approximately 15 seconds. If the student engaged in the target behavior again, the teacher would remain with the student for another 15 seconds. No contingencies were provided for instances of disruptive behavior, unless the behavior escalated to a level of severity that the teacher perceived it must be addressed, in which case the teacher had been previously prompted to respond to it according to existing classroom procedures.

Peer attention

This condition was designed to identify behavior that occurred as a function of attention from peers. Peer confederates were identified for inclusion based on strong social skills, ability to follow instructions, and an existing relationship with the target student (Appendix G). Prior to beginning sessions, peers were instructed to recognize and deliver attention for each occurrence of the identified behavior, as described below. At the start of each new condition, peers were privately reminded of the expectations for their behavior by the PI. At the beginning of each

session, peers also received an instruction card similar to that given to the target student reminding them to respond to the target student's requests for help. Teachers began sessions by placing a card on the desk of the participating student that read, "We're going to work on some material you're familiar with. Please do your best work. You're allowed to talk quietly during this activity, so if you need help from (peer's name), you may ask them for it by speaking quietly and appropriately about the work." The teacher led the class into an activity that was moderately challenging for the target student. Data collection began when the instruction card was handed to the target student. Each time the target student engaged in the identified behavior, the identified peer spoke with the student for approximately 15 seconds about the assigned activity and offered any necessary help. If the student engaged in the target behavior again, the peer spoke with the student for another 15 seconds. If the peer did not respond to the target student's identified behavior, the teacher was responsible for reminding him/her to do so by tapping him/her on the shoulder or quietly saying, "(Peer), I think (target student) needs your help." Teachers only provided this directive once per instance of target student identified behavior. Similarly, if the peer was providing attention to the target student independently of the target student's behavior, the teacher prompted the peer to return to his/her work. No contingencies were provided for instances of disruptive behavior, unless the behavior escalated to a level of severity that the teacher perceived it must be addressed. If an escalation of disruptive behavior impeded classroom functioning, the teacher was encouraged to respond to it according to existing classroom procedures.

Control

The control condition was designed to provide a basis of comparison for the other experimental conditions. In this condition, reinforcement was not contingent on instances of the identified appropriate behavior, and the students did not experience the antecedents making such

behavior likely to occur. Rather, teacher and peer attention was delivered noncontingently, and antecedents presumed to be least aversive (e.g., an easy academic task) were present throughout the condition. In this condition, teachers began sessions by placing a card on the desk of the participating student that read, “We’re going to do some work you’re all familiar with. I’ll be coming around to talk to you as you may need help. (Peer) will also check in with you from time to time. Please work quietly and do your best work.” Data collection began at the conclusion of oral instructions. No contingencies were provided for instances of disruptive behavior or any of the target appropriate behaviors, but teacher and peer attention were provided on a fixed time schedule of every one minute. Participating peer confederates were instructed to provide such attention prior to the session, and had an index card indicating when and how to provide attention. If they did not provide attention at the requisite time, the teacher was responsible for reminding them to “check in” on the target student. During training, teachers were instructed that if an escalation of disruptive behavior impeded classroom functioning, they should respond to it according to existing classroom procedures.

Procedures for Monitoring Consultation

Consultation was based on the steps of the BC paradigm, during which teachers participated in problem identification, problem analysis, plan (FA) implementation, and plan evaluation (social validity) stages. However, it was also necessary to monitor the consultation process with each teacher. To do so, the researcher maintained a log of each consultative interaction. In the log, events were monitored and recorded, such as the completion of important consultative and research procedures. Additionally, aspects of each consultative interaction that seemed potentially important were noted. Elements of each consultation that were recorded included teachers’ statements about the target student’s behavior and/or its causes, relevant interaction factors, such as a teacher’s tone or message content during a meeting, teachers’

apparent reactions to the implementation of the FA in their classrooms, procedural or logistical hurdles to be overcome, or statements related to the development of each consultative relationship.

Table 2-1. Criteria for evaluating teacher integrity during classroom-based FA

	Teacher correctly responds to target appropriate behavior	Teacher correctly responds to disruptive behavior	Teacher correctly prompts peer (if necessary)	Teacher correctly ends reinforcement interval	Peer correctly responds
Control	√	√	√		
Escape	√	√	√	√	
Peer Attention	√	√	√		√
Teacher Attention	√	√	√	√	

CHAPTER 3 RESULTS

This investigation examined two variables related to the implementation of FA in general education middle school classrooms. The first, the integrity with which teachers implemented FA procedures, was examined across three phases: baseline, training, and classroom implementation. The second factor under study was students' responses to the FA conditions. Specifically, targeted appropriate behaviors and identified problem behaviors were observed and recorded. The frequency with which students engaged in appropriate behavior across conditions provided evidence for the presence of a reinforcing function for that behavior. Finally, all outcomes were examined in the context of a consultation conducted with each participating teacher, according to the procedures of BC. The results of this investigation are presented below.

Teacher Integrity

Teachers' integrity to the FA procedures during each phase of the analysis is presented graphically. The first phase, baseline, represents the level of integrity with which teachers performed an abbreviated mock FA session with only a written description as a guide. The second phase, training, represents teachers' integrity during practice sessions (also an abbreviated mock FA) after viewing training presentations about how to conduct a classroom-based FA, including video modeling of each condition. Teachers also received performance feedback following each session during this phase. The third phase represents the introduction of the FA to the classroom and the target student, during which teachers were responsible for carrying out the environmental manipulations peculiar to each condition. Performance feedback was delivered approximately every four sessions during this phase.

Figure 3-1 depicts each teacher's integrity to the FA procedures during each phase of the assessment. During the baseline phase, Teachers A and B demonstrated integrity ranging from

20% to 87% of steps completed correctly. Mean rates of integrity during the baseline phases were 57% for Teacher A and 55% for Teacher B. The teacher attention condition stood out during this phase of the analysis as one during which both Teachers A and B were able to perform with high levels of integrity despite having no training in how to do so.

Teacher C's baseline data is notable for the change in magnitude observed between sessions 4 and 5. This change is signified in Figure 3-1 by a phase change separating that data into baseline (bL) and baseline prime (bL') phases. Due to time constraints, Session 5 began one week after Sessions 1 through 4 were conducted. Prior to beginning mock FA sessions that day, Teacher C inquired as to whether he should do what he thought the cards were "telling" him to do, or whether he should do what he would normally do in his classroom. During initial baseline sessions, the integrity demonstrated by Teacher C averaged 40%. When instructed to follow the cards as best as he understood them, he began to demonstrate high levels of integrity in all conditions, ranging from 85% to 100%.

Following training only one mock FA probe was conducted in each condition with Teacher C. This modification was made because of the high levels of integrity he demonstrated during the baseline prime phase. During the training probes, Teacher C demonstrated 100% integrity in each condition. The stability with which such high integrity was observed across the baseline prime and training phases argued against the need to conduct further observations of Teacher C's integrity to the FA procedures.

Training sessions continued for Teacher A until requirements for stability at 80% criteria or above were met. For Teacher A, three sessions of each condition were sufficient to demonstrate stability of performance, with the exception of the control condition. Five training sessions of the control condition were conducted to demonstrate stability of integrity above 80%.

Teacher B's training data reflects acceptable levels of integrity for all conditions after two sessions of each. Due to limited time, Teacher B proceeded into the third phase of the analysis on the strength of increasing trend in three out of four conditions.

Levels of integrity during FA implementation were highest for Teacher C, followed by Teacher A, then Teacher B. Teachers A and C both demonstrated consistently high levels of integrity across conditions. These teachers were most likely to demonstrate slightly lower levels of integrity during peer attention (Teacher A mean integrity = 91%; Teacher C = 96%) and control conditions (Teacher A mean integrity = 92%; Teacher C = 96%). Similarly, Teacher B demonstrated consistently low performance throughout the control condition (mean integrity = 52%). However, she demonstrated variable performance during peer attention sessions (mean = 88%, range 64% - 100%).

Table 3-1 details the areas in which each teacher missed steps to be implemented in the classroom-based FA. All three teachers demonstrated difficulty monitoring peer performance and prompting peers regarding their behavior when it was necessary during peer attention and control conditions. Teacher A was most likely to demonstrate errors in peer prompting, followed by the delivery of noncontingent delivery of attention during the control condition. Teacher B was most likely to make errors in ignoring instances of disruption, ignoring instances of raising hand outside of the teacher attention condition at a schedule of once for every three instances of hand raising, prompting the peers, and delivering noncontingent attention during the control condition. Teacher C was most likely to make errors in prompting the peer and in delivering noncontingent attention during the control condition.

Finally, data were also taken on the percent of intervals during which the target student received the form of noncontingent attention during each of the three experimental conditions

that was contingently available during that condition. Those data are represented by the closed data points on Figure 3-1, and indicate that each teacher was able to maintain low levels of the relevant form of noncontingent reinforcement during experimental conditions. Levels of noncontingent reinforcement during experimental conditions averaged 13.67% of intervals for Teacher A, 9.78% for Teacher B, and 7.57% for Teacher C. Sessions during which the percentage of intervals in which noncontingent attention exceeded 20% were Session 28 for Teacher A (73%, Session 10 for Student A) and Session 19 for Teacher C (40%, Session 3 for Student C).

Teachers A and B demonstrated improvements in procedural integrity following training, modeling, and performance feedback regarding how to implement an FA. Improvements in integrity demonstrated by Teacher C appeared to be related to information supplied by the researcher during the baseline phase, rather than the instigation of training. All three teachers demonstrated high levels of procedural integrity throughout the training phase. During classroom implementation, Teachers A and C maintained high procedural integrity. Teacher B's procedural integrity was variable throughout that phase.

Functional Analysis of Appropriate Classroom Behavior

Each teacher was responsible for conducting a classroom based analysis of appropriate behavior for a student demonstrating disruptive behavior in his/her classroom. Data on each of the student target behaviors is presented graphically, in which session number is graphed on the x-axis and rate per minute is graphed on the y-axis. Rate per minute was calculated for each session by dividing the total frequency of instances of the target behavior by the total duration of the session. Sessions were typically 15 minutes in duration; however, several sessions had to be shortened due to a sudden or unexpected change in classroom activity. In the case that a session

was shortened, rate per minute data were prorated by dividing the total frequency of the target behavior by the actual length of the session duration.

Multielement FA

Student A

Student A did not request a break in any of the conditions, thus, that data is not presented. He demonstrated elevated rates of raising his hand, appropriate peer speech, and disruption during all FA conditions. Figure 3-2 represents Student A's rate per minute of hand raising in each of the four FA conditions. The overlap in data points, lack of magnitude change between conditions, and lack of stable trend in any of the conditions indicate that the function of hand raising was undifferentiated in experimental conditions during which hand raising was reinforced compared to those when it was not. Figure 3-3 depicts Student A's rate per minute of appropriate peer speech in each of the FA conditions. During and after Session 6, a change in magnitude can be seen between rates of appropriate peer speech during the peer attention condition, during which that behavior was consequated with brief amounts of peer attention, and the other three conditions. This change in magnitude continues with an increasing trend, until Session 14, when the rate per minute of appropriate peer speech declined during the final peer attention condition. However, rates of appropriate peer speech in the other conditions remained stable until the conclusion of the FA, and an elevated rate of appropriate peer speech was demonstrated in all sessions. Thus, it appears that appropriate peer speech was reinforced by peer attention, though the data indicate a possible decreasing trend.

Student B

Student B did not demonstrate requests for a break from the academic task during any condition; therefore, data regarding that target behavior are not presented. Data regarding Student B's rates of raising hand/appropriate teacher speech and appropriate peer speech are

provided in Figures 3-5 and 3-6, respectively. Both indicate that the function of either behavior was not differentiated by this analysis. Furthermore, the greatest stability of rates of each of the observed behaviors is noted during the control condition. This suggests that the maintaining reinforcer for Student B to engage in any of the target behaviors may have been present during the control condition, but was not identified in this analysis.

Student C

Student C did not demonstrate requests for a break from the academic task during any condition; therefore, data regarding that target behavior are not presented. Furthermore, Student C demonstrated only one instance of raising her hand during the FA, during Session 3, a peer attention condition. Data regarding that target behavior are depicted in Figure 3-8; however, the lack of variability in that data over the length of the FA renders any visual analysis and interpretation of that target behavior impossible.

The rate at which Student C engaged in appropriate peer speech is illustrated in Figure 3-9. The high rates of that target behavior (approximately 1 – 2 times per minute) during Sessions 3 and 7 provide evidence of the reinforcing efficacy of peer attention for appropriate behavior. However, the trend in the rate at which Student C demonstrated appropriate peer speech is decreasing, and she demonstrated only 0.13 instances per minute of that behavior during the final peer attention condition.

Disruption

Although disruption was not consequated during the FA, descriptive data on the frequency of its occurrence was taken in order to observe any commensurate effects of the FA on the frequency of disruption. Student A's rate per minute of disruption is graphed in Figure 3-4. Student A demonstrated a very high rate of disruption in Session 10, an escape condition. However, he was most likely to demonstrate elevated rates of disruption in the peer attention and

control conditions. Data regarding Student B's rates of disruptive behavior is provided in Figure 3-7. The rate of disruption does not appear to be differentiated by any of the conditions presented. However, declining rates in disruption toward the conclusion of the FA suggest a possible treatment effect of the FA procedure.

Over the course of the FA, Student C appeared to become increasingly reactive to the observer(s)' presence in the classroom. During the final FA session, an escape condition, she engaged in aggression toward the peer confederate each time that Teacher C was not looking in her direction. That elevated rate of aggression is represented in the rate of disruption, presented in Figure 3-10. Though aggression was not originally a component of the operational definition of disruption demonstrated by Student C, it was recorded as such during that session on the basis of its potential to disrupt other students (specifically, the student upon whom the aggression was occurring) from the classroom activity. That session was discontinued early and the FA was terminated as a result. The reactivity demonstrated by Student C poses a serious threat to the internal validity of this FA and appears to have had a commensurate effect on the data path of her observed rates of appropriate behavior during the peer attention conditions.

Peer Attention Reversal Analyses

Because the multielement data derived from the FA of Student A's and Student B's rates of appropriate behavior indicated a possible peer attention function, additional graphic analyses were conducted to further examine the differences in appropriate behavior demonstrated during the peer attention condition in comparison to the other conditions. In particular, control conditions (during which average rates per minute of appropriate peer speech often overlapped with those demonstrated during the peer attention condition) were further examined using a reversal design treating small time segments of the FA session as the unit of analysis. Breaking each session down into smaller units of time also allowed for an examination of trend within

each session, which may provide additional evidence regarding either student's response to the experimental contingencies as they came under the stimulus control provided by each (Vollmer, Iwata, Zarcone, Smith, & Mazaleski, 1993). For example, a high rate of appropriate peer speech at the beginning of each control condition, accompanied by a decreasing trend in that behavior over the course of the session would suggest that a student's rate of appropriate peer speech decreased as a result of an extinction effect of an experimental condition in which that behavior was not reinforced by peer attention. Likewise, an accelerating rate of the same appropriate response during the peer attention condition would further support the reinforcing efficacy of peer attention for that behavior.

Student A

Figure 3-11 depicts Student A's rate of appropriate peer speech across control and peer attention conditions. Each unit depicted on the x-axis represents three minutes of the session, in escalating order. The y-axis depicts the total frequency of appropriate peer speech. Data are depicted cumulatively; thus, the rate of increase on the rise of the graph depicts the total units of appropriate peer speech demonstrated during each time increment. For example, in Figure 3-11, when the graph depicting appropriate peer speech during Session 6 increases from seven to eight between minutes 12 and 15, this indicates that Student A demonstrated one instance of appropriate peer speech during that time. Cumulative graphing of the data allows both a minute-by-minute analysis of its trend and a composite analysis of the overall frequency of target behavior demonstrated within each session. Thus, the total frequency of appropriate peer speech within each session is represented at the data point above Minute 15 on the x-axis, allowing a similar comparison between conditions to that provided by the multielement data presentation. This data analysis still suggests the possibility of decreasing trend across both conditions, but further suggests that rates of appropriate peer speech were more likely to increase within each

peer attention condition. In contrast, during the control condition, the frequency of appropriate peer speech increased throughout only one session (Session 3). The point at which Student A ceased issuing appropriate peer speech during the remaining conditions was during the 10-12 minute interval in Session 5, the 6 – 9 minute intervals in Sessions 11 and 16. In fact, in both of those sessions the final instance of appropriate peer speech occurred during minute 7, indicating that appropriate peer speech did not persist into the second half of a condition during which it was not reinforced by peer attention.

Multielement presentation of the rates of disruption suggested that rates of appropriate peer speech were consistently highest during the peer attention and control conditions. However, cumulative line graphs of the frequency of disruption during those conditions suggest a different pattern. The frequency of disruption during control and peer attention conditions in a reversal design using cumulative line graphs is depicted in Figure 3-12. This analysis suggests an increasing trend in the rate of disruption during the control condition, while during peer attention conditions the frequency of disruption did not increase after the 12 minute increment in Sessions 6 and 9, and did not increase beyond the 9 minute increment in Session 14. Additional comparisons are necessary to fully interpret any possible effect of the peer attention condition on the frequency of disruptive behaviors, but these findings suggest that the reinforcing effects of peer attention on rates of appropriate peer speech during the peer attention conditions may have contributed to a concurrent decrease in the frequency of disruption.

Student B

Despite undifferentiated rates of responding during the FA, elevated rates of responding were noted during some experimental conditions. Specifically, Student B demonstrated a high rate of appropriate peer speech during Session 2, a peer attention condition. However, he also

demonstrated elevated rates of appropriate peer speech during the control condition. Thus, a within session reversal analysis of those conditions was conducted for each of those behaviors.

