

The Effectiveness of Classroom-Based Functional Analyses and
Interventions for Off-Task and Disruptive Behaviors in a
General Education Reading Classroom

By

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Abstract

Experimental functional analysis has been empirically validated as an assessment tool for problem behaviors with a variety of populations in a range of settings; however, there is a dearth of research demonstrating that school personnel can effectively implement this technology. Such demonstrations are important given the increase in children with problem behavior being served in the public school system under IDEIA. Two studies were conducted utilizing experimental functional analyses of off-task and disruptive behavior in a school setting. In Study 1, the teacher effectively conducted three functional analysis conditions (i.e., escape, attention, and play) with a participant without disabilities. The results of the functional analysis suggested that off-task and disruptive behaviors were maintained by teacher attention. Based on these results, a function-based intervention was developed that included fixed momentary differential reinforcement of other behaviors (FM-DRO), differential reinforcement of alternative behaviors (DRA), and extinction for disruptive and off-task behaviors. Following the implementation of the treatment, off-task and disruptive behaviors decreased to near-zero levels. Study 2 was an extension and replication of the procedures utilized in Study 1. In Study 2, the teacher implemented the functional analysis and function-based intervention with 3 participants without disabilities. Results of the functional analyses indicated attention as the maintaining variable for off-task and disruptive behavior for all participants. Replication of the intervention used in Study 1 (i.e. FM-DRO, DRA, and extinction) significantly decreased rates of disruptive and off-task behaviors for all participants.

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The Effectiveness of Classroom-Based Functional Analyses and
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Functional analysis of problem behavior, as described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982/1994), experimentally examines the effects of different reinforcement contingencies on problem behavior. The maintaining reinforcer identified in the functional analysis can then be manipulated to reduce problem behavior. This type of intervention is referred to as a function-based intervention. There is a greater need for this type of assessment and intervention in educational settings in recent years due to an increase in the number of children with developmental disabilities and severe problem behavior who are mainstreamed into general education settings (Scott et al., 2004). Additionally, the Individuals with Disabilities Education Improvement Act of 2004 (P.L. 108-446) federally mandates that children who engage in challenging behaviors have supports put in place to keep them in their current placement and to enable them to make sufficient academic progress. This drives the need for school-based behavioral assessment and intervention by requiring the use of functional behavioral assessments (FBA) and positive behavioral support plans to address the challenging behaviors presented by students in school settings.

Function-based Interventions

The purpose of function-based interventions is to alter the identified antecedents and consequences of problem behaviors. Thus, identification of the

antecedent conditions that set the occasion for problem behavior and the consequences that reinforce and increase the likelihood that the behavior will occur again in the future is vital to the development of an effective intervention plan.

Antecedent interventions can be used to modify the motivating operation for problem behavior as well as the discriminative stimuli that trigger problem behavior.

Interventions that modify consequences aim to eliminate the relationship between the behavior and the maintaining source of reinforcement. Research has demonstrated that function-based interventions are more likely to result in an effective treatment than those selected arbitrarily (Ervin et al., 2001; McComas, Hoch, & Mace, 2000).

Treating problem behaviors prior to determining the function it serves can be inefficient, ineffective, and even harmful (Neef & Peterson, 2007). Determining the function of the behavior helps inform how the behavior can be changed. Interventions that do not incorporate a behavioral assessment are considered behavior modification, not function-based because they rely on strong reinforcers and/or punishers that override the conditions maintaining the behavior (Mace, 1994). Many problems can arise when implementing interventions that are not based on the function of the individual's problem behavior. For example, non-function based interventions can unintentionally strengthen the problem behavior via positive or negative reinforcement instead of extinguishing the problem behavior (Vollmer & Northup, 1996). In addition, the intervention may not be functionally related to the contingencies maintaining the problem behavior and will therefore be ineffective. Furthermore, the intervention may not teach alternative behaviors to enable the

person to appropriately gain the desired reinforcer. One essential step in developing a function-based intervention is conducting a functional assessment of the problem behavior. Although IDEIA (2004) mandates that a FBA be conducted in school settings to identify a treatment, it does not specify what represents a valid FBA and as a result there is no protocol for schools to follow.

Functional Behavioral Assessment

The lack of specification by the federal mandate has led to some confusion about what actually constitutes an FBA and the differences between it and a functional analysis (Haynes & O'Brien, 1990; Gresham, Watson, & Skinner, 2001). Functional behavioral *assessment* describes a range of indirect, direct, and experimental assessments that are used to identify potential antecedents and consequences associated with the occurrence of problem behaviors (Gresham, et al., 2001). Indirect methods include checklists, rating scales, structured interviews and questionnaires completed with the person exhibiting the problem behaviors or those who care for the person. The purpose of an interview is to collect information on the behavior, antecedents, consequences, and other variables that help develop hypotheses regarding the function of the behavior (Miltenberger, 2004). Because of their convenience, interviews are one of the most common assessment methods used by psychologists and school personnel, but are not typically sufficient for developing interventions (McComas, Hoch, & Mace, 2000). Although indirect methods are easy to conduct and quick to administer, they are based on verbal report which may be inaccurate due to bias and lack of objectivity (Neef & Peterson, 2007).

Direct observation methods for assessing problem behaviors, also referred to as descriptive assessment methods, involve a person observing and recording information while in the person's natural environment under normal conditions. One example includes the ABC observation in which the antecedents and consequences that occur each time the behavior is exhibited are recorded (Bijou, Peterson, & Ault, 1968). ABC observations are either conducted during a set period of time in which data is recorded continuously (i.e., ABC continuous recording) or only when the behavior occurs, during which time the events that preceded and followed the occurrence of problem behavior are recorded (i.e., ABC narrative recording). Other direct observation methods include recording the frequency or duration of problem behaviors. For example, Greenwood's computerized MS-CISSAR observation tool may be used to report differences in the probability that a behavior given a profile of different antecedent conditions observed in the classroom will occur (e.g., Greenwood, Abbott, & Tapia, 2003). While recording environmental variables as they occur in real time increases accuracy over indirect methods, direct methods are more time consuming than indirect methods and are only associations (correlations) between antecedents, consequences and problem behavior are demonstrated, not functional relationships.

Experimental methods include experimental functional analysis. A functional *analysis* refers to the experimental manipulation of antecedent or consequent events in a controlled setting to identify functional relations between environment and behavior (an ABC model; see Iwata et al., 1982/1994). Functional analysis is but one

approach to FBA (Horner, 1994); however, it is the only approach that uses experimental manipulations to identify the function of aberrant behaviors rather than descriptive or correlational hypotheses regarding the operant function of behavior (Carr, 1994). Iwata, et al. (1982/1994) were the first to describe a comprehensive model for assessing the sensitivity of problem behavior to positive, negative, and automatic reinforcement. The efficacy of the procedures described by Iwata et al. has been established by hundreds of published studies and is considered the standard among behavioral assessment methodology within the field of applied behavior analysis (see Hanley, Iwata, & McCord, 2003).

Another type of functional analysis includes the exclusive manipulation of antecedents (an AB method; see E. G. Carr & Durand, 1985). In this type of analysis only antecedents are manipulated and consequences for problem behaviors are not programmed. Hanley et al. (2003) stated that the ABC model (as developed by Iwata et al., 1982/1994) is a “more rigorous demonstration of causation” and results in a strong contingency between the problem behavior and reinforcer (p. 168). With an AB analysis, the maintaining contingency of the problem behavior “must be inferred on the basis of the correlation between behavior and antecedent conditions” (Hanley et al., 2003, p. 168). Furthermore, McComas and Mace (2000) stated that an antecedent analysis might suggest control by a specific antecedent event, but errors in interpreting results can occur. For example, the occurrence of problem behavior following the presentation of a demand (i.e., the antecedent event) may occur due to either negative or positive reinforcement (Iwata et al., 1994). In other words, the

maintaining contingency could be escape from the demand itself or access to attention as the result of the problem behavior that followed the presentation of the demand.