Figure 3-13 illustrates the comparison between the frequency of appropriate peer speech observed during the peer attention and control conditions. This comparison does not indicate that peer attention is an effective reinforcer for appropriate peer speech; the delivery of that consequence appears to have had a punishing effect during those conditions. Rather, it appears that there may be a reinforcing effect of an unknown consequence delivered during the control condition, or that the antecedents present during the control condition (e.g., noncontingent attention) produced higher rates of appropriate peer speech. Figure 3-14 depicts a comparison of the frequency of disruption between the peer attention and control conditions. This contrast indicates that rates of disruption may be reduced during the peer attention condition; however, this conclusion is only partially supported given the lack of observed stability in the data.

While these analyses provide some additional evidence regarding the effects of the control condition on Student B's behavior, it should be noted that all control and escape conditions, and one peer attention condition, were conducted at less than 80% integrity. Thus, any conclusions about Student B's performance during the FA are extremely tenuous.

Multielement Data During Sessions of 100% Procedural Integrity

Due to the high level of integrity noted during many of the FA sessions conducted with Student A, and lingering questions regarding the effect of teachers' procedural integrity on FA outcomes, the multielement FA data obtained with Student A was further analyzed in the context of Teacher A's procedural integrity. Specifically, those sessions during which integrity to all procedures was 100% were graphed alone (Figure 3-15, 3-16, and 3-17). Though a trend can not be observed in the single data points present from the peer attention and control conditions, these analyses may clarify the results obtained from the full multielement design. Specifically, the

results remain unclear for rates of raising hand, and suggest that high differences in magnitude in rates of appropriate peer speech and disruption remain between the peer attention and other conditions.

Social Validity

After the conclusion of data collection, a social validity interview was conducted to ascertain additional information about each teacher's perceptions of the FA training and implementation processes. This interview also served as the plan evaluation component of the consultation, according to the procedures of BC. The interview, which can be seen in Appendix N, consisted of 12 Likert-style items, on which 7 indicated a high level of the descriptor being probed in each item, and 1 indicated a low level of that descriptor. Each teacher's responses to the Likert items are described in Table 3-4.

Teacher A

Teacher A indicated that she was somewhat comfortable with the study, but that it took some time to grasp the concept of the FA procedures. According to her report, this decreased her overall level of comfort because she thought it was important to understand the procedures on a conceptual level prior to using them. Teacher A noted some differences in her social validity ratings over the course of the FA and reported two numbers for those items, these numbers are presented in Table 3-4. Specifically, she reported a decrease in the participating peer's apparent comfort level between the beginning and end of the assessment sessions, an increase in disruption to the classroom over time, and an increase in the amount of disruption it caused other students.

At the end of the interview, Teacher A was asked about new information and/or skills that she had gained as a result of participating in this study. She reported the following:

- 1) She had delivered contingent escape to increase time spent on task for a student (other than the target student).
- 2) She had thought about using cards similar to those used during the FA to describe behavioral contingencies to disruptive students.
- 3) She was considering individual preferences for types of reinforcement as an intervention strategy for students who disrupted the classroom.
- 4) She was thinking about how to use group contingencies for completed work.

Additionally, while responding to this question Teacher A discussed with the researcher at length how to address a hypothesized function of teacher attention for another student's disruptive behavior. She also reported that she had recently considered how similar ideas about reinforcement might be maintaining tantrum behaviors exhibited by her three-year-old niece.

Teacher B

Teacher B's responses to the social validity interview are presented in Table 3-4. Overall, she indicated that she was comfortable with the study, that it was somewhat time intensive to participate, but that it was minimally disruptive to the classroom and its routines. She stated that she would "encourage" other disruptive students to participate in a similar type of assessment in the future. However, she indicated that her willingness to participate in a similar assessment in the future would depend upon the timing of such a procedure. Specifically, she reported that she would rather such an assessment begin in the fall, so that scheduling of FA sessions would fit more naturally into the classroom context and would not necessitate changing classroom activities in order to accommodate time constraints in data collection. She indicated that the information obtained from the assessment was somewhat helpful, its effects being attenuated by the fact that it was "not very reasonable" to implement the FA conditions. Her primary concern about implementation centered on the control condition; she stated that it was not realistic to provide attention to one student every minute. She gave the procedure a global rating of "6,"

indicating that she perceived it to be beneficial, saying her primary reason for doing so was the decrease in Student B's rates of disruption over the course of the assessment. While she was uncertain whether it was the conditions themselves or an artifact of being "experimented on" that affected his behavior, she reported that Student B seemed to appreciate and be "grateful for the help" with his behavior.

When asked what skills or knowledge she obtained from participating in the assessment, Teacher B indicated the following:

- 1) She was considering using cards similar to those used during the FA to describe to students the behavioral expectations during a specific activity, and/or to encourage peers not to attend to problem behavior demonstrated by certain students.
- 2) Providing noncontingent attention to a disruptive student, by checking on his/her progress, was a successful strategy to decrease disruptive behavior, and in the future she might do so as often as once every three minutes.

Teacher C

A social validity interview was conducted with Teacher C following the conclusion of FA sessions in the classroom. His responses to the social validity questionnaire can be viewed in Table 3-4. Overall, he reported that the process was not as disruptive as he had originally expected it to be, and that the information obtained was somewhat useful. He clarified, however, that the information obtained from the FA would be more useful at the beginning of the school year, rather than at the end. Teacher C indicated that he might not be willing to participate in similar processes in the future, and that his reason was that he perceived once was sufficient to teach him the FA procedures and attempt the implementation of an FA in his classroom. He did indicate that he would be willing to have another student participate in the future. Finally, he rated the assessment procedure as a four on the seven-point scale, stating that he was unsure how feasible the procedure was without extensive consultative support, and simultaneously concerned about the level of invasiveness to the classroom when that support was provided (e.g., when the

consultant was in the classroom taking data). When asked what skills or ideas he gained from the process, he cited an increased awareness of the importance of ignoring disruptive behavior and practice using that skill. He stated that he had been using that principle with a variety of students other than the target student.

Student Reactivity

Prior to the implementation of FA conditions in the classroom setting, the researcher did not interact with any of the participating target students, in an attempt to reduce potential reactivity to the researcher's presence. However, due to the demands of data collection (e.g., needing to sit near the target students), at some point during the FA implementation each student became aware that he/she was being observed. Further, each student demonstrated some aspects of reactivity to the observations and FA conditions. Student A appeared to note that he was being observed during approximately the 3rd or 4th observation. During those observations, he was noted to turn frequently in his seat to look at the researcher. Student A began complaining about the FA conditions during approximately the 11th or 12th FA session. From that time forward, he was noted to mutter under his breath to the peer confederate prior to and following FA sessions. While the exact content of those statements in unknown, he appeared to be complaining about the FA process. Toward the end of the FA he frequently greeted the researcher upon entering the classroom. During FA conditions themselves, however, he did not engage in any behaviors directly indicating reactivity.

Student B demonstrated relatively little reactivity to the FA procedures. At the end of the first class period during which the FA was conducted, he returned the last session's condition cards to Teacher B and asked, "Do you need these for other kids like me who need help with their behavior?" When Teacher B reported this to the researcher, she indicated that she thought he seemed grateful for what he perceived to be assistance. This was despite the fact that when a

peer asked him about the cards during an early teacher attention condition, he responded, “I don’t know, some stupid card telling me that I should be quiet and raise my hand if I want help.” Thus, it is unclear to what degree he might have been embarrassed about being singled out for an assessment of his classroom behavior. However, he did not engage in any attempts to hide his participation. Additionally, Student B did not appear to fatigue of the FA conditions until later in the assessment. Session 11 was the first that he was observed to ask Teacher B, upon presentation of the condition cards, “How much longer do I have to do this?”

Student C did not appear to note that she was being observed until approximately the 7th condition. However, after noting that the researcher was observing her, she became extremely reactive to the procedure. She frequently asked Teacher C when and why she was being observed, and when it would be discontinued. She was not reassured by Teacher C’s explanations that he was being observed also. Student C’s reactivity became most notable during Session 10, when she began to aggress toward the peer confederate each time that the teacher’s back was turned. As previously noted, this session and the FA were subsequently discontinued.

Consultation Outcomes

Experimental procedures, specifically, training and performance feedback, were embedded in the procedural context of behavioral consultation (BC). As described in Chapter 2, BC was used to unify the steps of the study and as a supportive context intended to maximize the integrity with which FA procedures were implemented by each of the participating teachers. Following each consultative interaction, important events occurring during that interaction were logged by the researcher. Thus, an analysis of each of the consultations and its outcomes is presented via a) the stages of BC and b) their relevance to several factors known to influence consultative interactions. Specifically, those latter factors included: entrance into consultation,

teachers' perceptions of problem behavior, goals for consultation, the degree of consultant (researcher) directedness during verbal interactions, time allocated to meetings with the consultant, reactions to performance feedback meetings, the content of those meetings, and the overall nature of the consultative relationship.

Teacher A

Consultation began first with Teacher A in November, 2007 and concluded in April, 2008. Consultation began first with Teacher A primarily because she was the most enthusiastic and flexible of the three participating teachers with regard to the time commitment and procedural rigor involved in the research project. Given the high number of procedural demands involved in this research, choosing the most enthusiastic participant with whom to begin was conceptualized as a means of reducing the variability inherent to consultative procedures with individuals with differing backgrounds, classroom procedures, and perceptions of consultation. Put another way, choosing the most cooperative teacher participant at the onset of consultation decreased the potential likelihood of the consultation itself introducing new procedural challenges to its implementation in a general education middle school classroom. As a result, the researcher was better able to carefully monitor other variables having the potential to influence the procedural integrity and results of the FA. Thus, consultation with Teacher A served as a model for consultation steps to be taken with Teachers B and C.

Entrance into consultation with Teacher A began as a result of her being recommended to participate by the middle school assistant principal. Thus, the consultation was not entirely voluntary. However, Teacher A began to express enthusiasm for the project during the first meeting, and indicated that she had many students she thought would be appropriate for participation. She seemed to perceive the project as an opportunity to improve a student's problem behavior, but did not express specific attributions about problem behaviors that students

demonstrated. During the selection process, she was careful to choose a student participant who was not already receiving any form of behavioral intervention services, further suggesting that she perceived the consultation as an opportunity to target student behavior.

Consultation with Teacher A became increasingly collaborative following the problem identification stage. She readily understood and applied the procedures to her scheduled classroom activities, easily adapting her lesson plans and instructional strategies per the requirements of the given condition. This understanding appeared to begin early on in the consultation. After watching the training videos, in which each condition was modeled for her, she stated, “I can see how I can use this with other students, too!” This level of understanding appeared to increase when the FA began in the classroom. Teacher A typically informed the researcher of which conditions would be appropriate given the scheduled day and time of FA sessions. Rather than the researcher having to inform her of which conditions needed to be conducted, she often began scheduling meetings by saying, “We need to do a peer attention, right? I think we can do that during _____ activity on Tuesday.” Furthermore, she was accurate in her monitoring of which conditions needed to be conducted, and the activities that she selected were almost always appropriate for the requisites of a given condition.

As the consultation developed, Teacher A’s goals continued to center on helping Student A improve his behavior. Secondary goals appeared to include helping the researcher complete the project and learning new strategies for managing classroom behavior. Further, the consultation was equally composed of consultant and consultee directed statements. While she was receptive to the researcher’s statements about sessions to be conducted and suggestions for data collection times, Teacher A remained forthright in asserting days and times that were not available for

conducting FA sessions, concerns about the FA, and in discussing any potential obstacles to the FA process.

During FA implementation, performance feedback meetings were conducted with Teacher A on a variable ratio schedule of four sessions (performance feedback was conducted after every session during training). Thus, while meetings typically took place after four FA sessions had been conducted, they occasionally were scheduled after three or five sessions. The introduction of a variable ratio schedule was not intentional, but was related to the feasibility of planning performance feedback sessions (i.e., performance feedback could not be given during the middle of a class period during which two sessions were to be conducted). Teacher A was flexible to the scheduling of performance feedback meetings, and consistently scheduled a sufficient amount of time to conduct such meetings. Consistent with the procedures outlined in Chapter 2, performance feedback sessions included review of the graphic results of both the teacher integrity data and Student A's performance during the FA, as well as review of steps implemented correctly, praise offered for correct responding to specific challenges that may have occurred during the sessions, and review of steps implemented incorrectly. Teacher A often began performance feedback meetings by noting or inquiring about steps implemented incorrectly (i.e., "I didn't get over to him (to provide NCTA) every time (every minute during the control condition).") Such statements were confirmed, but immediately followed by noting the overall integrity of the session and steps implemented correctly. If necessary, steps implemented incorrectly were revisited to engage in problem solving about how to handle such scenarios in the future (e.g., "It's okay if you don't make it to provide NCTA at the minute mark if you're speaking to another student, just make sure you get there as soon as possible.")

Teacher A consistently used performance feedback sessions as an opportunity to ask questions about her performance, and how the FA was proceeding.

The consultative relationship with Teacher A was highly collaborative. Further, the high level of collaboration that characterized this consultation was present from early on in its development. At every stage of the BC process, she appeared to be comfortable expressing her questions, concerns, and enthusiasm about the project to the researcher.

Teacher B

Consultation with Teacher B began in January, 2008 and concluded in May, 2008. Teacher B was chosen to participate second because it was perceived that it may take slightly longer to complete training sessions with her than with Teacher C. Also recommended to participate by the middle school assistant principal, Teacher B appeared to perceive that she had little choice in participating, and that the project was being thrust upon her. During the initial meeting, she spoke extensively of her concerns that the project would require large amounts of her time and the level of intrusion to her classroom. When asked about potential student participants and her experience with students with behavior problems, Teacher B expressed internal, fixed attributions (Athanasou, Geil, Hazel, & Copeland, 2002) about students' problem behavior. For example, she referred to students who demonstrate disruptive behavior as "troublemakers" and "bad kids." Specific to Student B, she credited much of his disruptive behavior to his developmental history and internal problems with self-control. During the problem identification interview, she indicated that she thought Student B was compelled to disrupt the classroom when it became too quiet.

Teacher B appeared to relate to the researcher most strongly on the shared experience of completing a dissertation, which often seemed to be the primary reason that she gave her continued consent to participate in the research project. The other goal present throughout the

research process appeared to be a desire to improve Student B's behavior. Teacher B often made statements that might indicate a strong preference for consultant directedness during consultation, saying such things as, "Whatever you want, dear," in response to inquiries from the researcher about scheduling and conditions to be conducted. However, her statements during performance feedback meetings indicated a contrary desire to have greater directedness as a consultee. For example, Teacher B often expressed frustration with the control condition and the challenge inherent to supplying attention to Student B every minute, and would make statements such as, "You just have to understand, it's not realistic to get over there every minute. No teacher can do that on a daily basis." Attempts by the researcher to differentiate research procedures and daily teaching practices were unsuccessful in assuaging her concerns about the demands of the FA.

Teacher B rarely allowed scheduling of meetings longer than five minutes; thus, performance feedback sessions were typically brief. As with Teacher A, performance feedback sessions occurred once per every four sessions on a variable ratio schedule, for the same reasons noted above. Performance feedback sessions with Teacher B consisted of reviewing graphic analysis of her procedural integrity, Student B's data, steps implemented correctly, and steps implemented incorrectly. Occasionally, problem solving steps to address an issue in inconsistent implementation were reviewed. Most attempts to do so were met with a statement such as, "At least you got data, right?" Further, Teacher B often began scheduling and performance feedback meetings with statements such as, "What do you want?" While she did not appear to be angry or bothered by these meetings, she appeared at all times to be overwhelmed by various demands upon her time, of which this project was another.

The blunt quality of her statements, though not necessarily an obstacle to the consultative process itself, made analyzing the content of her statements and proceeding accordingly difficult. Throughout the consultation, it was unclear to what degree she was dissatisfied with the procedures, and which specific procedures were most bothersome to her. Throughout FA implementation in the classroom, Teacher B's statements did not reflect an increased understanding of the FA procedures. During scheduling meetings, and again immediately before conducting FA sessions, she asked to be reminded of the relevant procedures for the imminent conditions. Overall, there was some element of collaboration in consultation with Teacher B. She shared concerns about the procedures; however, efforts to validate her concerns and move into problem-solving steps were largely unsuccessful. The skills she reported gaining during the social validity interview were the first that she reported to the researcher. Though she gave positive ratings to the assessment procedure at the conclusion of consultation, her statements throughout consultation reflected a pervasive dissatisfaction with the demands upon her time.

Teacher C

Consultation with Teacher C began in January, 2008 and concluded in May, 2008. Entrance into consultation with Teacher C was, as with all the participating teachers, centered on the procedural aspects of affirming participation, attaining consent, and identifying and obtaining consent from student participants. However, this phase seemed to persist longest, and was never fully replaced by other patterns of interactions. During problem identification, Teacher C identified the class in which Student C was placed as "hyper." He reported that the class consisted of many students who were receiving remedial instruction for low reading and/or math test scores. He seemed to make fixed, internal attributions that these students' behavior (including that of Student C) was endemic to their academic performance. Throughout consultation, Teacher C was minimally communicative regarding his perceptions of the FA.

Thus, it is difficult to infer his goals for the consultation itself. It seems likely that the presence of the researcher at the impetus of the administration was perceived as a potential threat or a strong form of corrective feedback regarding his classroom management strategies. Thus, his primary goal appeared to be avoiding punishment from administration should he not cooperate. Additionally, he showed some interest in improving the classroom behavior of the target student.