Without programmed consequences during the experimental analyses, it can not be determined which contingency is maintaining the problem behavior in this scenario.

Additionally, recent research has provided further support of these findings. Potoczak, Carr, and Michael (2007) compared the results from both AB and ABC analyses with 4 participants with developmental disabilities. Results from the ABC analyses for all participants indicated that problem behavior was maintained by escape from academic demands, while results from the AB analyses were inconclusive for all 4 participants. This is an empirical demonstration of the efficacy of the ABC analysis when compared to an AB analysis. Therefore, it has been suggested that it is “best practice” to manipulate both antecedents and consequences of problem behavior when conducting functional analyses (Hanley et al., 2003; Sasso, Conroy, Stichter, & Fox, 2001). As the purpose of this study focuses on the use of the experimental functional analysis in a school setting, the following discussion will elaborate on this specific technology.

Experimental Functional Analysis

Iwata et al. (1982/1994) first developed the experimental functional analysis methodology to evaluate the function of self-injurious behavior exhibited by people with developmental disabilities. The experimental conditions were arranged so that each condition had a motivating operation (i.e., antecedent) and a potentially reinforcing consequence. Iwata et al. used a multi-element design for the evaluation

of one control and three experimental conditions (i.e., social disapproval, academic demand, alone, and unstructured play). These four conditions are the most commonly used experimental functional analysis conditions (Neef & Peterson, 2007). Social disapproval (i.e., contingent attention) involves attention being withheld and delivered contingent on the problem behavior. A high rate of the problem behavior in the social disapproval condition suggests that the behavior is maintained by access to attention. The demand condition (i.e., contingent escape) involves the continuous presentation of demands and contingent on problem behavior the person is allowed to escape for a predetermined amount of time. A high rate of the problem behavior in this condition suggests that behavior is maintained by the removal of the demand. During the alone condition, all materials and people are absent and no social consequences were delivered contingent on the occurrence of problem behaviors. A high rate of problem behavior in this condition suggests that behavior is maintained by automatic reinforcement (i.e., the sensory consequences resulting from the behavior). During the play (i.e., control) condition, preferred activities and attention are available and demands are not present. In addition, all problem behaviors are ignored. A high rate of the problem behavior in this condition suggests that behavior is either maintained by automatic reinforcement or results are undifferentiated and further assessments are necessary to identify the function of the problem behavior.

Since the development of these test conditions, researchers have developed variations that have been incorporated within these controlled settings. One variation is the length of the experimental sessions. It has been suggested that shorter sessions

are appropriate to use when time is limited, such as in a school setting. For example, Wallace and Iwata (1999) reviewed the effects of session length on 46 sets of 15-min sessions. They compared the results of each analysis based on the full 15-min session, first 10 min, and the first 5 min. Results for the full 15 min and the first 10 min matched for 100% of cases. Results from the full 15 min and the first 5 min matched for 93% of cases. These results suggest that 5-min sessions are more likely to result in a false negative. This is presumably due to the participant not contacting the establishing operation and contingency present in each condition. Wallace and Iwata concluded that although 5-min sessions may lead to a false negative, it is a low possibility, and therefore in most cases, it seems appropriate to use shorter sessions when time is limited.

Other variations of experimental functional analysis test conditions include access to tangible items (Mace & West, 1986), divided attention (Mace, Page, Ivancic, & O'Brien, 1986), and social avoidance (Hagopian, Wilson, & Wilder, 2001). Furthermore, other variations that have been incorporated within the school environment include peer attention (Lewis & Sugai, 1996), escape-to-attention (Mueller, Sterling-Turner, & Moore, 2005), academic tasks during all experimental sessions (Broussard & Northup, 1995), and demand conditions including academic tasks with varying difficulty (Broussard & Northup, 1997). For a comprehensive review of variations within school environments see Ellis and Magee (2004).

School-based Experimental Functional Analysis

Teacher training. An emerging theme in the current functional analysis literature is the evaluation of school personnel conducting experimental sessions and then implementing function-based interventions (e.g., Bessette & Wills, 2007; Ervin et al., 2001; Kamps, Wendland, & Culpepper, 2006; Sasso et al., 1992; Scott et al., 2004; Wright-Gallo, Higbee, Reagon, & Davey, 2006). A review of the literature found only 24 studies that included school personnel conducting the experimental conditions of a functional analysis (Shumate, 2008). Due to the limited amount of research on school personnel in educational settings conducting functional analyses (Hoff, Ervin, & Friman, 2005), little is known concerning how to effectively and efficiently train school personnel to implement the experimental conditions. A few other studies have reported training procedures without the teacher implementing the experimental conditions to identify the maintaining variable(s) of a student's problem behavior (Erbas, Tekin-Iftar, & Yucesoy, 2006; Iwata et al., 2000; Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). For example, Iwata et al. (2000) taught undergraduate students in an applied behavior analysis laboratory course to perform three functional analysis conditions (i.e., attention, escape, play). During the first part of the training, the college students read written descriptions and outlines of the assessment conditions based upon Iwata et al. (1982/1994), watched videotaped simulations of each condition, and completed a written test. This part of the training lasted approximately 1.5 hr. The second part of the training procedures consisted of the participant implementing the conditions with another person playing the part of a

child engaging in problem behavior. These practice sessions were videotaped to allow for feedback to be given while the participant watched their video. The second part of the training lasted approximately 10-30 min for each participant. Overall, all participants were able to learn how to implement the functional analysis conditions within approximately 2 hours.

Sasso et al. (1992) reported training a teacher to perform functional analysis conditions in a school setting. The results of this teacher conducted functional analysis were compared to the results of a functional analysis that was conducted by a researcher. Descriptions of the training procedure included the teacher receiving written material describing the conditions and two meetings with the researcher that included practicing with a student and reviewing assessment related information. Details of the materials and trainings were not reported. Similar results were reported for both the researcher and the teacher who conducted the experimental functional analyses. This finding suggests that teachers can be trained to successfully perform a functional analysis in a school setting. However, this study does not report enough information regarding the training components to allow for replication by others.

Conversely, Bessette and Wills (2007) reported detailed descriptions of the components used to train school personnel within a school-based functional analysis and intervention research study. They utilized a training package that included three training units (i.e., training on each of three experimental conditions) with study guides for each unit that were completed by a paraprofessional. The researcher reviewed the information following the completion of each study guide to clarify any

questions the paraprofessional had regarding that condition. A pretest and posttest were given to assess the paraprofessional's mastery of the written material. Following the posttest, the paraprofessional accurately conducted the experimental sessions with a student exhibiting problem behavior and a function-based intervention was successfully implemented based on the functional analysis results.

Integrity of teacher conducted functional analysis. Treatment integrity demonstrates the extent to which the independent variables are implemented as prescribed. High rates of treatment integrity allow the results of a study to be interpreted with confidence. Few studies incorporating functional analysis in school-based assessments have reported integrity data and even fewer studies have reported the teacher as the person who implemented the functional analysis (Shumate, 2008). Additionally, the method in which integrity has been collected and the degree of specification of the integrity method varies across studies. For example, Alter, Conroy, Mancil, and Haydon (2008) reported the procedural integrity data for the functional analyses conditions conducted by the teacher. Integrity scores were calculated based on the teacher providing the appropriate consequence in each experimental condition when the participant engaged in the problem behavior. Specific details of how these data were collected were not reported. Data were collected for 21% of all conditions for each of 3 participants, and procedural integrity ranged from 75–100% ($M = 96\%$).