Teacher C readily set aside time to hold performance feedback meetings. However, he frequently forgot about them or was not in his classroom when they were scheduled to occur. Performance feedback sessions with Teacher C were conducted on a fixed ratio schedule of once every three sessions. Procedures during performance feedback were the same as were used with Teachers A and B. Teacher C occasionally asked for clarification about correct steps to be taken when he had made an error in FA implementation. He did not make statements about his understanding of the procedures or any intention to apply them to other students in the classroom. As is evident in his baseline data, Teacher C readily grasped the procedural requirements of each FA condition. Thus, consultation was not organized around the concept of supporting him in understanding and applying these concepts to his classroom. Rather, most consultation interactions focused on next steps to be completed (e.g., scheduling sessions, conditions to be conducted), almost to the exclusion of other variables that may have been impacting his or Student C's performance during the classroom FA.

Though all interactions with Teacher C regarding the FA were entirely consultant directed, attempts to broaden the focus of those interactions to classroom management strategies, behavioral principles, or general issues related to the challenges of teaching were met with little to no response. Throughout baseline, training, and classroom FA sessions, Teacher C was primarily a passive participant in the consultation process. When attempts were made to engage

him in collaborative problem-solving, such as through a discussion of which conditions might fit best with upcoming classroom activities, he was noted to make statements such as, “I don’t know, it doesn’t matter; tell me what you want to do.” Thus, a collaborative approach was never taken that was specific to the FA sessions, and he seemed to continue to perceive decision-making responsibility for the FA to be solely that of the researcher. However, outside of discussions about the FA, Teacher C engaged the researcher in collegial discussions about the general behavior of his classroom, difficulties in management, or humorous accounts of student behavior. These discussions were almost opposite in nature to those concerning the FA, in that while Teacher C appeared to ascribe to the researcher decision-making expertise regarding the FA, he did not solicit information about approaching classroom behavior more generally during other discussions. Rather, discussions of the FA versus outside conversations seemed to take place in parallel to one another.

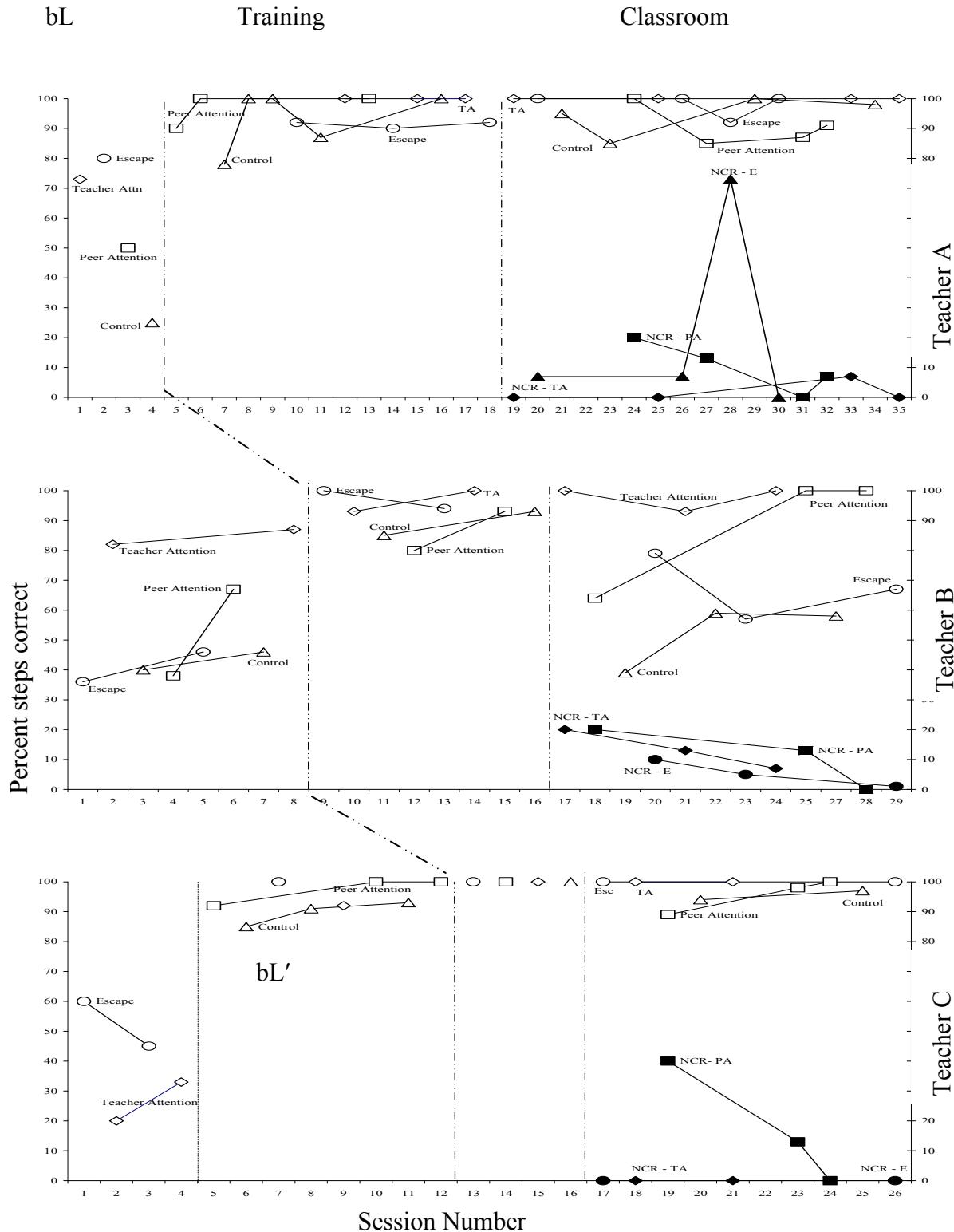


Figure 3-1. Teachers' procedural integrity during FA sessions

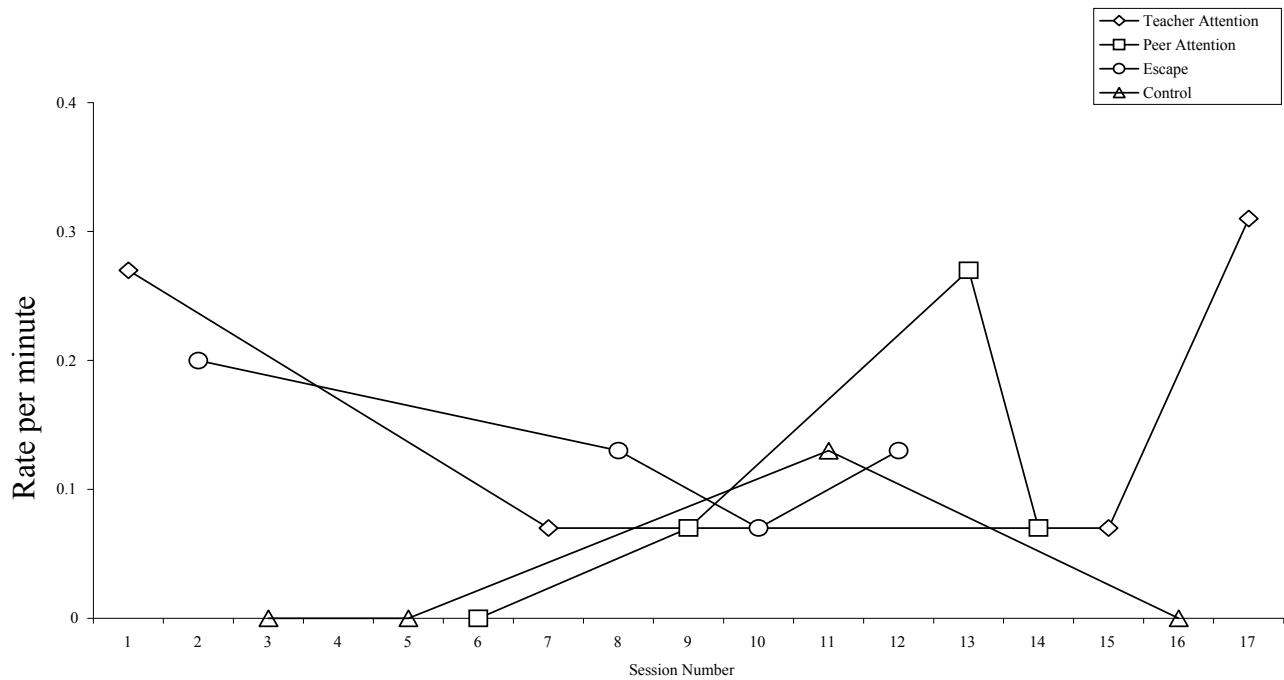


Figure 3-2. Student A: Responses per minute raising hand across conditions

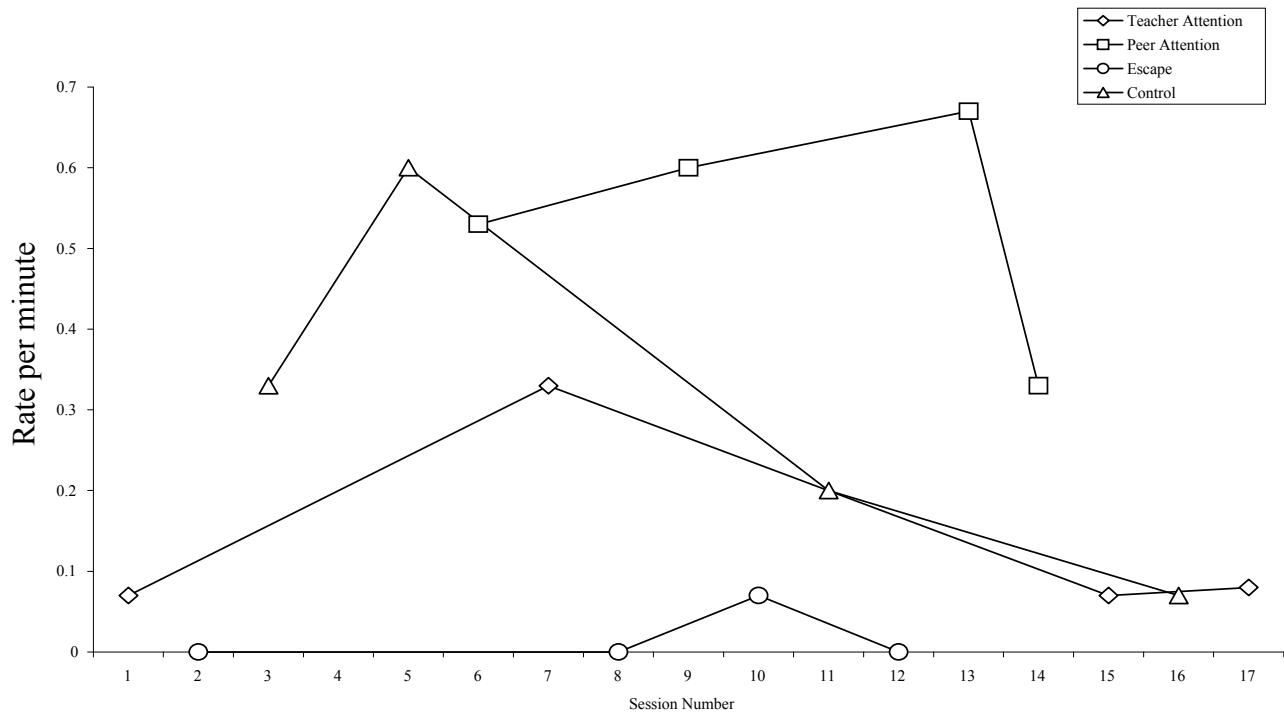


Figure 3-3. Student A: Responses per minute appropriate peer speech across conditions.

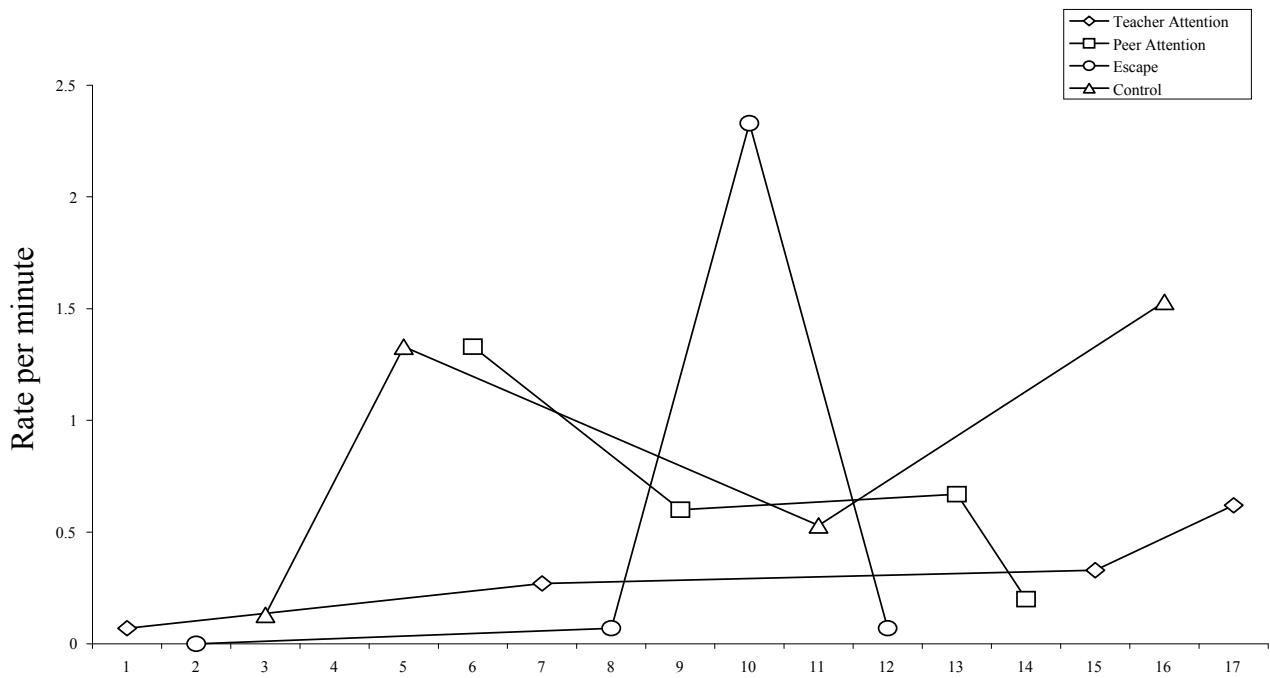


Figure 3-4. Student A: Responses per minute disruption across conditions.

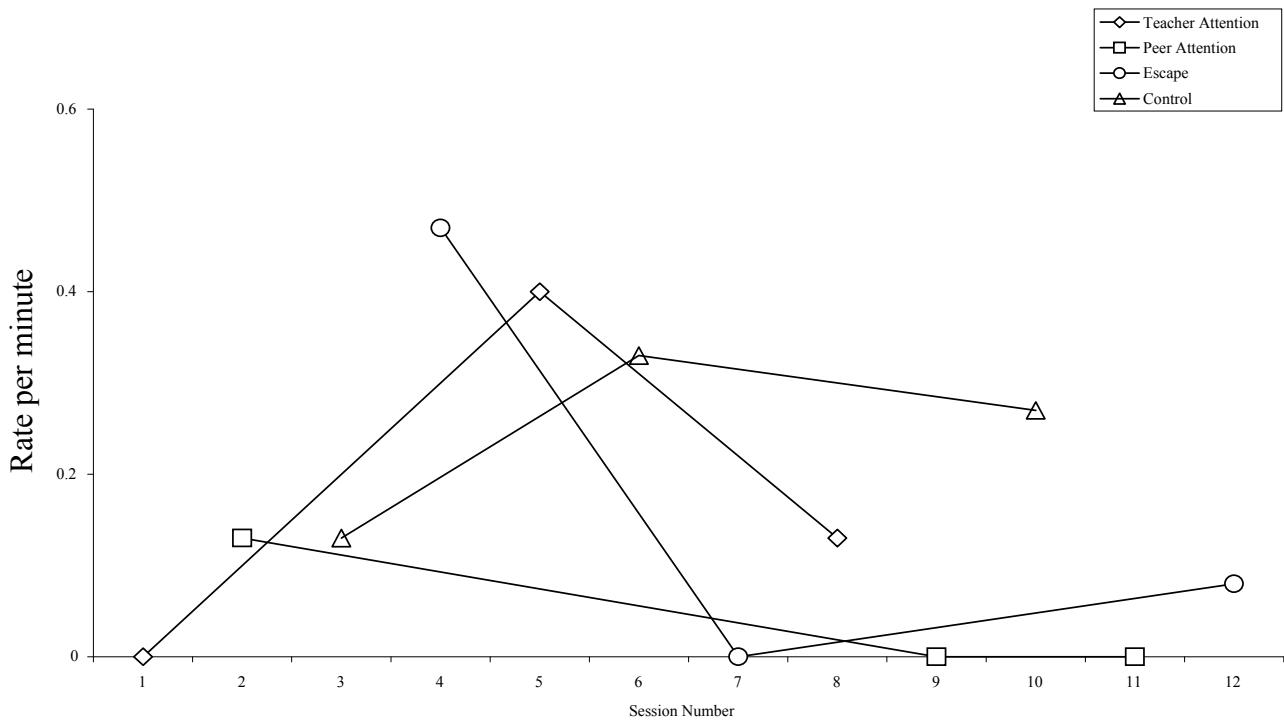


Figure 3-5. Student B: Responses per minute raising hand/appropriate teacher speech across conditions.