Another example, Bessette and Wills (2007), provided a more detailed description of how they collected integrity data. They specified that upon the

occurrence of the problem behavior, the researcher scored the school personnel's response as either correct or incorrect. Additionally, the school personnel's response to appropriate behaviors during the experimental conditions was also recorded. The fidelity of the school personnel's implementation was collected for 100% of experimental sessions and data ranged from 79-100% ($M = 95\%$).

Furthermore, Ray and Watson (2001) utilized a different procedural integrity method, a procedural integrity checklist. The items on the checklist varied across experimental conditions with at least five elements assessed for each condition. The checklists were completed by a second observer who viewed a videotape of the session. The observer recorded if the teacher completed each item on the checklist during a particular experimental session. The specific items on the checklists were not reported or further described. It was reported that integrity data were collected for at least 47% of the experimental sessions and procedures were correctly implemented 93% of the time.

Social Validity in Schools. Social validity is a crucial feature in the field of applied behavior analysis (Wolf, 1978). To be an applied study, the behavior being evaluated and altered must be important to the individual and those around them (Baer, Wolf, & Risley, 1968; Schwartz & Baer, 1991). Few school-based studies that include a functional analysis as developed by Iwata et al. (1982/1994) have reported social validity data. Moreover, only four studies have reported the use of a formal method to assess the social validity of a school-based functional analysis and function-based intervention. These methods include published rating scales

(Broussard & Northup 1995; Dufrene, Doggett, Henington, & Watson, 2007; Sasso et al., 1992) and questionnaires developed by the researcher with Likert scales and open ended questions (Bessette & Wills, 2007). More specifically, Dufrene et al. utilized the Assessment Rating Profile-Revised (ARP-R; Eckert, Hintze, & Shapiro, 1999) and Intervention Rating Profile (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985) at the end of the study. Sasso et al. utilized the Treatment Acceptability Rating Form-Revised (TARF-R; Reimers, Wacker, & Cooper, 1991) prior to and following the functional analysis. Unlike these two studies, Broussard and Northup conducted the IRP-15 with modifications (i.e., intervention was changed to assessment) prior to the functional analysis sessions. Another study did not report formal social validity data, but did report anecdotal information from the school personnel following the conclusion of the study (Wright-Gallo, Higbee, Reagon, & Davey, 2006).

Similar to the variation in social validity measures, the social validity results were reported in varying degrees of specification. Bessette and Wills (2007) found that the school personnel reported that the procedures were easy to learn and the intervention was effective in increasing on-task behavior, but was unsure if she would recommend the functional analysis and function-based treatment to others. Broussard and Northup (1995) reported that the functional analysis procedures were rated as moderately acceptable. Dufrene et al. (2007) provided the actual score of both the ARP-R and IRP-15. While it was reported that higher ratings on these measures represents a higher degree of acceptability, it was not specified which scores represent a moderate versus high degree of acceptability. Overall, the social validity

ratings of the experimental analyses sessions and intervention were within acceptable ratings. Similarly, Sasso et al. (1992) reported the exact scores on the TARF-R for both teachers and concluded that all procedures were scored as highly acceptable. Wright-Gallo et al. (2006) reported that the teacher informally stated that the “experimental FA provided useful information to her regarding possible functions of aberrant student behavior” (p. 431).

While the results of the social validity data from these studies were acceptable, the number of studies that have reported on measures of social validity is unacceptable. It is imperative to the advancement of this method of assessment that those who are currently responsible for conducting behavioral assessments find functional analysis as an acceptable method. If school personnel do not find functional analysis as an acceptable assessment method, they will discontinue using this methodology during behavioral assessments.

Population Characteristics of the Current Literature

Another emerging theme in the literature is the use of functional analysis methodology with typically developing children who are displaying aberrant behaviors (Moore, Edwards, Wilczynski, & Olmi, 2001). Presently there are a limited number of studies that focus on using functional analysis methodology for children without an identified disability (Hanley et al., 2003). One current example, Kwak, Ervin, Anderson, and Austin (2004), evaluated the agreement of function across different FBA methods with a participant without identified disabilities, but described by the school as the “most disruptive student.” Results from the experimental

functional analysis indicated that attention from his teacher and peers maintained his problem behavior.

Another study, Kamps et al. (2006), included a functional analysis for 2 participants without identified disabilities, but described as at risk for emotional and behavioral disorders. All experimental conditions were conducted by the teacher in the natural setting during regular academic activities (i.e., reading, math, and language arts instruction). The function of each participant's problem behavior was identified and a function-based intervention was successfully implemented. These two studies demonstrate the utility of employing functional analysis methodology with typically developing children. More specifically, in both studies the experimental analysis effectively identified the function of problem behavior and in Kamps et al. the identification of the function of problem behavior enabled the authors to develop and implement effective function-based interventions. Given these encouraging findings, more research is needed to clarify the efficacy of functional analysis with typically developing school-aged children.

Purpose and Research Questions

The purpose of the current research is to address limitations in the literature related to experimental functional analyses conducted in school settings by school personnel. First, a limited number of studies have evaluated the effectiveness of experimental functional analyses conducted by teachers in school settings and even fewer studies describe the methods used to train the teachers (Shumate, 2008). With the aim of generating function-based interventions in schools in accordance with

IDEIA (2004), it is important for researchers to develop training procedures that school personnel can use to effectively implement experimental functional analyses in school settings to identify the function of problem behavior. Second, a limited number of studies exist that include children without disabilities when conducting functional analyses. Hanley et al. (2003) noted that conducting experimental functional analyses with typically developing children is an under researched area. Therefore research is needed to demonstrate that these procedures are effective with this population. Third, few data exist regarding the level of integrity of teacher implemented functional analyses or the social validity of using this methodology in school settings (Shumate, 2008). Two studies were formulated in response to these empirical questions. Specifically, during Study 1 data were collected and used to answer the following preliminary questions:

1. Can a teacher effectively conduct an experimental functional analysis after minimal training in a general education reading classroom? Can this analysis identify the function of off-task and disruptive behaviors with a typically developing student?
2. Can the interventions based on the results of the functional analysis be effectively implemented by the classroom teacher? Can this intervention reduce disruptive behaviors and decrease off-task behavior of the participant during academic reading tasks?

3. Can the teacher implement the experimental sessions and intervention with a high level of integrity? To what extent does the teacher report the functional analysis methodology as socially acceptable?

Furthermore, Study 2 served as a replication of Study 1 to provide further support of the results. During Study 2 data were collected and used to answer the following questions:

1. To what extent can a previously trained teacher extend the findings of Study 1 and replicate the implementation of the functional analysis procedures with 3 students and identify the function of their disruptive and off-task behavior?
2. Can the previously trained teacher implement the same function-based intervention for multiple students simultaneously to decrease disruptive and off-task behavior?
3. Can the teacher implement the experimental sessions and intervention and maintain a high level of integrity? To what extent does the teacher report functional analysis methodology as socially acceptable following the implementation of these procedures with multiple students in the same classroom?
4. To what extent do the findings from Study 1 and 2 support the use of experimental functional analysis in school settings and implementation of a function-based intervention during ongoing instructional activities?