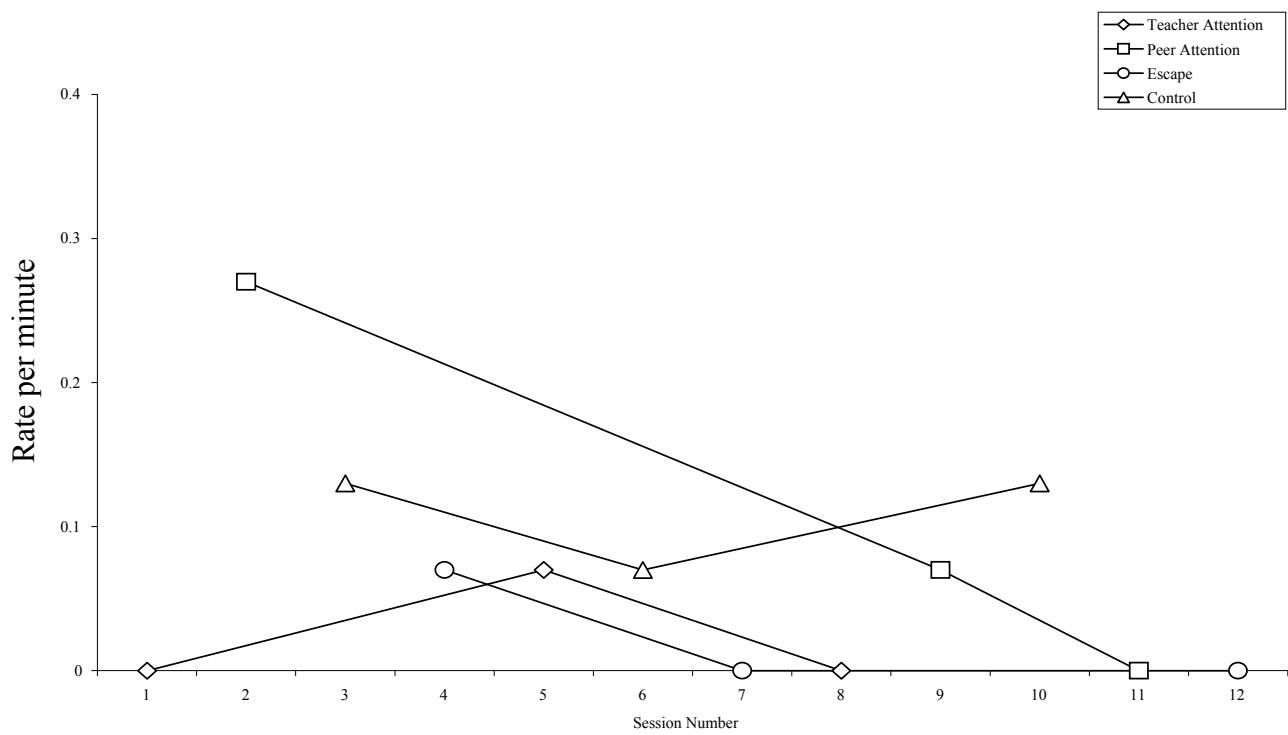


Figure 3-6. Student B: Responses per minute appropriate peer speech across conditions.

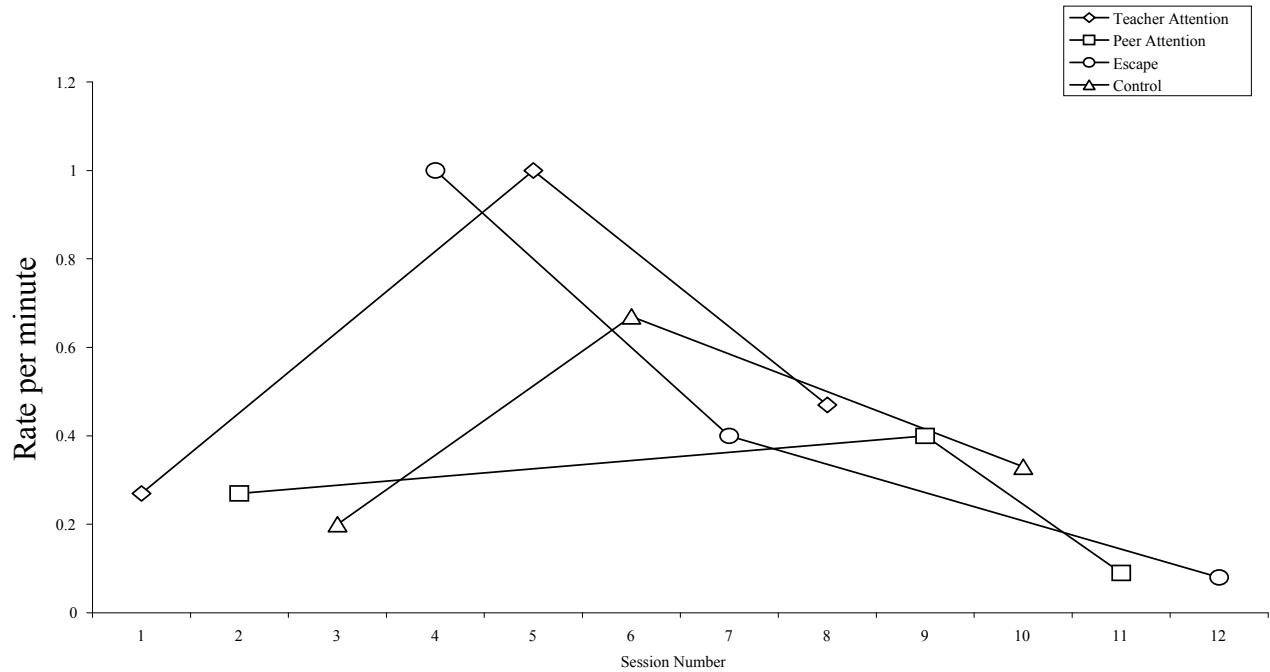


Figure 3-7. Student B: Responses per minute disruption across conditions.

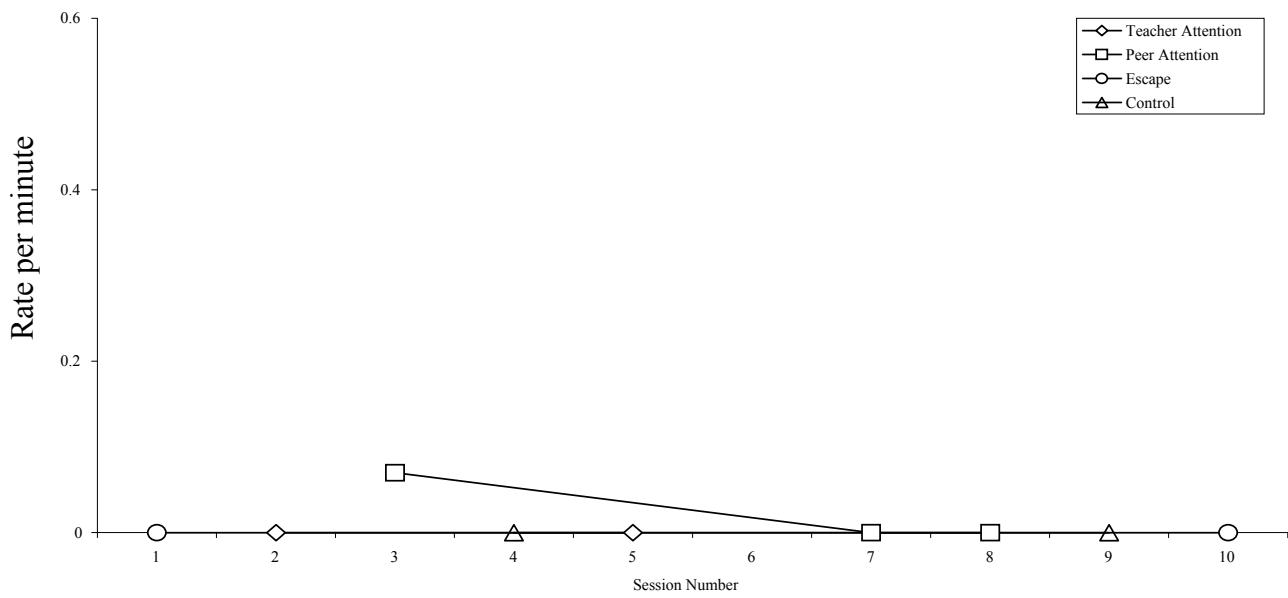


Figure 3-8. Student C: Responses per minute raising hand across conditions.

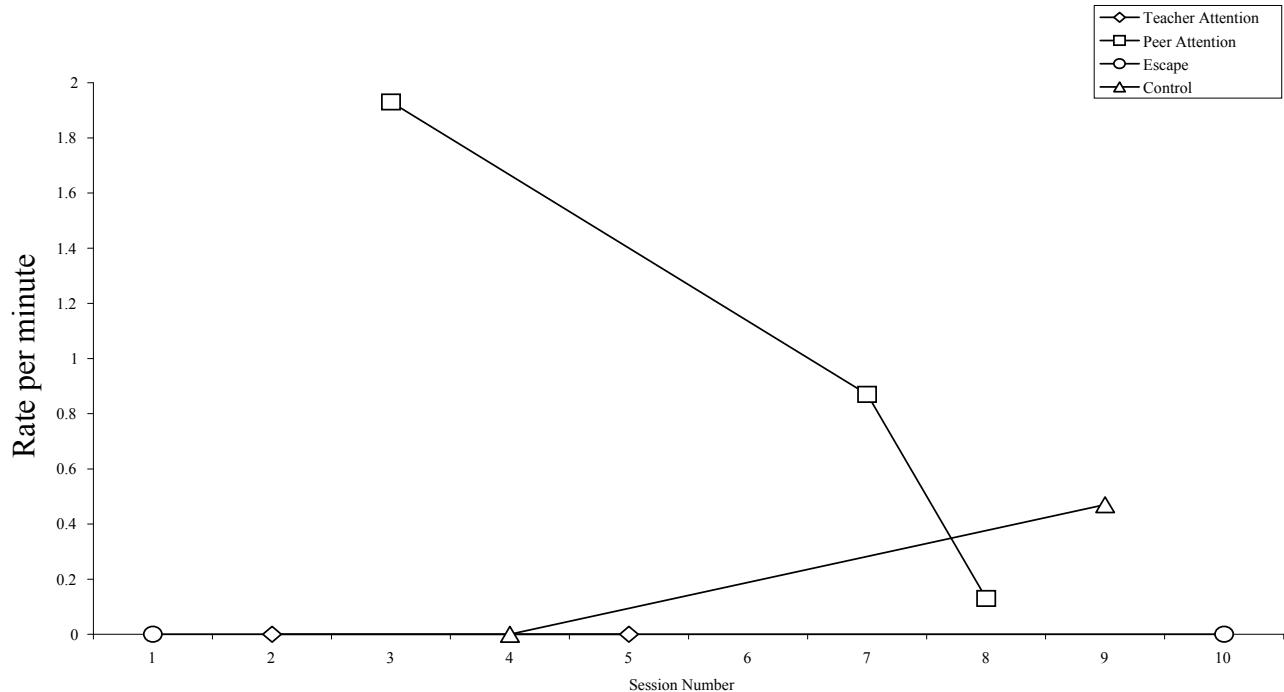


Figure 3-9. Student C: Responses per minute appropriate peer speech across conditions.

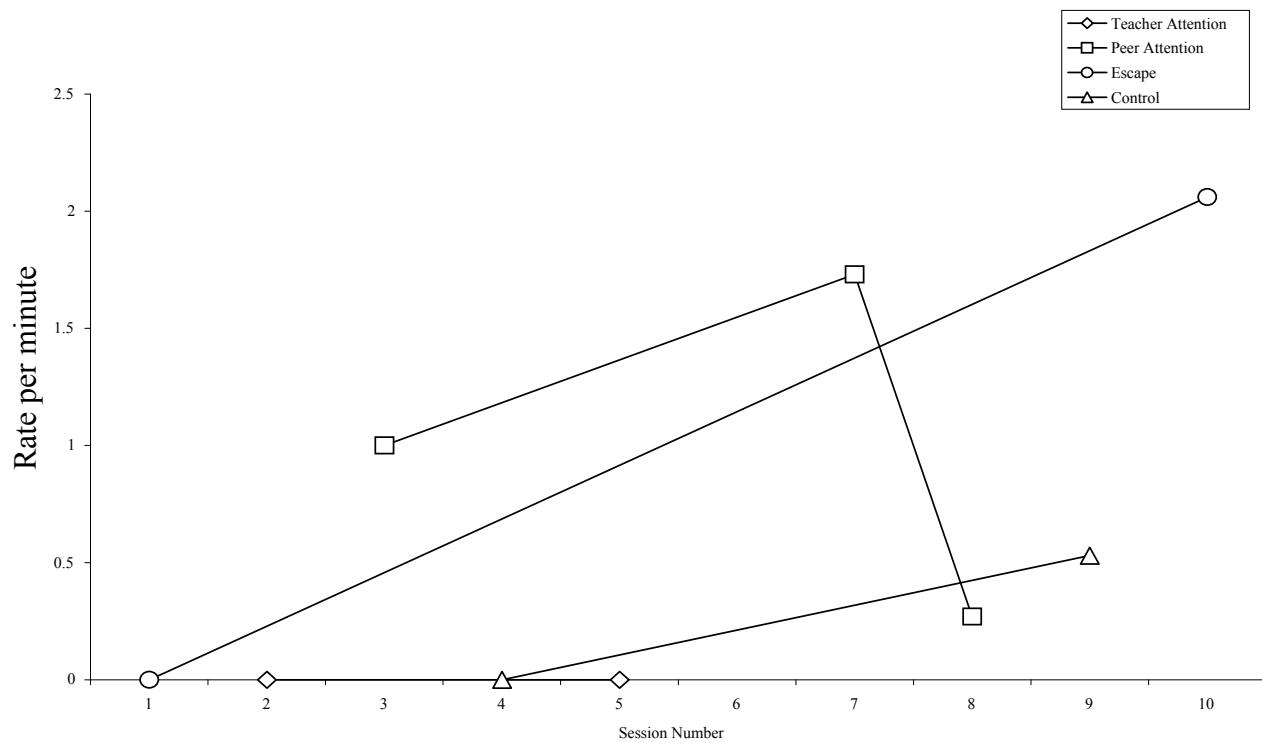


Figure 3-10. Student C: Responses per minute disruption across conditions.

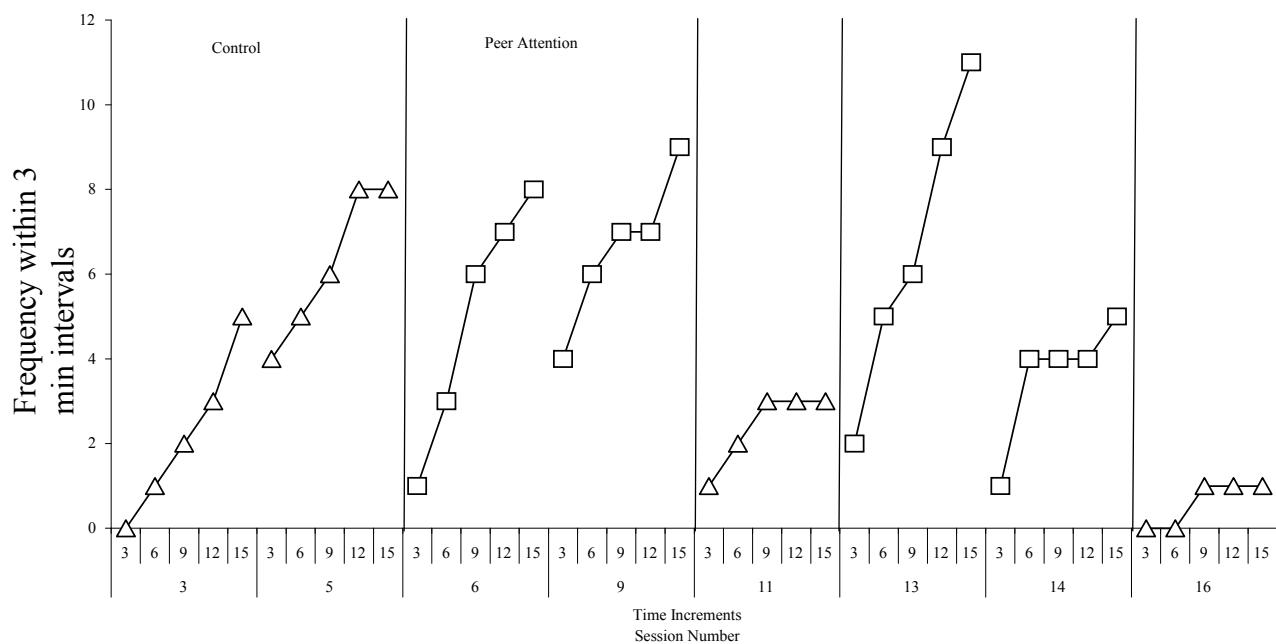


Figure 3-11. Student A: Frequency of appropriate peer speech; within sessions analysis of Control and Peer Attention