Method

Study 1

Setting

This study took place in an elementary school located within a mid-western metropolitan area. There were a total of 278 students, of which 65% received free or reduced lunches. The school's population was 50% female and 50% male and the ethnicity was 52% Caucasian, 24% Hispanic, 17% African-American, and 2% American Indian or Alaska Native, 2% Asian or Pacific Islander, and 3% multi-ethnic.

All the procedures in this study (i.e., observations, training, functional analysis sessions, and interventions) occurred in the participant's general education reading classroom during *Programmed Reading*. The reading block for all second grade students was split into one 45-min period and two 20-min periods. During one of the 20 min periods, all participants participated in a rotation of instruction using the *Programmed Reading* curriculum (Sullivan & Buchanan, 1988). *Programmed Reading* is an individualized reading curriculum designed to be used independently by students. Each student is assigned a book on his or her individualized instructional reading level. Students are instructed to read quietly out loud, while the teacher monitors and evaluates students reading and passing of test pages. In the participant's reading class, there were 2 teachers and a total of 10 students.

Participants

Ella was an 8-year-old African-American girl and attended a general education second grade classroom. Ella was not reported to have any formal diagnoses, but had a history of engaging in disruptive and off-task behavior during instructional times. Consequently, she was frequently sent to the principal's office due to these behaviors. Ella was referred by her reading teacher because of her high rate of disruptive and off-task behaviors during the independent reading class. The teacher was a 26-year-old Caucasian male whose official role in the school was as a reading intervention provider. The teacher had been at the school for 2 years implementing small group reading interventions.

Response Measurement

Student behaviors. The primary dependent variables were disruptive and off-task behaviors. Disruptive behaviors included behaviors that appeared to interfere with learning, impede instructional delivery, or both. Disruptive behavior included the student arguing, taunting, name calling, making audible vocalizations unrelated to the instructional task (i.e., singing, humming, and talking to self), making repeated audible noises with tangible items (e.g., pencil tapping), talking to peers, calling out the teacher's name with or without hand-raising, getting out of her seat and walking up to the teacher during seat work, and waving her hand in the air. Non-examples included appropriately responding to the teacher's verbal questions, talking with teacher permission, and quietly reading out loud. Off-task behavior was defined as not attending to or participating in instructional activities as requested by the teacher.

Examples of off-task behaviors included engaging in disruptive behaviors (as defined above) while not engaging in the academic task. These definitions were not mutually exclusive. For example, if the participant was engaging in pencil tapping, but was engaged in the academic task, then only disruptive behavior was scored. Other examples of off-task behaviors include gazing around the classroom and not following instructional directions. Non-examples included doing or attempting the assigned task (e.g., quietly reading out loud, looking at the teacher or instructional activity), appropriately seeking assistance, and following directions. Appropriate recruitment of teacher attention was also collected to score integrity data. This was defined as hand-raising without engaging in disruptive behaviors.

Teacher behaviors. In addition to the measurement of the student's behavior, data on the teacher's behaviors were collected. Data were collected if the teacher responded (teacher attention) when the participant engaged in appropriate behaviors (i.e., hand-raising without disruptive behaviors in the attempt to gain the teacher's attention and engagement in the instructional activity) and when the participant engaged in disruptive and off-task behaviors. Examples of teacher attention included any verbal comment directed to the participant (e.g., praise, answering questions, correcting or reprimanding), or gestures (e.g., high fives, pats on the back, eye contact with a nod of the head, and a thumbs up). Data were also taken on demands placed by the teacher. Demands were defined as statements to engage in an academic activity. Examples include, but were not exclusive to statements such as "begin reading," "open your books and read," and "read out loud." The purpose of collecting data on

the teacher providing attention to appropriate and inappropriate behaviors and giving demands was to monitor the fidelity of implementation during the experimental analysis and intervention conditions.

Data collection methods. All observations during baseline and intervention were 15 min, while functional analysis sessions were each 5 min. All student and teacher data were recorded using a pencil and paper format. Time sampling methods were used for collection of all data. More specifically, off-task behavior was collected using a momentary time sampling procedure during 10-s intervals and student disruptive and teacher behaviors (including integrity data during the functional analysis sessions and intervention observations) were collected using 10-s partial-interval recording. The researcher used a cassette tape player with headphones, and a pre-recorded tape announcing the end and beginning of each 10-s interval during all observations. Only 5 min of data were able to be scored on each data form, therefore during each 15-min baseline and intervention observation three data forms were necessary. Different pencil and paper data collection forms were used for each condition of the study (Appendix A).

Inter-observer Agreement

Agreement was defined as both observers scoring either an occurrence or nonoccurrence for each target behavior during each 10-s interval. Inter-observer agreement was collected using a point-by-point agreement method. The number of agreements was divided by the number of agreements plus disagreements. These quotients were then multiplied by 100.

A second observer collected data during 19% of observations across all conditions (i.e., baseline, functional analysis, and intervention) during Study 1, mean = 93%, range = 87% - 100%. Mean agreement across behaviors: participant disruptive behaviors = 98%, participant off-task = 97%, teacher attention to appropriate behaviors = 100%, teacher attention to inappropriate behaviors = 99%, and teacher presentation of demands = 99%.

Assessments, Training, and Implementation Procedures

The procedures consisted of (a) the functional assessment interview (O'Neill et al., 1997); (b) direct behavioral observations (descriptive baseline); (c) experimental functional analysis training; (d) functional analysis sessions; (e) function-based intervention training; (f) function-based intervention observations; and (g) follow-up observations.

Functional assessment interview. Prior to the descriptive assessment, the researcher interviewed the reading teacher using a modified version of the Functional Assessment Interview (FAI; O'Neill et al., 1997). Modifications included the exclusion of questions concerning the person's sleep schedule, medications, and eating habits. This interview was conducted to gather information regarding each student's problem behaviors and possible contingencies maintaining those behaviors. During the interview, which lasted 30 min, the teacher and researcher formulated hypotheses regarding the function of the participant's disruptive and off-task behaviors. They also discussed and defined the disruptive and off-task behaviors that would be targeted during the study.

Direct behavioral observations (descriptive baseline). Prior to the experimental functional analysis, a descriptive assessment was conducted using direct behavioral observations of the reading teacher and participant in the reading classroom. All observations were 15 min in length. All direct behavioral observations were conducted in the same classroom in which the functional analysis and intervention were later conducted. Environmental modifications were not made except that the teacher announced to the students that the researcher was there to observe him and help him be a better teacher. The researcher was seated on the perimeter of the classroom during all sessions. The rationale for the descriptive assessment condition was to document pre-functional analysis levels of all included dependent and independent variables so that comparisons could be made to post intervention levels of these same variables. The descriptive data provided information regarding the rates of the participant's problem behaviors and antecedents prior to and consequences following each occurrence of problem behavior. This data aided in the development and implementation of the experimental functional analysis conditions by providing data in support or opposition of the hypotheses generated during the teacher interview. It also helped address the concerns of school personnel regarding the direct manipulation of antecedents and consequences that could possibly increase problem behaviors. This data is reported as the baseline rate of disruptive and off-task behavior.

Teacher functional analysis training. Following the functional behavioral interview and direct behavioral observations for the descriptive baseline, the

researcher conducted teacher training on the functional analysis conditions. Only functional analysis conditions that were indicated by both the teacher interview and the descriptive baseline as possible maintaining functions for off-task and disruptive behavior were included: attention, escape and play/control. Training consisted of a 15-min meeting in which the researcher provided the teacher a brief descriptive statement for each condition printed on three different colors of 8.5 x 11 inch paper (Appendix B). On the yellow sheet of paper the following directions were printed: “**Attention Condition:** Attend to all inappropriate behaviors, Ignore all appropriate behaviors.” On the blue sheet of paper the following directions were printed: “**Escape Condition:** Every 30 seconds give a clear instruction “Name, start reading.” If the student complies within 5 seconds praise, if noncompliant repeat instruction, if still noncompliant, take away materials and ignore until the next instruction. If the student engages in a disruptive behavior, remove the task until the next instruction.” On the red sheet of paper the following directions were printed: “**Play Condition:** No demands (except for the initial instruction), attention given every 30 seconds, if an inappropriate behavior occurs do not give attention until 5 seconds after the behavior. When the student tries to appropriately interact, reciprocate. Ignore all inappropriate behaviors.”

During the 15-min training, the researcher described different likely scenarios and role-played the correct responses. The researcher modeled examples of each condition and involved the teacher in practice with feedback. The teacher’s questions and concerns were addressed as they arose during the training. Finally, during

training the definitions of behaviors were again reviewed. Additionally, prior to and following each session, the teacher was asked if he had any concerns or questions and these were addressed as they arose.

Functional analysis. Attention, escape, and control/play experimental functional analysis conditions were conducted based on the results of the teacher interview and descriptive observations. These conditions were based on those developed by Iwata et al., (1982/1994) (see description of conditions below) with some notable exceptions. First, all conditions were run during the participant's normal academic time in a small group, individually paced reading rotation. Second, unlike Iwata and colleague's control/play condition during which no demands were given, at the beginning of the control/play condition, the participant was instructed to pick from a variety of books and to continue to read. Also, in the current study a demand to read was given at the beginning of each class period because it was the participant's normal academic instruction time. In addition, the reading materials were present during the attention condition. Finally, neither a tangible nor an alone condition were run with the participant based on observations by the researcher and the results of the behavioral interview with the teacher. Based on these results, it was concluded that neither tangible nor automatic reinforcement were possible maintaining variables for this participant.

Students, including the participant, were seated at their regular desks during all sessions except for the control/play condition. All students were generally engaged in independent reading, with some variations in terms of activities, such as reaching a

test and earning a free day. When the participant earned a free day, she was allowed to spend the following day in the special reading corner reading books of her choice for the entire 20 min period. The special reading corner was a small area defined with a bookcase, pillows, stuffed animals, and a rug. Therefore, when the participant worked one-on-one with the teacher on the test or earned a free day, data were not collected for the participant. This was to allow for the continuation of the participant's academic progress during this study while controlling for the one-on-one supervision during tests (resulting in a high rate of attention). Tests occurred approximately every 40 pages that the students read, and they read approximately 5 to 7 pages per day.

Observations were conducted once per day, 3 to 5 days per week, depending upon the teacher's schedule, school schedule (assemblies and field trips), and the participant's school attendance. Data were collected during the 15 min of actual instruction time. Approximately 5 min of each 20-min period was the transition into the classroom, the teacher's record keeping at the end of the class, and the transition out of the classroom. During each day of the experimental functional analysis, all conditions were conducted each day and the attention and escape sessions were conducted in a random order, while the control/play condition was always conducted last. All functional analysis sessions were 5 min in duration.

During the experimental conditions, the teacher held the corresponding color coded instruction sheet that had the instructions for the condition in which he was conducting to enhance discrimination between different functional analysis conditions

and provide a visual prompt for the teacher. To decrease the disruptions of the researcher prompting the teacher during the functional analysis, the researcher held the corresponding color coded instruction sheet to serve as a visual prompt during each session. The researcher signaled that the session had ended by moving the corresponding color coded sheet from left to right. Following the signal, the change of color coded sheet served as another visual signal to the teacher which condition to next conduct. Prompts during sessions included a signal to provide attention every 30 seconds during the play condition, a signal to return the task during the demand condition, and a signal to present a demand. The signal for attention, the return of task materials, and presentation of demands consisted of the researcher holding the corresponding color coded sheet straight up.

Attention. During this condition, the teacher engaged in normal teaching, which involved rotating around the room listening to students read while monitoring other students in the group simultaneously. The paraprofessional was also rotating around the room, but remained near the other students in the classroom and did not stand near or interact with the participant of this study. Therefore the teacher stayed close to where the participant was seated and was the one to respond when the participant raised her hand. At the beginning of each rotation the teacher instructed the class to begin reading. Beyond the initial demand to read, the teacher was instructed not to issue demands during this condition. After giving the demand to start reading, the teacher monitored the students while reading. Each time the participant engaged in a disruption or was off-task the teacher gave immediate brief attention.

Verbal attention consisted of brief statements in response to what the participant had said or her off-task behavior. For example, when the participant was off-task the teacher might ask if she was having trouble or why she was not reading. When the participant engaged in calling out for the teacher, the teacher would immediately respond by asking her what she needed. If the participant got out of her seat and asked the teacher a question, he would briefly respond to her question and then continue his previous activity. If the participant again asked the teacher a question the teacher would repeat the above protocol. When the participant would repeatedly engage in the problem behavior, she was repeatedly provided with brief attention from the teacher. In addition to providing verbal attention, the teacher also temporarily moved closer in proximity to the participant as to help minimize disruptions to the other students in the classroom. During the attention condition, the participant's reading materials remained in front of her during the entire session and were not removed contingent on disruptive or off-task behavior.

Escape. During this condition, the teacher prompted the participant to engage in reading every 30 s. If the participant was already engaged in reading, the teacher provided a prompt to continue reading. If the participant began/continued to read, she was given a brief verbal praise statement (e.g., "good job reading"). If the participant did not begin reading within 5 s, another prompt was given. If the participant began reading after the second prompt, she was given a brief verbal praise statement. If the participant did not begin reading within 5 s after the second prompt, her reading materials were removed from her desk and were not returned until the beginning of

the next scheduled 30 s prompt. In addition, the teacher turned away from the participant and ignored all behavior until the next trial (i.e., no attention was provided during the escape interval). Additionally, her reading materials were removed when she engaged in disruptive behaviors. The escape condition differed from the attention condition in two aspects. First, during the escape condition, teacher attention was only delivered contingent on the participant reading within 5 s of the demand being placed. If she engaged in disruptive behaviors the reading materials were removed and no teacher attention was provided. Therefore, unlike the attention condition when attention was contingent on disruptive and off-task behaviors, attention was only provided for on-task behavior, while escape was delivered contingent on disruptive and off-task behaviors. Secondly, while the initial prompt to read was stated at the beginning of each class regardless of which condition was conducted first, it was only repeated every 30 s during the demand condition.

Control/Play. During this condition, the participant was informed that for the next few min she would be allowed to engage in reading a book of her preference in the special reading corner. This was a small area in the front of the classroom that had a bookcase, blanket and pillows for the participants. During normal teaching activities, all students were allowed to spend the 20 min reading period in the special corner reading books that they had chosen the day following a test. While the participant was in the reading corner during the functional analysis conditions, the teacher provided attention (a brief verbal praise statement) delivered on a fixed-time 30 s schedule. If the participant recruited the teacher's attention appropriately, the

teacher responded immediately. A 5 s time delay for teacher attention was implemented if the participant engaged in any inappropriate target behaviors. The delay was implemented during the control/play condition to control for disruptive and off-task behaviors inadvertently being reinforced by teacher attention.