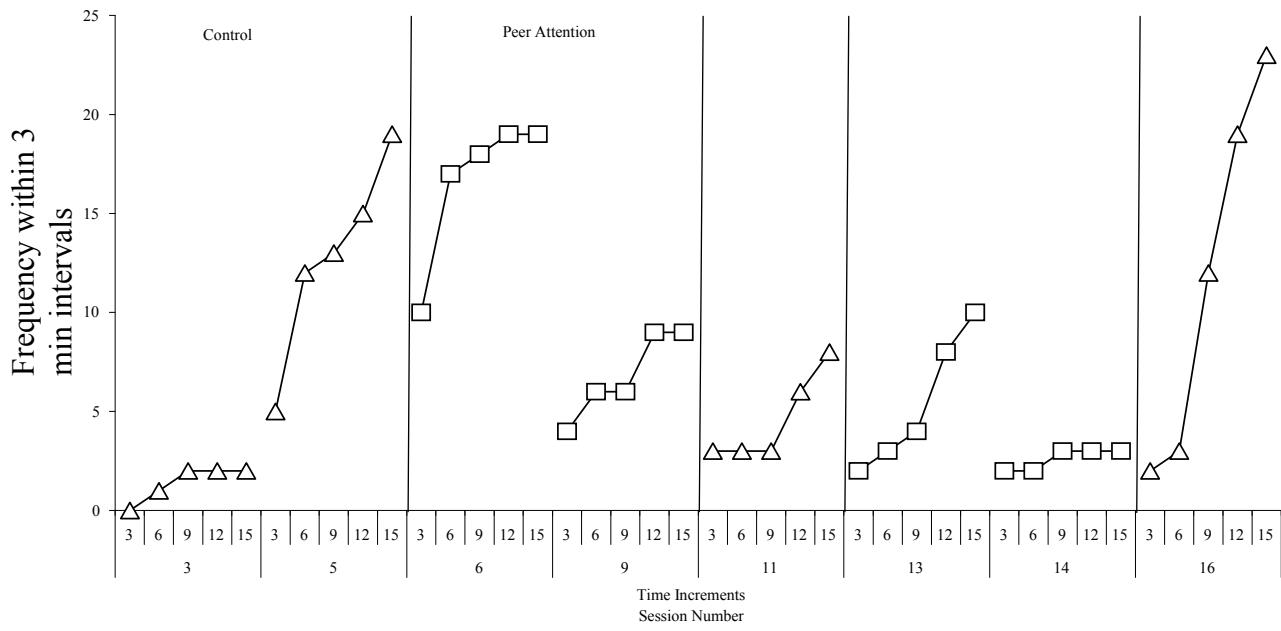


Figure 3-12. Student A: Frequency of disruption; within sessions analysis of Control and Peer Attention

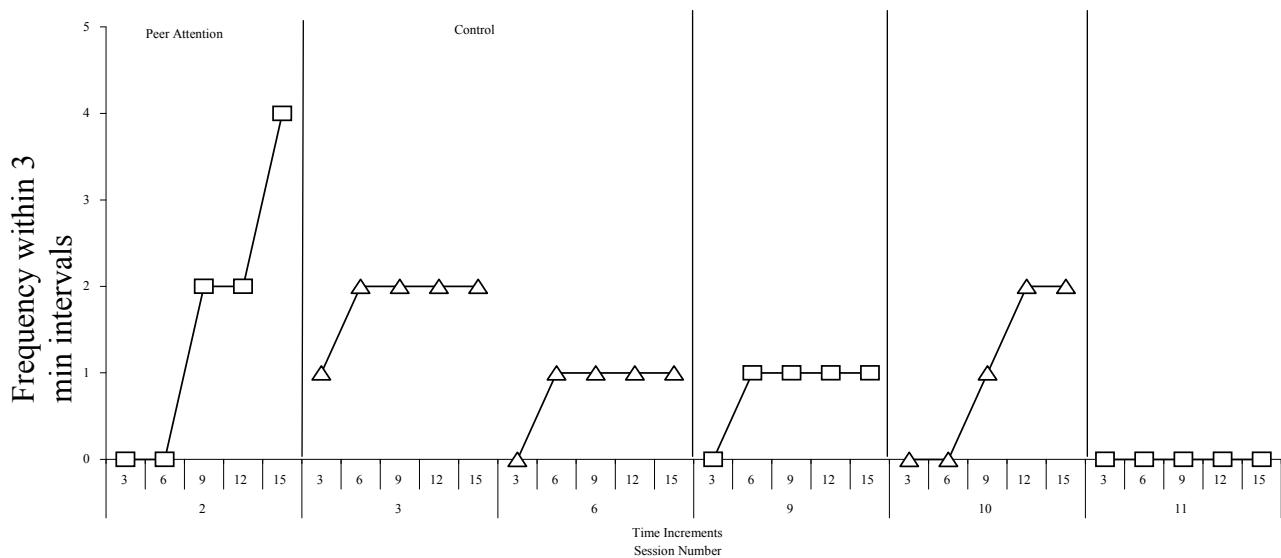


Figure 3-13. Student B: Frequency of appropriate peer speech; within sessions analysis of Control and Peer Attention

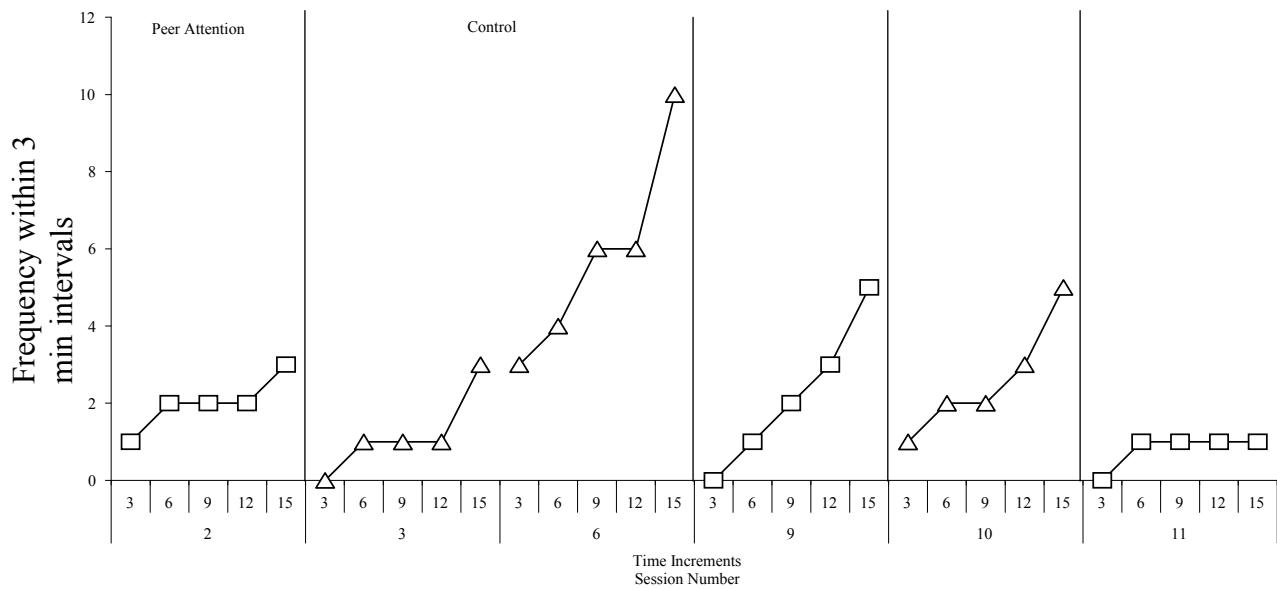


Figure 3-14. Student B: Frequency of disruption; within sessions analysis of Control and Peer Attention

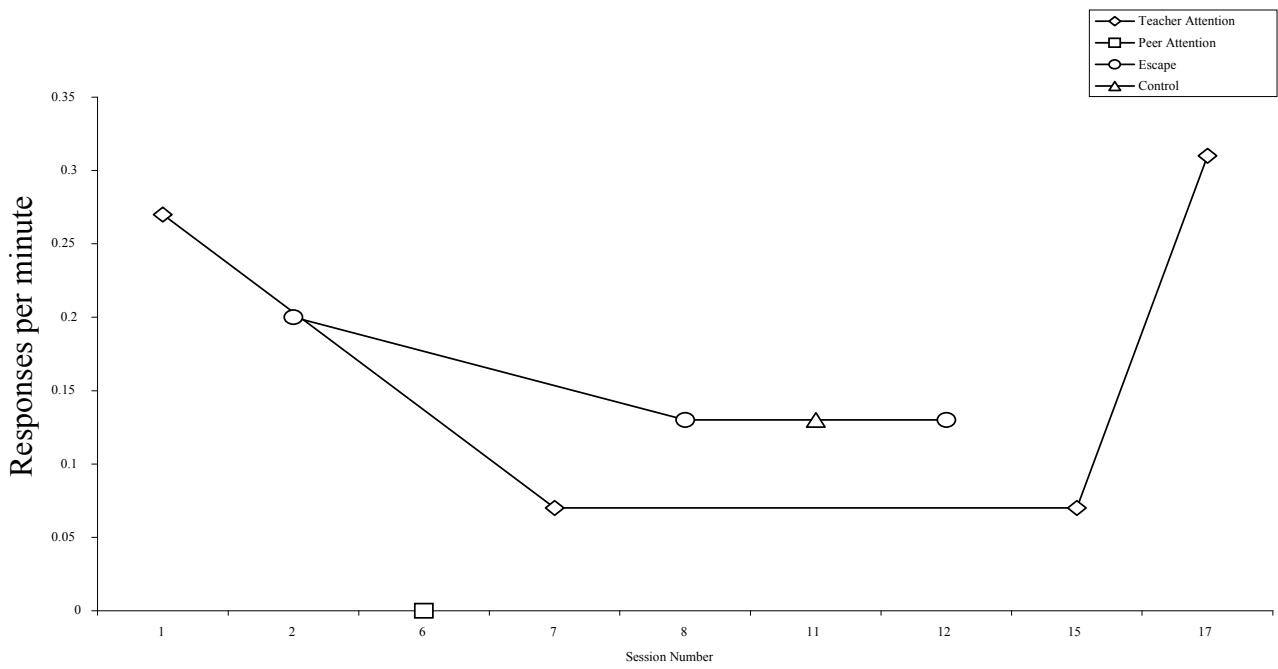


Figure 3-15. Student A: Raising hand during sessions of 100% procedural integrity.

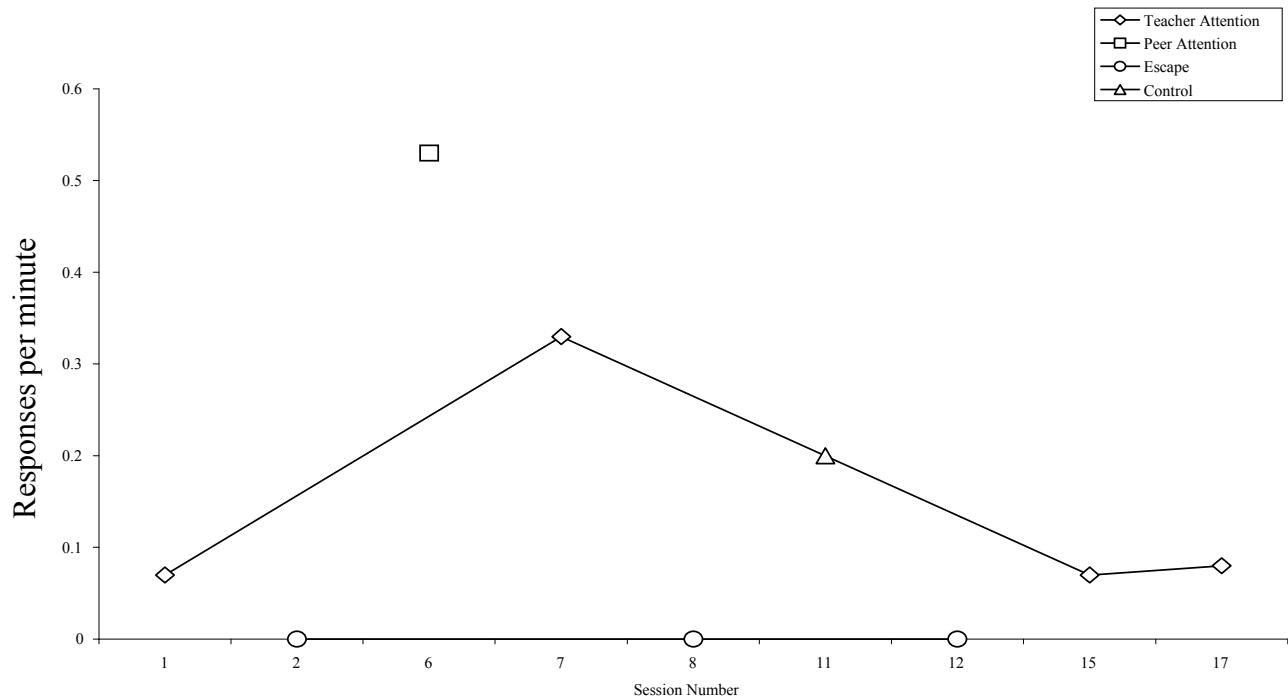


Figure 3-16. Student A: Appropriate peer speech during sessions of 100% procedural integrity.

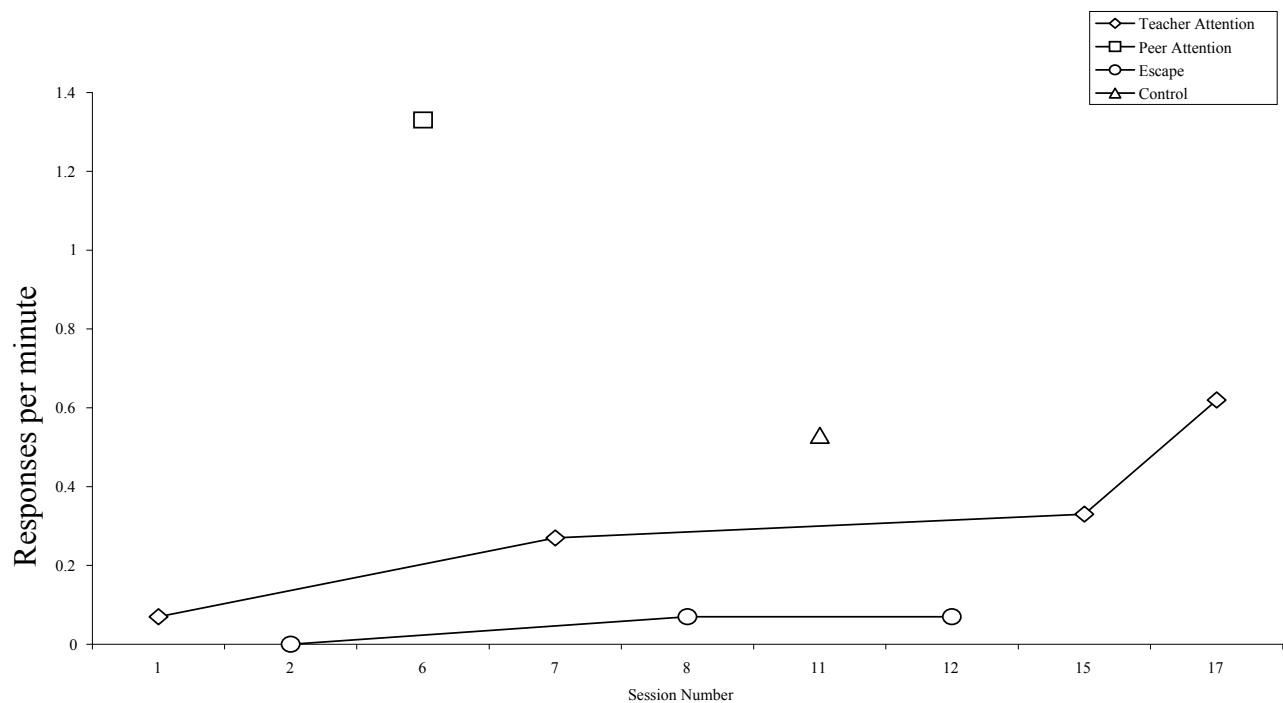


Figure 3-17. Student A: Disruption during sessions of 100% procedural integrity.

Table 3-1. Student A FA results; Teacher A procedural integrity

Participant	Session	Condition	Rate of responding	Teacher integrity	Weaknesses in integrity
A	1	TA	RH .27/min APS .07/min Disr .07/min	100%	n/a
	2	Escape	RH .2/min APS 0/min Disr 0/min	100%	n/a
	3	Control	RH 0/min APS .33/min Disr .13/min	95%	Noncontingent Teacher Attention (NCTA)
	5	Control	RH 0/min APS .6/min Disr 1.33/min	85%	NCTA; Prompting peer to deliver NC attn (NCPA)
	6	PA	RH 0/min APS .53/min Disr 1.33/min	100%	n/a
	7	TA	RH .07/min APS .33/min Disr .27/min	100%	n/a
	8	Escape	RH .07/min APS 0/min Disr .07/min	100%	n/a
	9	PA	RH .07/min APS .6/min Disr .6/min	85%	Prompting peer to deliver contingent attn.
	10	Escape	RH .07/min APS .07/min Disr 2.33/min	92%	Correctly end escape interval; prompting peer not to respond to APS
	11	Control	RH .13/min APS .2/min Disr .53/Min	100%	n/a
	12	Escape	RH .13/min APS 0/min Disr .07/min	100%	n/a
	13	PA	RH .27/min APS .67/min Disr .67/min	87%	Prompting peer to deliver contingent attn.; ignoring RH
	14	PA	RH .07/min APS .33/min Disr .2/min	91%	Prompting peer not to deliver NCPA
	15	TA	RH .07/min APS .07/min Disr .33/min	100%	n/a

Table 3-1. Continued.