Teacher function-based intervention training. Following the completion of the functional analysis for Ella, the researcher met with the reading teacher for a brief 10 min meeting. During this meeting the data were reviewed and the implementation of the function-based intervention was discussed. The reading teacher was provided with a written description of the treatment components (see Appendix C) and a data sheet to monitor his rate of positive attention (see Appendix D). Although a description of disruptive and off-task behaviors was not provided, they were discussed to clarify any discrepancies between the researcher's and teacher's definitions. It should be noted that the reading teacher had developed the list of behaviors that were considered disruptive and off-task for the participant and the researcher used these definitions for the purposes of this study. After discussing the treatment components and role playing, the reading teacher agreed that the intervention was feasible.

Function-based intervention. Based on the results of the functional analysis for Ella, teacher attention was found to be the maintaining variable for off-task and disruptive behaviors during the small group independent reading class. The intervention was designed to target the maintaining variable of teacher attention. The intervention consisted of three behavioral components; fixed momentary differential reinforcement of other behaviors (FM-DRO), differential reinforcement of alternative

behaviors (DRA) and extinction. With the FM-DRO component, the teacher used a self-monitoring system to deliver attention on a 1 min schedule as long as the participant had not engaged in inappropriate target behaviors within 5 s (Appendix D). Because all target behaviors (e.g., off-task and disruptive behaviors) were maintained by the same variable (teacher attention), it is believed they were both in the same response class. Therefore, when instructing the teacher when to provide attention, he was told not to provide attention within 5 s of the participant engaging in any disruptive or off-task behaviors. For the DRA component, the teacher immediately responded to appropriate recruitment of his attention when the participant raised her hand without engaging in disruptive behaviors by providing praise and assistance with her request. Training to teach the participant alternative behaviors was not necessary because the participant displayed the behavior during baseline, but during baseline hand-raising was only intermittently reinforced and there was frequently a time delay in gaining the teacher's attention. With the extinction component, the teacher ignored all disruptive and off-task behaviors.

The programmed rate of praise during intervention was initially on a 1 min fixed momentary schedule. The teacher rated Ella's behavior at the end of each class to evaluate if the schedule of reinforcement could be thinned. The criteria for thinning the schedule was based on the teacher rating her behavior as acceptable 2 days in a row, then the FM-DRO schedule could be thinned by 1 min to a 2 min schedule. The teacher ratings were based on teacher's interpretation of Ella's appropriate and inappropriate behavior immediately following the 20 min class period. A 5-point

Likert scale was used to score the acceptability of the student's behavior. On a scale of five to zero, a score of five was defined as the student not engaging in disruptive or off-task behaviors, while a score of zero was defined as the student engaging in disruptive or off-task behaviors 50% or more of the class period. If Ella's behavior was not rated as a four or five during the thinned schedule of reinforcement (i.e., once every 2 min), then the rate of reinforcement returned to the previous 1 min schedule the following day. If the rate of reinforcement was thinned to a 3 min schedule, but the teacher scored her behavior as a three or less, the schedule of reinforcement would return to the previous 2 min schedule the following day.

Procedural Integrity

Integrity data were collected during all functional analysis sessions and intervention observations. Integrity data was collected to monitor the teacher's implementation of the specific contingencies in place. Because contingencies were always in place for disruptive and off-task behaviors and for their absence, all 10-s intervals were scored as either correct or incorrect. This allowed for monitoring of both incorrect and correct application of the different contingencies. Following each 10-s interval, the teacher's behavior was scored as either correct or incorrect. The criterion for a correct teacher response was based on the contingencies in place during each condition of the functional analysis and the intervention. For example, during the play condition and intervention, a correct response was scored when the teacher ignored each occurrence of a participant's disruptive behavior and provided praise for task engagement every 30 s. During the attention condition the teacher was instructed

to ignore when the participant raised her hand without engaging in disruptive behaviors, therefore a correct response was scored if the teacher did not attend to this behavior. Additionally, during intervention when the participant engaged in appropriate behavior to recruit the teacher's attention (i.e., hand-raising without disruptive behavior), if the teacher did not respond then the teacher's response was scored as incorrect.

Experimental Design

An AB design was used to compare the results of the descriptive baseline and intervention with an embedded multi-element design. The multi-element design (Kazdin, 1982) was used during the functional analysis phase of this study. The order in which the experimental conditions were conducted was randomized with the exception of the control/play condition, which was always conducted last. Without a break between experimental conditions, the play condition was conducted last each day to minimize lost instruction time due to the transition.

Social Validity

The teacher completed a satisfaction survey (Appendix E) at the end of the study using a 5-point Likert scale. The survey consisted of nine statements to be rated on a scale of one to five (1 = strongly agree to 5 = strongly disagree). In addition, there were four open ended questions for the teacher to complete and another space requesting other comments and suggestions.

Study 2

Many of the methodological characteristics of Study 2 are similar to those reported for Study 1. Study 2 was conducted the school year following Study 1 with the same teacher using a multiple baseline across participants design.

Setting

This study was conducted in the same elementary school as described in Study 1. The only difference in the setting characteristics was the reading classroom had moved to a different room in the school building. All 3 participants were in the same second grade reading instruction rotation class with six other students, the teacher and a paraprofessional. This setting was chosen because the teacher reported that these 3 participants were exhibiting high rates of disruption during this specific reading rotation. In the reading class there were a total of 9 students, 3 females and 6 males in the classroom with the teacher and paraprofessional. The teacher and the paraprofessional rotated around the group of 9 students. Before the current study began, the paraprofessional was instructed to not engage with the 3 participants of the study for the remainder of the school year and to only rotate among the other 6 students. This was to help control for the other adult present in the room who was not participating in the study so that attention or demands from the paraprofessional did not confound the results.

Participants

Two males and a female identified as at risk for later reading failure based on scores on the *Dynamic Indicators of Basic Early Literacy Skills* (Good & Kaminski,

2002). Brandon, Paul, and LaTonya, served as participants in this study. Brandon was a 7-year-old Caucasian boy, Paul was an 8-year-old Caucasian boy, and LaTonya was a 7-year-old African-American girl. The teacher reported that all 3 participants engaged in high rates of disruptive behavior in addition to low rates of on-task behavior during the 20 min daily small group *Programmed Reading* class. None of the participants were receiving special education services; they were all in the general education classroom without any additional supports. The teacher was the same teacher who participated in Study 1.

Response Measurement

The same definitions for teacher and student behaviors were utilized from Study 1. All observations during baseline, functional analysis, and intervention were 5 min. All student and teacher data were recorded using a pencil and paper format identical to the forms used in Study 1. The same time sampling methods were used for collection of all data. More specifically, off-task behavior was recorded using a momentary time sampling procedure during 10-s intervals and teacher and student disruptive behaviors were collected using 10-s partial-interval recording. The researcher used a cassette tape player with headphones, and a pre-recorded tape announcing the end and beginning of each 10-s interval during all observations. Different pencil and paper data collection forms were used for each condition of the study (Appendix A).

All observations and functional analysis sessions during Study 2 were 5 min in duration. This is different than Study 1 in which the baseline and intervention

observations were 15 min in duration and only the functional analysis sessions were 5 min. During baseline and intervention, only one 5-min observation was conducted with each child per day who was present, with the exception of instances when there was insufficient time to run a full observation with each participant. The sequence of procedures during the multiple baseline consisted of collection of baseline data for all participants, then the teacher implemented the functional analysis for the first participant, followed by implementation of the intervention for the first participant. Baseline data were also collected for the other 2 participants on the same day that intervention data were collected for the first participant. Next, the teacher implemented the functional analysis for the second participant, followed by intervention for the second participant and so forth for the third participant. Observations were randomized across participants and the teacher was unaware of which participant was being observed at any given time as data were being collected for all participants, each day in their respective baseline and intervention phases. The only exception was during the functional analysis when data were only collected for 1 participant across all three conditions. Therefore, the teacher was aware of whom data were being collected during the functional analysis sessions.