Participant	Session	Condition	Rate of responding	Teacher integrity	Weaknesses in integrity
	16	Control	RH 0/min APS .07/min	98%	NCTA
	17	TA	RH .31/min APS .08/min	100%	n/a

Table 3-2. Student B FA results; Teacher B procedural integrity

Participant	Session	Condition	Rate of responding	Teacher integrity	Weaknesses in integrity
B	1	TA	RH 0/min APS 0/min Disr .27/min	100%	n/a
	2	PA	RH .13/min APS .27/min Disr .27/min	64%	Correctly prompting peer to ignore disruptions; ignoring RH
	3	Control	RH .13/min APS .13/min Disr .2/min	39%	NCTA, prompting peer to deliver NCPA, to ignore APS
	4	Escape	RH .47/min APS .07/min Disr 1/min	79%	Ignoring RH; prompting peer not to provide NCPA
	5	TA	RH .4/min APS .07/min Disr 1/min	93%	Ignoring disruptive behavior
	6	Control	RH .33/min APS .07/min Disr .67/min	59%	Ignoring RH; providing NCTA; prompting peer to provide NCPA, to ignore APS
	7	Escape	RH 0/min APS 0/min Disr .4/min	57%	Ignoring disruptive behavior
	8	TA	RH .13/min APS 0/min Disr .47/min	100%	n/a
	9	PA	RH 0/min APS .07/min Disr .4/min	100%	n/a
	10	Control	RH .27/min APS .13/min Disr .33/min	58%	Ignoring disruptive beh; delivering NCTA, prompting peer to deliver NCPA, to ignore APS
	11	PA	RH 0/min APS 0/min Disr .09/min	100%	n/a
	12	Escape	RH .08/min APS 0/min Disr .08/min	67%	Ignoring RH

Table 3-3. Student C FA results; Teacher C procedural integrity

Participant	Session	Condition	Rate of responding	Teacher integrity	Weaknesses in integrity
C	1	Escape	0 in all conditions	100%	n/a
	2	TA	0 in all conditions	100%	n/a
	3	PA	RH .07/min APS 1.93/min Disr 1/min	89%	Prompting peer to respond to APS
	4	Control	0 in all conditions	94%	Providing NCTA
	5	TA	0 in all conditions	100%	n/a
	7	PA	RH 0/min APS .87/min Disr 1.73/min	98%	Correctly prompting peer to ignore disruption
	8	PA	RH 0/min APS .13/min Disr .13/min	100%	n/a
	9	Control	RH 0/min APS .47/min Disr .53/min	97%	Correctly prompting peer to provide NCPC when scheduled
	10	Escape	RH 0/min APS 0/min Disr 2.06/min	100%	n/a

Table 3-4. Teachers' responses to social validity interview (1= not at all, 7 = very)

Question	Teacher A	Teacher B	Teacher C
How comfortable were you with this study?	5	6	4
How time intensive was it for you to participate in the training sessions?	4	5	5
How comfortable were you with the training sessions?	6	6	6
How comfortable did the peer appear with the assessment (FA) sessions?	6 (beginning) 3 (end)	6	6
How time intensive was it for you to participate in the assessment (FA) sessions?	6	5	1
How disruptive was this assessment to your classroom?	4 (beginning) 6 (end)	2	4
How much did you have to change your classroom routine to allow the target student and peer to participate in the assessment procedures?	5	3	4
How disruptive was this assessment to the other peers in the classroom?	4 (beginning) 6 (end)	2	1
How enthusiastic would you be about another student participating in this assessment?	6	6	5
How willing would you be to participate in this assessment again?	5	4	3
How useful was the information obtained from this assessment to you and the target student?	7	5	5
Overall, how would you rate this assessment procedure?	6	6	4

CHAPTER 4 DISCUSSION

Overview of Findings

The results of this study indicate that functional analyses may be implemented with high integrity by middle school teachers working with students who demonstrate disruptive behavior. Further, those analyses may yield useful information relevant to intervention planning for students who demonstrate persistent disruptive behavior in the classroom setting. However, there are limitations inherent to this research study and the application of its findings to general education middle school settings, both of which are discussed below. Finally, additional questions raised by this research are also discussed.

Teachers' Procedural Integrity

Two of the three participating teachers (Teachers A and C) demonstrated consistent implementation of FA conditions during both the training and classroom implementation phases. Teacher B was able to demonstrate acceptable levels of integrity during the training phase, but did not maintain those levels during all conditions of the classroom-based FA. Prior investigations of the ability of persons unfamiliar with the theoretical principles of FA to conduct such assessments (Iwata et al., 2000; Moore et al., 2002; Wallace et al., 2004) have not examined the ability of educators to carry out a multielement design within the classroom setting. This study did so by measuring teachers' implementation of four conditions (three experimental, one control) in an extended multielement design. With the exception of Teacher C, the results are consistent with those obtained during previous research in this area (Iwata et al., 2000; Moore et al., 2002; Wallace et al., 2004), in that teachers did not demonstrate acceptable levels of procedural integrity until after training and performance feedback procedures were introduced. However, Teacher B's data pattern is discordant with the results obtained by Wallace et al.

(2004), in that she did not continue to demonstrate high levels of integrity during the classroom-based FA. The provision of performance feedback at an average of every four sessions was sufficient to maintain levels of integrity demonstrated by Teachers A and C, but did not appear to be sufficient for Teacher B. Continuing investigations of performance feedback schedules have suggested that there is individual variability in the amount of performance feedback necessary to sustain teachers' integrity to a selected procedure (Witt et al., 2004; Codding et al., 2005).

Students' Behavior during FA

Each student's response to the FA conditions differed significantly. Responding demonstrated by Student A demonstrated evidence of a possible reinforcing effect of contingent peer attention for appropriate behavior, and unexplained effects of peer attention on disruptive behavior. Though low levels of integrity make it impossible to draw conclusions from Student B's FA results, rates of disruption suggest a possible treatment effect of the extinction procedures present during all FA conditions. Finally, Student C's data is also unable to be interpreted due to threats to its internal validity, but early rates of responding, demonstrated prior to the apparent interfering effect of severe reactivity, indicate the possibility of a peer attention function. Throughout each FA, there appeared to be uncontrollable, intervening factors affecting the outcomes of the FA that were not specific to the FA manipulations themselves.

Consultation and Social Validity

Consultation with each teacher differed greatly, in ways that may have been reflected in the data generated by each teacher/student dyad. However, the use of consultation procedures appeared to support the implementation of FA within the classroom. It greatly benefitted the collection of information relevant to each target student, especially during the initial planning stages. Furthermore, it provided a context through which to work with each teacher in order to support his/her procedural integrity. As has been noted, performance feedback was a successful

strategy in maintaining the procedural integrity demonstrated by two out of three participating teachers. Social validity data obtained from all three teachers indicate that they found the procedure to be useful, and would be especially useful at the beginning of the academic year. Teachers mentioned concerns about the benefit of the information obtained relative to the level of intrusiveness required to conduct an FA. However, they all stated that they would support similar future efforts to be taken with a student demonstrating disruptive classroom behavior. Across participants, social validity ratings indicated that they found this assessment strategy to acceptable and relevant to the behaviors demonstrated by each target student. Student reactivity as an indicator of social validity suggests that students were uncomfortable with the assessment procedures, particular the length of the FA and the presence of an observer.

Interpretation of Findings

There are several findings that merit further explanation. First, teacher integrity was not consistent across all participants. The lack of integrity throughout much of the classroom FA implemented by Teacher B requires additional consideration. Second, though FA findings provided additional evidence regarding the best means through which to intervene with each student's behavior, a lack of clarity pervaded all of the FA data, which must be examined in greater detail. Finally, though general procedural guidelines of BC were followed, each consultation differed considerably. The variations in consultative interactions, and their possible effects on the results of this investigation, should be reviewed.

Teacher/Student A

With respect to the level of collaboration present during consultation, patterns of interaction, and self-reported satisfaction with the research, consultation outcomes with Teacher A were positive. The highly collaborative nature of the consultation between Teacher A and the researcher appeared to benefit other aspects of the assessment. First, Teacher A's levels of

integrity were high throughout the evaluation. Additionally, the FA data obtained with Student A provided strong evidence of the reinforcing effects of peer attention on his rates of appropriate classroom behavior. Of the three students assessed in this investigation, the FA results obtained with Student A are arguably the most clear. However, despite this clarity, there were some unexplained rates of responding during the FA. Most notably, Student A was more likely to demonstrate disruption during peer attention and control conditions. Prior to the FA, Teacher A hypothesized that disruptive behavior was maintained by peer attention; appropriate behavior was also maintained by peer attention during the FA. Thus, it is perhaps surprising that Student A should continue to engage in disruptive behavior when a) peer attention was contingently available for appropriate behavior, as in the peer attention condition, and b) peer attention was continuously and noncontingently available during the control condition. One possible explanation for this effect may be that the presence of some form of peer attention, no matter the contingency, served as either an antecedent to disruption or a discriminative stimulus within the classroom environment. If peer attention functioned as a discriminative stimulus for the availability of more peer attention, the implication would be that the environmental conditions established during the FA were not consistent and/or powerful enough to overcome the influence of Student A's learning history. In this case, once peer attention was delivered once, contingently or not, it served as an indicator that more peer attention would be available for additional behaviors. Because disruption was most likely the most frequently reinforced response in Student A's learning history, that behavior would be the most likely to occur under similar conditions. Indeed, this appears to be the case. Figure 3-11 indicates that while appropriate behavior came under the stimulus control of peer attention conditions and responded to the lack of contingent reinforcement during control conditions; in Figure 3-12 the opposite is

true. Disruption during peer attention conditions was extinguished over time; however, during control conditions disruption continued to occur at a high rate. This finding suggests that some element(s) of the control condition was similar enough to Student A's previous classroom experiences to continue to induce high rates of disruption.

As previously stated, the FA conducted with Student A was the only assessment in this investigation to produce consistent findings. However, there is, nevertheless, some variability within those findings. The impact of Teacher A's integrity on the variability of findings is unknown. For example, the apparent reinforcing function of peer attention on appropriate peer speech is further evidenced in Figure 3-16, in which the one peer attention session conducted at 100% integrity produced clearly elevated rates of appropriate peer speech during that condition. Similar findings are observed regarding disruption in Figure 3-17. Thus, the impact of procedural integrity remains unknown. Given that those conditions that produced the highest rates of responding, peer attention and control, were also those in which procedural integrity was typically lower than 100%, it is perhaps worth noting that the outcomes of the FA conducted with Student A may have been different had procedural integrity been equal to 100% during all sessions.

Teacher/Student B

The lack of a strong consultative relationship, especially early on in the assessment process, appears to have been detrimental to the outcomes obtained with this dyad. One way to improve this relationship might have been to modify the performance feedback procedures to involve more frequent contact and additional rehearsal opportunities. For example, performance feedback sessions could have been carried out following each class period in which FA sessions were conducted. Additional rehearsal would have involved similar types of role playing practice as was used during the baseline and training phases of the assessment. Conducting additional

meetings with more intensive feedback procedures may have also served to strengthen the consultative relationship. Typically, during meetings, Teacher B was noted to be forthright about her concerns and direct in her statements. Thus, providing her with additional opportunities to discuss issues of concern may have engendered greater trust and collaboration between her and the researcher.

Other modifications to the performance feedback procedures that may have been helpful include providing written performance feedback and using negative reinforcement procedures (DiGennaro, Martens, & McIntyre, 2005). Using such a procedure, written feedback would have been provided to Teacher B after each day of running sessions. Additionally, a meeting would be held to review missed steps unless the procedures were implemented with 100% integrity. This approach has been shown to successful in increasing and maintaining teachers' integrity to a chosen procedure, and may be more successful than other forms of performance feedback alone (DiGennaro, Martens, & Kleinmann, 2007). This procedure may have been especially useful with Teacher B in communicating that her professional time was valued by the researcher throughout the consultation process, and in providing her with a permanent record of her performance to be referred back to prior to additional sessions.

Because consultation with Teacher B was not successful in maintaining high levels of procedural integrity throughout the FA process, additional consideration should be given to the importance of establishing a collaborative relationship with some consultees prior to conducting such an assessment. Indeed, the volume of the research literature concerning teachers' assessment and intervention integrity demonstrates the ubiquitous nature of concerns about teachers' ability to modify classroom procedures in order to change student behavior. The findings of this study suggest that not only is it crucial for teachers to demonstrate strong

integrity in order to implement classroom-based FAs, but that it may be the nature of consultation itself that inhibits performance during measures of classroom integrity. Perhaps, with some teachers, it is necessary to engage in an extended period of problem identification and goal-setting, in order to ensure that consultant and consultee have a shared sense of the problem and agreed upon procedures for how to assess and address it. In some cases, this may involve teachers collecting data about students' and/or their own classroom behavior. For others, it may involve several more focused conversations about the problem behavior and a critical examination of the classroom factors affecting it. In most cases, it is perhaps both strategies that would be effective. While this may appear to be a more time-intensive approach to problem-solving, greater time spent on understanding the problem and goals for consultation at its inception would almost certainly yield more efficient assessment and intervention procedures, as well as require fewer modifications to the procedure once it is implemented. Most importantly, however, spending additional time in developing collaboration prior to classroom use of any procedure is likely to improve consultative outcomes, including the integrity with which procedures are implemented by teachers.

Teacher/Student C

As with Student B, the FA outcomes obtained with Student C were inconclusive. However, the implementation of the FA with Teacher and Student C was unique. Two issues appeared to affect the outcomes of this assessment: the absence of collaboration between the researcher and Teacher C, and the severe reactivity demonstrated by Student C. The latter factor appears to have had the most direct effect on the student behaviors observed during the FA. While some reactivity was demonstrated by all three student participants in this study, Student C was the only student participant whose reactivity appeared to affect her rates of both appropriate

and disruptive behaviors during the FA. There are several strategies that may have reduced reactivity to this procedure.

The researcher did not interact with each of the target students in an effort to limit reactivity. However, each student demonstrated some degree of reactivity nonetheless. A better strategy might have been to make students aware of the researcher's presence and the FA conditions following the student PII. This would have provided each student an opportunity to ask questions about the process, address his/her concerns, and gain a better sense of his/her enthusiasm (or lack thereof) for the research itself. Further, as students inevitably became aware of the FA conditions and the fact that the researcher was observing them, it may have been most prudent to obtain target students' assent to participate as well. Though there is debate about the degree to which children and adolescents can truly give informed assent, and the conditions under which it may be acceptable not to obtain assent (such as in the intended use of this FA procedure), there are alternative protocols that may be used to measure assent. These include allowing informed dissent, in which the student is informed of the research procedures and can withdraw participation, and careful monitoring by participating caretakers to determine whether a particular behavior might indicate dissent (Lewis, 2002). Certainly, in the case of Student C, the introduction of aggressive behavior in Session 10 was taken as an indicator of dissent. However, more careful monitoring of her behavior prior to that session, or having presented her with the option of withdrawing participation, might have prevented the aggression she demonstrated toward the peer confederate.

Theoretical Implications of Findings

The primary goal of this research project was to determine whether general education middle school teachers are able to implement FA with high integrity within the classroom setting. The results indicate that while it is possible for teachers to learn these procedures under

carefully controlled conditions, it may not always be successfully applied to the classroom itself. Further, the quality of the consultative relationship through which teachers learn and are supported in conducting FA may impact their procedural integrity. However, it is unknown which and to what extent specific elements of consultation are needed in order to produce high integrity to FA procedures. Performance feedback was enough to sustain procedural integrity for all teachers during training, and for two teachers during the classroom FA. This finding is in accordance with previous investigations of performance feedback that also found that procedure was highly effective during consultation. However, it also indicates that there are some limitations to the use of performance feedback, perhaps the most important of which is that a certain form or frequency of delivery may not be universally applicable, even though certain consultations are similar in nature. Instead, it may be necessary to rely on problem identification statements and early consultative interactions in order to determine an optimal form and intensity of providing feedback.

A secondary goal of this study was to determine the degree to which FA conducted in classroom settings yielded meaningful results regarding students' behavior. Modifications made to the FA procedure in order to make it amenable to a middle school classroom setting highlight relevant conceptual issues. Appropriate behavior, rather than disruptive behavior, was reinforced during the FA in order to circumvent the logistical and acceptability issues that would be raised by temporarily increasing rates of disruption within an instructional setting. However, this modification was made according to the assumption that differing topographies of behavior are maintained by the same reinforcing functions (Borrero and Vollmer, 2002; Frea and Hughes, 1997). This assumption has been experimentally examined in recent research with adolescents demonstrating severe problem behavior in an institutional setting, and support has been found for

the continuity of function across topographies of behavior (Perrin, Sellers, Badley, & Marcus, 2008; Sellers & Strickland, 2008). Thus, for Student A, the finding that appropriate peer speech was maintained by peer attention would argue that disruption is also maintained by peer attention. Indeed, this statement was supported by Teacher A's statements. But elevated rates of disruption during peer attention conditions, as previously discussed, indicate that other phenomena were exerting an unknown influence on disruption that was not measured in this investigation. Thus, this study provides some evidence in support of the theoretical assumption that function is the same across different behaviors. However, the current findings also suggest that two or more variables may be operating to maintain sophisticated behavioral repertoires, especially in typically developing students, in ways that were not measured by this investigation.

Practical Implications of Findings

In nearly thirty years of use, FA has been conducted with many individuals and the various settings in which they are served. The many ways in which it has been applied is a clear and convincing argument for the utility of FA in determining behavioral function and planning intervention. However, this does not mean that FA is necessarily applicable to all contexts, individuals, or behaviors. In applying FA to general education settings, one of the goals of this research was to evaluate how useful this procedure was to an environment in which it had previously not been introduced. In doing so, the utility of the outcomes must be critically analyzed in terms of its efficiency, required effort, and impact upon the instructional environment.

In this study, the results of the FA were only conclusive for one student. Furthermore, the results of conducting FA with Students B and C highlight key issues that appeared to affect the FA outcomes. Specifically, those are that consultation must exist, be highly collaborative, and carefully monitored in order for teachers to implement FA contingencies within the classroom

context. Furthermore, students' own reactivity to observation and experimental manipulation must be considered and accounted for. These factors indicate that, while FA may produce valid outcomes for some students, the time, effort, and skill involved remains extremely high. Taken together, this is a strong indication that school-based assessments of problem behavior should be carefully planned to achieve an optimal balance of these factors. While it is possible to implement FA in a classroom environment, it may not always be feasible or necessary. The demands upon teachers' time and instructional resources must be considered relative to a particular student's needs. In some cases, a descriptive FBA may be sufficient to develop intervention goals and effective strategies (Ervin et al., 1998). When students' behavior does not respond as expected to function-based interventions developed on the basis of descriptive observations, experimental observations may be merited.

The goal of BC is not only to improve outcomes for the consultee and client relative to the current problem, but to strengthen the ability of the consultee to approach similar future problems (Bergan & Kratochwill, 1990). In this research, teachers' ability to handle future problems was only indirectly measured during the social validity interview by asking about skills they acquired through participation in the FA. Nevertheless, each teacher provided important insight into the potential of these procedures to impact his/her future classroom management. Perhaps unsurprisingly, Teacher A indicated the greatest number of skills attained, and reported that she had already been thinking about ways in which to apply FA principles to her classroom. Teacher B indicated some generalization of these skills, while Teacher C reported only that he had learned the importance of ignoring disruption for some students. Each of the skills reported by the three participating teachers, however, was theoretically consistent with the principles of behavior analysis, from which FA is derived. Thus, several important observations can be made.

First, Teacher C demonstrated extremely high levels of procedural integrity, but did not subsequently indicate a thorough understanding of the application of FA principles to his classroom. On the contrary, Teacher B had variable levels of procedural integrity within the classroom, but reported having acquired several new management strategies as a result of her participation. Teacher A demonstrated both high integrity and extensive self-reported generalization of theoretical knowledge. Variables that might be impacting these results include the amount of time spent conducting the FA (Teacher A participated in the highest number of training and classroom implementation sessions; Teacher C participated in the least), years teaching (Teacher B may have augmented her understanding of FA principles, despite her low levels of integrity, by applying previous classroom experience), and, of course, the level of collaboration present during consultation. The high level of collaboration between Teacher A and the researcher undoubtedly resulted in the highest amount of procedural knowledge transferred, despite the effort to standardize the transmission of knowledge through performance feedback sessions.

The level of theoretical knowledge teachers gained offers a potential alternative to the time-consuming process of conducting an extended multi-element FA. Thus, it is an important adjunct to an investigation that assesses the use of these procedures in general education classrooms. If teachers' abilities to respond to problem behavior can be addressed through consultation that focuses on the acquisition of relevant classroom management skills, concerns related to the feasibility of conducting an FA may be circumvented. Providing teachers with this knowledge may also remediate the noted limitations in implementing interventions derived from descriptive functional assessment techniques, including the possibilities of low intervention integrity or that the identified function is incorrect (Ervin et al., 2001; Wood et al., 2007). If

teachers have a more general understanding of the founding principles of FA, such as behavioral function and schedules of reinforcement, their ability to accommodate function-based intervention is likely to be increased.

Lastly, the present findings suggest important ramifications for practitioners acting as consultants in school settings. Not only should consultants carefully consider the type of assessment to be conducted and the level of theoretical knowledge that might be beneficial to teachers, but they should also evaluate the consultation itself over the course of its development. Of course, careful monitoring is a hallmark of BC (Bergan & Kratochwill, 1990). However, the interaction processes through which positive consultation outcomes are attained are as yet poorly understood (Graham, 1998). The findings of this study suggest that the level of collaboration remains an important indicator of the success of a given consultation, despite the presence of highly technological procedures for sustaining intervention/assessment procedures (e.g., performance feedback). Thus, consultants should pay close attention the consultees' response to each phase of the consultation, and be prepared to make modifications as necessary.

Limitations

Teachers' Procedural Integrity

One of the primary limitations inherent to the study of teachers' procedural integrity was introduced by the use of a multiple baseline design. While this design is preferable for investigations in which the independent variable cannot be removed once it has been implemented (e.g., training in FA cannot be removed), there may be difficulty in demonstrating internal validity of the experimental manipulation. Experimental control is demonstrated when changes in the dependent variable only occur upon the introduction of the independent variable (Kazdin, 1982). Thus, repeated demonstrations of this change provide evidence for the effect of the independent variable in a multiple baseline design. In this investigation, Teacher C

demonstrated a change in observed levels of procedural integrity during the baseline phase, prior to the introduction of training and performance feedback. Though this effect has previously been explained, it nevertheless poses a threat to the internal validity of the results observed with Teacher C. Furthermore, the simultaneous implementation of training and performance feedback does not reveal which element is primarily responsible for the change observed in the integrity demonstrated by Teachers A and B. It may be that one of the two elements is the responsible variable, or that each has a specific potential impact upon teachers' procedural integrity during FA.

As has been discussed, the impact of consultation upon teacher integrity outcomes is unknown. There appears, however, to have been an effect of the consultative relationship on the integrity with which teachers implemented FA procedures. Thus, the assessment of training and performance feedback in terms of its ability to sustain procedural integrity in middle school classrooms was affected by an intervening variable. Perhaps if the study had been conducted with teachers with whom a highly collaborative consultative relationship had already been established, the results would be clearer as to the precise impact of training and performance feedback. Conversely, given that consultation interactions have the potential to interfere with prolonged classroom-based research, perhaps the implementation of training, and particularly performance feedback, could have been more sensitive to the preferences of each consultee.

Students' Behavior During FA

It is unknown to what degree all sources of reinforcement were controlled during FA conditions. Thus, observed effects on student behavior may have been compromised by the presence of other sources of reinforcement throughout the FA. While noncontingent attention was measured specific to the condition being implemented, other sources of noncontingent attention were not. For instance, there is no way to state with certainty that there was not peer

attention available during teacher attention conditions. While anecdotally it was noted that most sources of reinforcement appeared to be well-controlled, the lack of systematic observation of that phenomenon precludes any certainty. Another classroom factor that was not systematically observed was the presence/absence of other preferred peers. Because the specific behavior of peers other than the confederate was not observed, it is unknown to what degree specific behaviors demonstrated by specific peers might have influenced target students' behavior. Given the high rate of responding observed during peer attention conditions, this may have had a strong impact on demonstrated rates of behavior.

Other potential influences on target student behavior include classroom activity, distal antecedents and consequences for target behavior, and the strength of each student's previous contact with the learning environment. While efforts were made to control classroom activity by specifying the type of academic demands that should be present during each condition, ultimately teachers selected the activity during which FA conditions would be conducted. As previously discussed, during peer attention and control conditions, peer speech was typically permitted throughout the classroom. Thus, activity type necessarily differed (it was an activity students could work on together), and the overall volume of the classroom was greater. Furthermore, the impact of events occurring prior to or after target behaviors, but outside of the observation period, is also unknown. Had the target students been more directly involved in the assessment process, they could have been interviewed about related experiences before and/or after the observation periods. For example, prior to running sessions, students could have completed a brief written interview about events occurring that day that may have affected their classroom behavior (e.g., disagreement with a friend, being teased, bad grade, being sick, etc.). Occasional interviews might also have measured any distal consequences related to participation

in FA conditions, such as being teased by peers, not being able to interact with preferred peers during conditions, or any effects on work completion. This may have supplied information allowing the FA conditions to be modified in order to produce higher internal and social validity (as evaluated by the participating students). Finally, the results also indicated that students' previous experiences in each classroom environment were not completely controlled for within the FA. This may have been most evident in rates of disruption, which was not fully eradicated even when appropriate behavior was maintained by reinforcers available within the FA.

Implications for Future Research

In relation to the points described above, there are several areas of additional research indicated by this study. More knowledge is needed about the conditions under which this procedure is most useful, including form and frequency of problem behavior, teacher characteristics, and the nature of the consultative relationship within which the procedure is supported. If this procedure is only useful for frequent and persistent forms of disruption, other assessment protocols remain to be developed for infrequent, highly intense classroom disruptions (e.g., severe aggression; Sterling-Turner et al., 2001). As teacher characteristics, including consultative goals and perceptions of problem behavior, appeared to impact the integrity with which teachers implemented the procedures, additional information is needed about the conditions under which teachers are likely to demonstrate high integrity. Finally, there remains a dearth of research delineating the technology through which strong consultative outcomes are obtained. While this investigation extends the literature by describing the intensity of consultation necessary to train teachers in a sophisticated assessment procedure, it remains to be seen whether high levels of collaboration can be obtained in all consultations, or whether that is necessary in order to obtain strong outcomes in all cases. Indeed, Teacher C demonstrated high procedural integrity in the absence of any collaborative relationship. However, despite

demonstrating slightly more collaboration during consultation, Teacher B did not demonstrate high integrity in the classroom FA. Thus, additional inquiry is needed into what conditions merit that time is spent on developing high levels of collaboration, and when adherence to the procedures is sufficient to produce positive outcomes for target students. Finally, some estimate is needed of the relative contribution of both training and performance feedback to teachers' sustained procedural integrity. If one procedure is adequate to improve and maintain integrity during FA, valuable time may be saved for both teachers and consultants in the implementation of FA.

The FA of students' behavior during this study also raised important questions regarding the nature of classroom behavior. First, the issue of how appropriate peer speech and disruption are related remains to be adequately explained. It may be that these behaviors have developed as a response class for students who demonstrate disruptive behavior, which may be functionally defined as behaviors that can be used to access peer attention. If that is the case, then it may be harder to extinguish rates of disruption while simultaneously increasing appropriate peer speech than if each behavior operated independently of one another (Sajwaj, Twardosz, & Burke, 1972). More research into the relation of appropriate and inappropriate forms of seeking peer attention by general education adolescents is clearly merited, as this will undoubtedly remain a primary reinforcer for much of this population. The high rates of responding observed during peer attention conditions also raise other questions. For example, when interviewed, all of the participating teachers indicated that they used or had tried reprimanding the target student in an effort to decrease disruption. Furthermore, such attempts were unsuccessful, indicating that they either had reinforcing effects upon the behavior or did not adequately address other sources of reinforcement. One related area for research would be to investigate whether the provision of

teacher attention contingent upon the demonstration of problem behavior increases the opportunity for students to receive peer attention. For example, it may be that during periods of teacher reprimands or conversations about problem behavior, disruptive students also receive increased amounts of peer attention. This peer attention could take the form of teasing, laughing, or otherwise commenting on the target student's behavior. An investigation of this phenomenon in a classroom setting might apply conditional probability technology to measure the contingent relationship of teacher reprimands and peer attention, thus providing a more inclusive measure of the multiple forms of reinforcement potentially maintaining problem behavior. Finally, the variety in rates of responding across conditions demonstrated by Students A and B may also indicate that those students' behavioral repertoires were not adequately supported by the artificial division of sources of reinforcement. Indeed, the maintenance of elevated rates of responding suggest that the control condition might be more representative of the classroom context, in which there are often many forms of noncontingent reinforcement, than other conditions examined in this investigation. Further, it is likely that a variety of sources of noncontingent reinforcement during that condition acted as discriminative stimuli for multiple behavioral topographies maintained by all or several available reinforcers. Thus, perhaps future FA research in middle school classrooms should include not only individual assessments of behavioral function, but conditions in which multiple potential functions are combined (e.g., escape-to-attention; Mueller et al., 2005).

Summary

The results of this investigation indicate that FA is a useful and feasible procedure for identifying behavioral function in general education middle school settings. Further, using FA to assess desired appropriate behaviors led to increases in the observed rate of appropriate classroom behavior, and participating teachers viewed these procedures as acceptable for their

classrooms. However, FA and the consultative procedures necessary to sustain it in the classroom setting is extremely time intensive, and may not decrease rates of disruption demonstrated by participating students. Additional consideration should be given to the consultative context in which these procedures must occur, including factors likely to affect the integrity with which teachers implement FA. Relatedly, careful consideration should be given to the appropriateness of this procedure, given the identified problem behavior, student cooperation, teacher goals, and available resources. Additional research is needed to identify the conditions under which these procedures are most likely to be successful, as well as to the unique characteristics of middle school classrooms that likely affect the rate of disruptive behavior demonstrated by students.

APPENDIX A
TEACHER RECRUITMENT FLYER

Attention Middle School Teachers:

Are you interested in treating problem behaviors in your classroom with a focus on appropriate behavior?

Would you like to be able to design and use interventions specific to your classroom?

Would you like to work in consultation with another professional?

If so, please contact Liz McKenney. I am working on a research project to develop a consultative process to assess and treat problematic behavior in middle school classrooms. And I would love to work with you! You can contact me at:
elwmcken@ufl.edu

This research has been approved by the Institutional Review Board at University of Florida and by P.K. Yonge. Participation in this project is completely voluntary.

APPENDIX B
INFORMED CONSENT – TEACHER PARTICIPANTS

Dear Educator-

I am a graduate student at the University of Florida, under the supervision of Dr. Nancy Waldron, conducting research on ways to help teachers identify and intervene with problematic behavior in their classrooms. The purpose of the study is to develop an in-class procedure you and other teachers can use to identify and address factors that may help to support appropriate behavior for students who disrupt the classroom. The results of this study have the potential to help you address problem behaviors you currently see in your classes, and they may help future teachers address problematic behavior in their classrooms. I am asking you to participate because you have been identified as an educator interested in expanding your teaching techniques for addressing behavioral problems.

As part of this study, I'd like to ask you to identify students in your class who regularly demonstrate disruptive behaviors you'd like to address. Students you nominate will then be asked for consent from their parents to participate. For each participating student, I will work with you to identify the problematic behaviors you'd like to replace with an appropriate behavior. For example, you may indicate that disruption (talking without raising one's hand, talking while the teacher is talking) is a problematic behavior for a student in your class. Together, we will set up several conditions through which to evaluate what may be maintaining, or reinforcing, each student's behavior. In each of the different conditions, we will identify ways to provide reinforcers for the occurrence of a desired and appropriate replacement behavior. These reinforcers are not unlike those that naturally occur in classrooms, and include your attention to the identified student, a peer's attention to the identified student, and allowing the identified student to escape from an academic activity for a short period of time. The rate of each student's behavior, or number of times they engage in the behavior during a certain amount of time, will be calculated. We will then compare behavior in each of the conditions to determine which condition best supports appropriate behavior. I understand that teachers face a variety of challenges and unforeseen dilemmas every day. Therefore, I will observe in your classroom as you are conducting these sessions, in order to determine how easily you can implement these conditions within your classroom. I will also provide and seek feedback about ways in which we can improve the analysis.

This study has the potential to provide you with valuable information about how students' behavior is maintained and can be altered. When we are able to establish the function of students' behaviors, we can work together to develop interventions to improve individual student behavior. There are no known risks to the participants.

For the protection of your privacy, your name will be changed when the data is reported. Data generated by you about each student will be kept confidential to the extent provided by the law. You have the right to withdraw consent for your participation at any time without consequence.

If you have any questions about this research protocol, please contact me at 246-1480, or my faculty supervisor, Dr. Waldron, at 392-0723, ext. 232. Questions or concerns about your rights

as a research participant may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611, (352) 392-0433.

Elizabeth L.W. McKenney, M.Ed.

I have read the procedure described above. I voluntarily give my consent to participate in Elizabeth McKenney's study of teacher-led, in-class analyses of appropriate behavior. I have received a copy of this description.

Participant signature

Date

APPENDIX C
TEACHER PARTICIPANT DEMOGRAPHIC FORM

The following is a brief set of questions asking about your experiences as a teacher. Completing this form provides me with information about your previous experience that may be helpful in designing and describing this research. Thank you for taking the time to complete this form accurately.

Teacher's Name:

Degrees Earned:

Additional Certifications Earned (if any):

Years of Full-Time Teaching (after internship):

Preschool –

Kindergarten –

1st grade –

2nd grade –

3rd grade –

4th grade –

5th grade –

6th grade –

7th grade –

8th grade –

9th grade –

10th grade –

11th grade –

12th grade –

Please describe any previous experience working with students with disruptive behavior and/or disabilities:

Have you ever participated in a classroom-based assessment of a student's problematic behavior?
If so, please describe this experience.

APPENDIX D

INITIAL STUDENT PARTICIPANT IDENTIFICATION FORM

This research project is intended to investigate classroom factors that increase appropriate behavior in students with disruptive behavior. The following questions are intended to identify students with whom this research would be appropriate. Please fill out one form for each student in your class(es) who has exhibited disruptive behavior so far in the course of this academic year. Disruptive behavior should include behaviors that have persisted thus far this year and for which you might have sought additional support or are considering seeking such support.

Your name - _____

Grade level - _____

Student's name - _____

Period - _____

- 1) Please describe each form of the disruptive behavior that the student exhibits (e.g., yelling out, talking to peers, etc.):

2)

Does the behavior occur at any time during the period more than another? Are there any "triggers" for the behavior? If so, please describe them.

- 3) Please describe ALL the contexts in which you have seen the behavior occur (e.g., math instruction, group work, lunchroom, hallway, etc.). If there is more than one form of disruption, please list the contexts for each individual behavior.

- 4) To your knowledge, has this student demonstrated these or similar behaviors during past school years? If so, please describe what you know of the behavior prior to this year.

APPENDIX E
INITIAL OBSERVATION FORM

Student:	Behavior 1 -	Antecedents & Consequences	Behavior 2 -	Antecedents & Consequences
Minute 0 - 1				
Minute 1 - 2				
Minute 2 - 3				
Minute 3 - 4				
Minute 4 - 5				
Minute 5 - 6				
Minute 6 - 7				
Minute 7 - 8				
Minute 8 - 9				
Minute 9 -10				
Minute 10 - 11				
Minute 11 - 12				
Minute 12 - 13				
Minute 13 - 14				
Minute 14 - 15				

Notes (classroom activity, peer behavior, other):

APPENDIX F
INFORMED CONSENT – PARENTAL CONSENT FOR STUDENT PARTICIPANTS

Dear Parent/Guardian-

I am a graduate student at the University of Florida, under the supervision of Dr. Nancy Waldron, conducting research on ways to help teachers identify and intervene with problematic behavior in their classrooms. The purpose of the study is to develop an in-class procedure teachers can use to identify and address factors that may help support appropriate behavior in the classroom. The results of this study are intended to be individualized to the needs of your child, and may also help future students. I'd like to ask for your permission for your child to participate in this research.