Inter-observer Agreement

Agreement was defined as both observers scoring either an occurrence or nonoccurrence for each target behavior during each 10-s interval. Inter-observer agreement was collected using a point-by-point agreement method. The number of

agreements was divided by the number of agreements plus disagreements. These quotients were then multiplied by 100.

A second observer collected data during 25% of observations across all conditions (i.e., baseline, functional analysis, and intervention) and participants. An average agreement score was calculated across all conditions and all 3 participants, mean = 98%. For Brandon, data were collected during a total of 25% of observations across all conditions, mean = 99%, range = 99%-100%. For LaTonya, data were collected during a total of 27% of observations across all conditions, M = 98%, range = 97%-99%. For Paul, data were collected during a total of 24% of the functional analysis and intervention observations, M = 98%, range 95-100%. Due to Paul's absence from school on the days that a second observer was present in the classroom, no inter-observer agreement data were collected during his baseline observations. Furthermore, mean agreement across behaviors: participant disruptive behaviors = 98%, participant off-task = 97%, teacher attention to appropriate behaviors = 99%, teacher attention to inappropriate behaviors = 99% and teacher presentation of demands = 99%.

Assessments, Training, and Implementation Procedures

The procedures consisted of (a) the functional assessment interview (O'Neill et al., 1997); (b) direct behavioral observations (descriptive baseline); (c) experimental functional analysis training; (d) functional analysis sessions; (e) function-based intervention training; and (f) function-based intervention observations.

Functional assessment interview. Prior to the beginning of the descriptive assessment, the researcher interviewed the reading teacher using a modified version of the Functional Assessment Interview (FAI; O'Neill et al., 1997). This interview was conducted to gather information regarding each student's disruptive and off-task behaviors and the possible contingencies maintaining those behaviors.

Direct behavioral observations (descriptive baseline). The direct behavioral observations procedures were identical to Study 1.

Teacher functional analysis training. A 10 min review of the original training material was conducted following the completion of Brandon's direct behavioral observations. During this training, the same color coded cards were provided to the teacher as in Study 1 and role playing was conducted.

Functional analysis. All experimental conditions were identical to Study 1. The researcher prompted the teacher during all conditions as described in Study 1.

Teacher function-based intervention training. Following the completion of the functional analysis for Brandon, the researcher met with the reading teacher for a brief 10-min meeting. During this meeting the data were reviewed and the implementation of the function-based intervention was discussed. The reading teacher was provided with a written description of the treatment components (see Appendix C) and a data sheet to monitor his rate of positive attention (see Appendix D). Although a description of disruptive and off-task behaviors was not provided, they were discussed to clarify any discrepancies between the researcher's and teacher's definitions. It should be noted that the reading teacher had developed the list of

behaviors that were considered disruptive and off-task for all participants and the researcher used these definitions for the purposes of this study. After discussing the treatment components and role playing, the reading teacher agreed that the intervention was feasible. Following the completion of the functional analysis for LaTonya and Paul the data were shared with the teacher and it was agreed upon that the same intervention would be implemented.

Function-based intervention. Similar to results of the functional analysis for the participant in Study 1, teacher attention was found to be the maintaining variable for off-task and disruptive behaviors for all 3 participants. The intervention consisted of the same three behavioral components as in Study 1. These three components were fixed-momentary differential reinforcement of other behaviors (FM-DRO), in conjunction with differential reinforcement of alternative behaviors (DRA), and extinction. With the FM-DRO component, the teacher again used the self-monitoring system to deliver attention on a 1 min schedule to each participant as long as he or she had not engaged in an inappropriate target behavior within 5 s (Appendix D). Because both target behaviors (e.g., off-task and disruptive behaviors) were maintained by the same variable (teacher attention), it was believed that they were both in the same response class for all 3 participants. Therefore, when instructing the teacher when to provide attention, he was told not to provide attention within 5 s of a participant engaging in any disruptive or off-task behaviors. For the DRA component, the teacher immediately responded to the participants' appropriately attempting to gain his attention (e.g., hand-raising without disruptive behavior) by praising the

participant for appropriately gaining his attention and providing assistance with their request. Additionally, disruptive and off-task behaviors were ignored (extinction).

While the goal of the intervention was to systematically thin the rate of praise from once per min, it was not feasible in Study 2 due to the participants extended absences during intervention, nearing the end of school, and the high rate of field trips and assemblies. It was decided by the teacher and experimenter to continue with the 1-min schedule of praise until the end of the school year to help maintain the low rate of disruptive and off-task behavior. These factors also impeded the ability to conduct follow-up observations due to the end of the school year.

Experimental Design

A multiple baseline across participants (Kazdin, 1982) was used to compare the results of the baseline to the function-based intervention with a multi-element embedded within the multiple baseline design. The multi-element design (Kazdin, 1982) was used during the functional analysis phase of this study. Unlike Study 1, the order in which the experimental conditions were performed was counter-balanced and randomized in Study 2.

Procedural Integrity

Integrity data were collected during all functional analysis session and intervention observations for all participants. Integrity data were collected to monitor the teacher's implementation of the specific contingencies in place. Because contingencies were always in place for disruptive and off-task behaviors and for their absence, all 10-s intervals were scored as either correct or incorrect. This allowed for

monitoring of both incorrect and correct application of the contingencies. Following each 10-s interval, the teacher's behavior was scored as either correct or incorrect. For example, during the play condition and intervention, a correct response was scored when the teacher ignored each occurrence of a participant's disruptive behavior and provided praise for task engagement every 30 s. During the attention condition the teacher was instructed to ignore when the participants raised their hand without engaging in disruptive behaviors, therefore a correct response was scored if the teacher did not attend to this behavior.

Social Validity

The teacher completed a satisfaction survey (Appendix E) at the end of the study for each participant, using a 5-point Likert scale. The survey consisted of nine statements to be rated on a scale of one to five (1 = strongly agree to 5 = strongly disagree). In addition, there were four open ended questions for the teacher to complete and another space requesting other comments and suggestions.

Results

Study 1

Functional Assessment Interview

Results from the interview suggested problem behaviors were disruptive behaviors and off-task behavior. It was reported that these behaviors were least likely to occur with one specific teacher (who was not a part of this study) and more likely to occur with all other teachers. It was reported that there were no clear antecedents preceding disruptive behaviors. When asked to identify the "function" of Ella's

disruptive and off-task behaviors, (i.e., when asked, “After the occurrence of a problem behavior, what does she gain or avoid”) the teacher responded that she gets attention. Based upon the teacher’s reports and information gathered during the FAI, it was hypothesized that the student’s disruptive and off-task behaviors were being maintained by attention from the teacher and other adults. It was unclear if escape from academic tasks was also a possible maintaining function of Ella’s disruptive and off-task behaviors.

Descriptive Baseline

Figure 1 shows the percentage of 10-s intervals with occurrences of disruptive behaviors during each 15-min observation. The mean percentage of intervals with occurrences of disruptive behaviors per observation was 16% (range = 13% - 22%). Figure 2 shows the percentage of 10-s intervals with off-task behavior during each 15-min observation. The mean percentage of intervals with off-task behaviors per observation was 61% (range = 45% - 90%). These direct behavioral observations supported the hypothesis from the FAI that teacher attention maintained disruptive and off-task behavior, but did not rule out escape as another possible maintaining variable. These observations helped inform the decision to include the attention and demand conditions during the experimental functional analysis. While it was hypothesized that attention was the maintaining function based on the results of both the teacher interview and direct behavioral observations, it remained unclear if escape was also a maintaining variable. Therefore, an empirical demonstration was needed to

rule out escape from demands as a possible function and validate attention as a maintaining function.