Your child's teacher will identify one or more problematic behaviors they'd like to address. For example, teachers might indicate that disruption (talking without raising one's hand, talking while the teacher is talking) is a problematic behavior for some students. The teacher will set up several conditions through which to evaluate what environmental factors maintain, or reinforce, an appropriate alternative behavior. In each of the different conditions, the teacher will offer a different form of reinforcement for appropriate behavior. These will include the teacher's attention, another student's attention, or a brief break from a challenging class activity. The number of times your student demonstrates the behavior during a certain amount of time will be counted. Teachers will then compare behavior in each of the conditions to determine which condition best supports your student's appropriate behavior. I will observe as teachers are conducting these studies, in order to determine how easily teachers are able to administer the conditions and evaluate the behavior.

This study has the potential to provide you and your child's teacher with useful information about problematic behaviors in the classroom and how to encourage appropriate behavior. In addition, information provided by this type of research can provide a direct link to interventions designed for your child. There are no known risks to your child.

For the protection of your family's privacy, students' names will be changed when the data is reported. Data generated by the teachers about each student will be kept confidential to the extent provided by the law. Participation or non-participation in this study will not affect your child's grades or placement in any programs. You have the right to withdraw consent for your child's participation at any time without consequence.

If you have any questions about this research protocol, please contact me at 246-1480, or my faculty supervisor, Dr. Waldron, at 392-0723, ext. 232. Questions or concerns about your child's rights as a research participant may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611, (352) 392-0433.

Elizabeth L.W. McKenney, M.Ed.

I have read the procedure described above. I voluntarily give my consent for my child,
_____, to participate in Elizabeth McKenney's study of teacher-led, in-class
analyses of problematic behavior. I have received a copy of this description.

Parent / Guardian

Date

APPENDIX G

PEER CONFEDERATE IDENTIFICATION FORM

Please identify 3 – 5 students whom you think would be appropriate for inclusion in this project to deliver attention to the target student contingent on the target appropriate behavior.

- | | |
|----|----|
| 1) | 4) |
| 2) | 5) |
| 3) | |

For each of these students, please consider the following yes/no questions:

Student #: _____ 1 2 3 4 5

Is this student
mature enough to
participate in this
study?

Does he/she have what
you would consider
strong social skills?

Does he/she follow
directions well?

Is he/she friends with
the target student?

APPENDIX H
INFORMED CONSENT – PARENTAL CONSENT FOR PEER CONFEDERATES

Dear Parent/Guardian-

I am a graduate student at the University of Florida, under the supervision of Dr. Nancy Waldron, conducting research on ways to help teachers identify and intervene with problematic behavior in their classrooms. The purpose of the study is to develop an in-class procedure teachers can use to identify and address factors that may help to support appropriate classroom behavior. One of the teachers with whom I am working, _____, has identified your child as someone who consistently follows classroom instructions and demonstrates supportive social behaviors, who may be able to assist us in our evaluation. With your permission, I'd like to ask your child to help in this research project by acting as a peer confederate.

The problem behaviors of identified students may involve such behaviors as disruption (talking out of turn or without raising one's hand) or out-of-seat behavior. One of the ways in which we will be evaluating student behavior will be through providing peer attention for targeted appropriate behavior. For example, when an identified student raises his/her hand instead of shouting out, a peer confederate might ask, "Do you need help?" By providing attention to the identified student for appropriate behavior, we are able to determine if peer attention is a motivating factor in the behavior of the target student. This provides teachers with a direct link to intervening with problem behavior for that individual student.

Your child will be asked to provide attention to the identified student when he/she engages in one or more appropriate "goal" behaviors. The attention that your child provides will be brief, and will not negatively affect his/her academic engagement. Your child's teacher will carefully plan the evaluation sessions during class time so that no students' ability to learn is negatively impacted.

For the protection of your family's privacy, students' names will be changed when the data is reported. Data generated by the teachers about each student will be kept confidential to the extent provided by the law. Participation or non-participation in this study will not affect the students' grades or placement in any programs. You have the right to withdraw consent for your child's participation at any time without consequence. There are no known risks to your child.

If you have any questions about this research protocol, please contact me at 246-1480, or my faculty supervisor, Dr. Waldron, at 392-0723, ext. 232. Questions or concerns about your child's rights as a research participant may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611, (352) 392-0433.

Elizabeth L.W. McKenney, M.Ed.

I have read the procedure described above. I voluntarily give my consent for my child,
_____, to participate in Elizabeth McKenney's study of teacher-led, in-class
analyses of problematic behavior. I have received a copy of this description.

Parent / Guardian _____ Date _____

I have read the procedures above. I give my assent to participate in Ms. McKenney's study of
classroom behavior. I have received a copy of this description.

Student Signature _____ Date _____

APPENDIX I
PROBLEM IDENTIFICATION INTERVIEW - TEACHER

(Adapted from Bergan & Kratochwill, 1990)

Teacher's Name: _____ Date: _____

Identified Student: _____

The purpose of this interview is to discuss the problem behavior that _____ exhibits and begin to identify when/why it happens and what other behavior might be more appropriate instead. Please feel free to stop me and ask questions along the way. I want to make sure I understand what's happening in your classroom, so don't hesitate to clarify when necessary.

- 1) I believe you've told me that you're concerned about _____, is that the behavior that you'd like to discuss? What other behaviors, if any, are you concerned about?
- 2) Behavior specification (What does he/she do when he/she is being disruptive?)
 - a) Prioritize each behavior on a scale of 1 to 10 in terms of disruptiveness to classroom functioning.
- 3) Clarify that this is a problem behavior that occurs in the physical setting of the classroom.
- 4) During which classroom activities, if any, is the problem behavior particularly likely to occur?
- 5) What typically happens immediately before the problem behavior occurs?
- 6) What do peers do/say immediately before the problem behavior occurs?
- 7) What typically happens immediately after the problem behavior occurs?
 - a) What are you likely to do?
 - b) What do peers typically do?
- 8) Summarize and validate sequential conditions, record teacher's responses.
- 9) Query each potential function of student behavior (teacher attention, peer attention, escape) while restating sequential conditions. (Example: You've said that Johnny shouts out during independent work, and that you typically take him aside and talk to him about why doing so is inappropriate. Do you think that Johnny might shout out to get your attention? His peers' attention? Away from the assignment?)
- 10) How often does this behavior occur during a typical class period? Upper limit? Lower limit?
- 11) How long does it last (if relevant)? Upper limit? Lower limit?

- 12) Summarize, validate, and confirm frequency and duration, record teacher's responses.
- 13) What other behavior(s) could _____ use that would be appropriate for your classroom? Is this a behavior that he/she has demonstrated previously?

- 14) Students sometimes demonstrate problem behavior because it is easier and/or faster than appropriate behavior. Is the selected appropriate behavior roughly equal to the problem behavior in terms of ease and efficiency?

Thanks for taking the time to discuss this with me. I think we've come to a good shared understanding of this student's behavior and what appropriate behavior he/she could use in its place. Our next steps are to go through a brief training and then begin the assessment to see what conditions will help to elicit appropriate behavior from this student. (Discuss any scheduling issues that need to be covered).

Do you have any questions for me?

APPENDIX J
PROBLEM IDENTIFICATION INTERVIEW - STUDENT

(Adapted from Bergan & Kratochwill, 1990)

Student's Name: _____

Date: _____

Participating Teacher: _____

Subject: _____

I want to talk to you a little bit today because some of your teachers are concerned about your behavior during class. Specifically, they've said that you are sometimes disruptive to the classroom. You're not in trouble, and **your parents and teachers have given their permission for me to talk with you**. I just want to talk to you a little bit about what happens in class when you're disruptive, so that we can help your teacher to work with you **on improving your behavior, is that okay?**

So we're going to discuss this problem behavior and try to think about when/why it happens and what other behavior might be more appropriate instead. Please feel free to stop me and ask questions along the way. I want to make sure I understand what's happening in your classroom, so don't hesitate to clarify when necessary.

- 1) What do you typically do that is disruptive to the classroom? (If student answers vaguely or says, "nothing," follow with, "When your teachers talk to you about your behavior, what do they say is the problem?")
- 2) Is there anything else that you do during class that may be problematic?
- 3) What specifically are you doing when you typically get into trouble?
- 4) Thinking about (identified subject area), are there certain activities or assignments that are hard or frustrating for you? What about when you're working by yourself? In groups? (Write down all of student's responses for this prompt).
- 5) Is there anything that could happen right before you _____ that might make you especially likely to do that?
- 6) Is there anything that your peers might do that might make you likely to _____?
- 7) What typically happens right after you _____?
 - a) What does Mr./Ms. _____ do?
 - b) What do your peers typically do?
- 8) Summarize and validate sequential conditions, record student's responses.
- 9) Query each potential function of student behavior (teacher attention, peer attention, escape) while restating sequential conditions. (Example: You've said that you usually stand up and walk around during independent work, and that your teacher yells at you and tells you to go back

to your seat. Meanwhile, your friends will talk to you if you talk to them, even though they're working. Do you think that when you do this what you really want is to get Mr./Ms.

_____ 's attention? To be able to talk to your friends? To get out of having to do the assignment?)

10) How often does this behavior occur during a typical class period? Upper limit? Lower limit?

11) How long does it last (if relevant)? Upper limit? Lower limit?

12) Summarize, validate, and confirm frequency and duration, record student's responses.

13) What else could you do instead that would be appropriate for your classroom? Is this something that you know how to do?

14) Sometimes we do something we're not supposed to because it's easier and/or faster than something more appropriate. Is the appropriate behavior we just talked about roughly equal to _____ (identified problem behavior) in terms of how hard or easy it is to do?

Thanks for taking the time to discuss this with me. I think I've got a better understanding of your classroom behavior and what might be helpful for you.

Do you have any questions for me?

APPENDIX K

FUNCTIONAL ANALYSIS DESCRIPTIONS FOR TEACHER TRAINING

(Adapted from the methods section according to Iwata et al., 1982/1994)

Teacher Attention. This condition is designed to identify behavior that occurs as a function of attention from the teacher. The teacher and student are in the classroom together during academic instruction. Teachers begin the session by placing an instruction card on the desk of the target student which states, “We’re going to work on some material you’re familiar with. Please do your best work. If you need help, let me know by (insert target behavior) and I’ll come talk to you.” Having explained the activity to the class, the teacher sits down at his/her desk or engages in some other activity that gives the appearance of not providing attention to the class. Each time the target student engages in the identified behavior, the teacher will walk to his/her desk and begin speaking with the student. Teachers should speak to the student as they normally would (e.g., “Do you need help?” “What are you having trouble with?”), and then provide any necessary help. Teachers will speak to the student for approximately 15 seconds using such statements before returning to their previous activity. If the student engages in the target behavior again, the teacher should remain with the student for another 15 seconds. No contingencies, including teacher attention, should be provided for instances of disruptive behavior.

Peer Attention. This condition is designed to identify behavior that occurs as a function of attention from peers. At the start of each session, peers should be privately reminded of the session condition by the teacher. Peers will be prompted to listen to teacher instructions in order to know when to begin the session. Teachers begin the session by placing an instruction card on the desk of the target student which states, “We’re going to work on some material you’re familiar with. Please do your best work. You’re allowed to talk quietly during this activity, so if you need help from a friend, you may ask (peer confederate) for it by (insert target behavior).” Each time the target student engages in the identified behavior, the identified peer(s) will speak with the student. Peers will be instructed to speak to the target student as they normally would given the specific behavior, and speak to the student for 15 seconds before returning to their own work. If the student engages in the target behavior again, the peer will speak with the student for another 15 seconds. If the peer does not respond to the target student’s identified behavior, the teacher should remind him/her to do so by tapping him/her on the shoulder or quietly saying, “(Peer’s name), I think (target student) needs your help.” Teachers should only provide this directive once per instance of target student identified behavior. Similarly, if the peer is providing attention to the target student independently of the target student’s behavior (e.g., the target student hasn’t asked for peer help), the teacher should prompt the peer to return to his/her work. No contingencies, including peer attention, should be provided for instances of disruptive behavior by the target student.

Escape from task demands. This condition is designed to identify behavior that occurs as a function of avoidance of difficult academic material. Teachers will begin this session by placing an instruction card on the desk of the target student which states, “We’re going to work on material that may be difficult. Please do your best work. If you need a short break, you may ask for one by (insert target behavior). I will let you know that you can take a break by (using an identified signal behavior).” Each time that the target student engages in the identified

appropriate behavior, the teacher should indicate to the student that he/she can take a break. Breaks can consist of sitting quietly, putting one's head down, walking around the room, or sitting in the teacher's office. At the conclusion of one minute, the teacher indicates that the break is over and that the student should return to work. If the student again engages in the identified behavior, another break should be provided. No contingencies, including breaks, should be provided for instances of disruptive behavior.

Control condition. The control condition is designed to observe the occurrence of behavior under conditions in which reinforcement is not contingent on instances of the identified appropriate behavior, but the student does not experience the antecedents making such behavior likely to occur. Thus, teacher attention and peer attention are available and the presented task is not difficult. In this condition, teachers begin the session placing an instruction card on the desk of the target student that states, "We're going to do some work you're all familiar with. I'll be coming around to talk to you as you may need help. (Peer confederate) will also check in with you from time to time. Please work quietly and do your best work." No contingencies will be provided for instances of disruptive behavior or the target appropriate behavior, but teacher and peer attention should be provided every one minute. Participating peer confederates will be quietly instructed to provide such attention prior to the session, and should be prompted to do so by the teacher if they are not providing attention every minute.

APPENDIX L
OPERATIONAL DEFINITION FORM

Participating Teacher: _____ Subject: _____

Student's Name: _____

Inappropriate Behavior 1:

Operational definition:

Examples:

Non-examples:

Inappropriate Behavior 2:

Operational definition:

Examples:

Non-examples:

Inappropriate Behavior 3:

Operational definition:

Examples:

Non-examples:

Appropriate Behavior 1:

Operational definition:

Examples:

Non-examples:

Appropriate Behavior 2:

Operational definition:

Examples:

Non-examples:

Appropriate Behavior 3:

Operational definition:

Examples:

Non-examples:

APPENDIX M

FUNCTIONAL ANALYSIS DATA COLLECTION FORM

Noncontingent Delivery of Reinforcement

Min:		Min:	

APPENDIX N
SOCIAL VALIDITY FORM

Date: _____

Teacher: _____

Target student: _____

I am examining the acceptability of my research procedures, and would appreciate your honest feedback. Using the scales below, please complete each item by circling the number that best indicates how you feel about this study. Thank you for your assistance.

1. How comfortable were you with this study?

Not at all Comfortable	Neutral	Very Comfortable				
1	2	3	4	5	6	7

2. How time intensive was it for you to participate in the training sessions?

Not at all Intensive	Neutral	Very Intensive				
1	2	3	4	5	6	7

3. How comfortable were you with the training sessions?

Not at all Comfortable	Neutral	Very Comfortable				
1	2	3	4	5	6	7

4. How comfortable did the peer(s) appear with the assessment sessions?

Not at all Comfortable	Neutral	Very Comfortable				
1	2	3	4	5	6	7

5. How time intensive was it for you to participate in the assessment sessions?

Not at all Intensive	Neutral	Very Intensive				
1	2	3	4	5	6	7

6. How disruptive was this assessment to your classroom?

Not at all Disruptive	Neutral	Very Disruptive
--------------------------	---------	--------------------

1 2 3 4 5 6 7

7. How much did you have to change your classroom routine to allow the target student and peer(s) to participate in the assessment procedures?

1 2 3 4 5 6 7

8. How disruptive was this assessment to the other peers in the classroom?

1 2 3 4 5 6 7

9. How willing would you be to allow another student to participate in this assessment?

1 2 3 4 5 6 7

10. How willing would you be to participate in this assessment again?

1 2 3 4 5 6 7

11. How useful was the information obtained from this assessment to you and the target student?

1 2 3 4 5 6 7

12. Overall, how would you rate this assessment procedure?

1 2 3 4 5 6 7

Comments:

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BIOGRAPHICAL SKETCH

Elizabeth Lane Weeks McKenney was born in Miami, Florida, and grew up in the suburbs of Atlanta, Georgia from the time she was seven. Though primarily an only child, she was fortunate enough to live down the street from her half-sister, Janet. Elizabeth graduated from Centennial High School in 1999 and went on to attend Tulane University. While at Tulane, she majored in psychology, took minors in Spanish and dance, and became a member of Chi Omega Fraternity and the Newcomb Dance Company. Elizabeth graduated summa cum laude in 2003 and was among one of the last classes to graduate from Newcomb College before it was disbanded in 2006 following Hurricane Katrina.

In 2002, a position as a classroom teacher at a summer treatment program for children with ADHD taught Elizabeth the potential of effective behavioral interventions. She pursued her interest in those techniques into her graduate career at the University of Florida. During graduate school, Elizabeth had the good fortune to broaden her understanding of behavior problems and behavior analysis through grant work with children with autism spectrum disorders under the direction of Dr. Maureen Conroy. At the same time, she learned the invaluable skills of effective consultation through practicum work at P. K. Yonge Developmental Research School under the supervision of Dr. Nancy Waldron. The influential leadership of both of Elizabeth's advisors has become the cornerstone of this dissertation project and of her future professional goals.

In 2004, Elizabeth married her college sweetheart, Mark. Their daughter, Samantha, was born in 2007, and she is a daily source of joy in their otherwise hectic lives. She completed her internship and was conferred her Ph.D. in May, 2010 and plans to remain involved in both K-12 schools and university academic settings as a school psychologist.