Functional Analysis

Figure 1 displays the percentage of 10-s intervals with disruptive behaviors and Figure 2 displays the percentage of 10-s intervals with off-task behaviors. During Ella's functional analysis, zero to near zero rates of disruptive behaviors and low rates of off-task behavior were observed during all play/control sessions. During the escape condition, low and variable rates of disruptive behaviors (range = 0% - 27%; mean = 7%) and variable rates of off-task behavior (range = 0% - 63%; mean = 23 %) were observed. During the attention condition, increasing rates of off-task behaviors (range = 7% - 77%; mean = 46%) and increasing rates of disruptive behaviors (range = 7% - 60%; mean = 33%) were observed. Based on these results, it was concluded that attention maintained disruptive and off-task behaviors.

Intervention

During intervention, disruptive behaviors decreased to 2% of 10-s intervals (range = 7% - 2%; mean = 4%) and during follow-up observations, disruptive behaviors decreased to 0% (range = 0% - 1%; mean = 0.4). This is a notable decrease compared to the descriptive baseline. Off-task behavior ranged from 6% - 24% with a mean of 13%; during follow-up observations, off-task behavior ranged from 1% - 14% with a mean of 6%. This is also a notable decrease compared to the descriptive baseline. Follow-up observations occurred at 1, 2, and 4 weeks following the intervention observations.

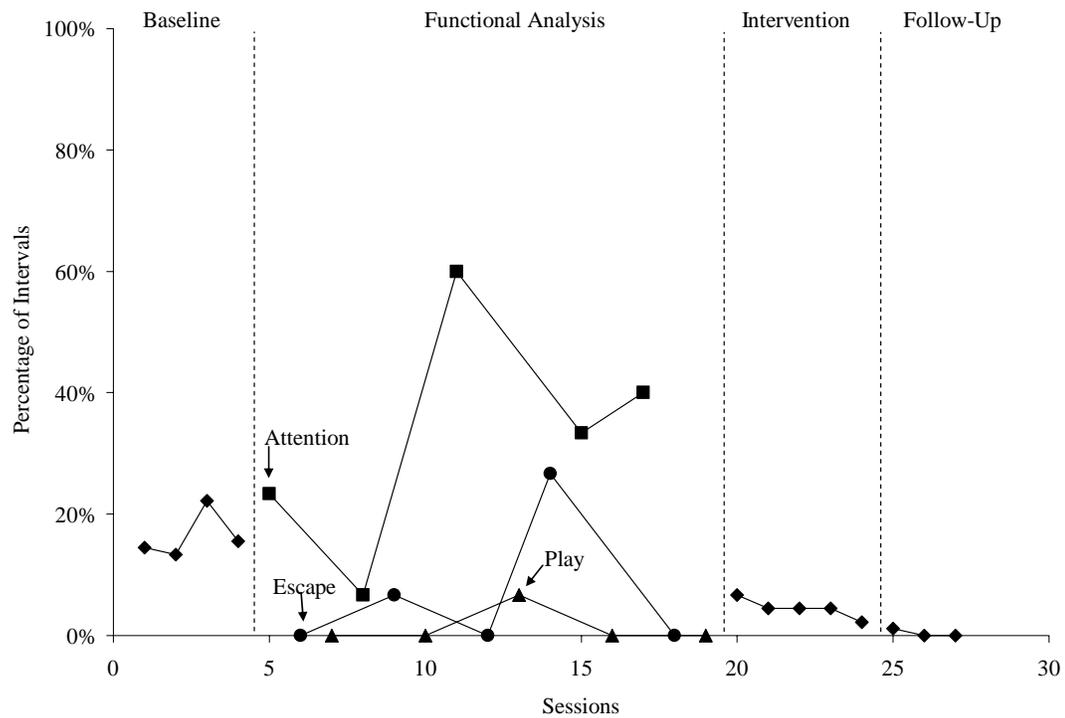


Figure 1. Percentage of 10-s intervals with disruptive behavior during the descriptive baseline, functional analysis, treatment evaluation, and follow-up for Ella.

Teacher behavior. Figure 3 reports the total number of intervals in which the teacher provided attention to Ella's inappropriate (i.e., disruptive and off-task) and appropriate (i.e., hand-raising without disruptive behaviors and engagement in academic tasks) behaviors. To allow for comparison of rates across both studies, the rate of teacher attention during Study 1 has been converted and is reported as rate per 5 min, although 15-min observations were conducted. During baseline, higher rates of attention were provided contingent on Ella's inappropriate behaviors. During intervention, attention was provided exclusively contingent on Ella's appropriate behaviors.

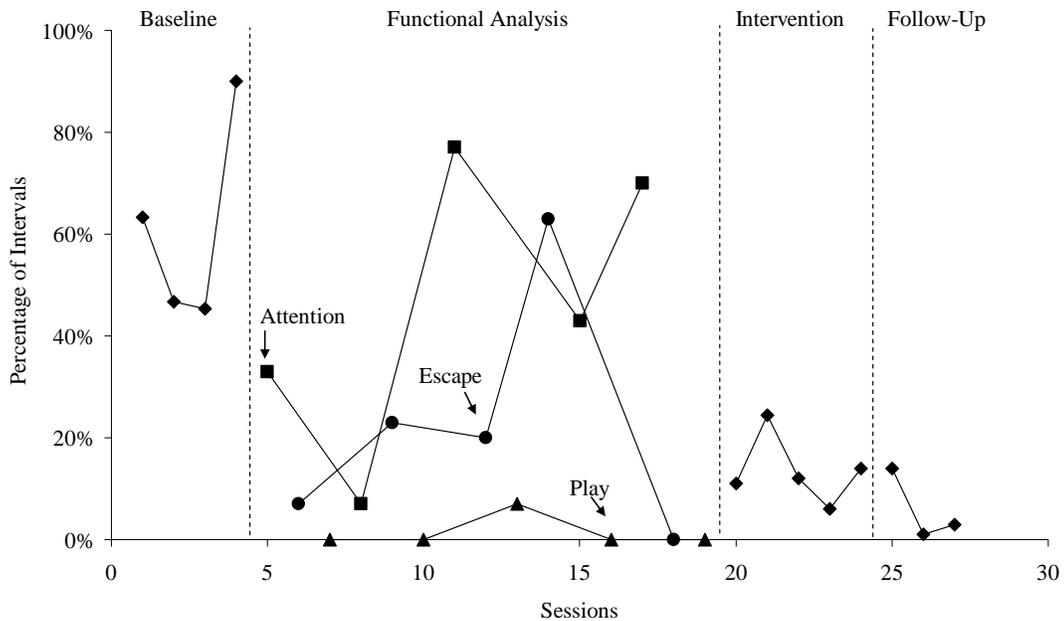


Figure 2. Percentage of 10-s intervals with off-task behavior during the descriptive baseline, functional analysis, treatment evaluation, and follow-up for Ella.

The percent of intervals of teacher presentation of demands during each condition was variable because the presentation of demands was only programmed during two of the functional analysis conditions. Demand presentation was programmed every 30 s in the escape condition during the functional analysis and only an initial demand was presented during the play condition. Otherwise, demand presentation was allowed to occur naturally during baseline, the attention condition of the functional analysis, intervention, and follow-up. The highest percent of intervals of demand presentation occurred during the escape condition. Percent of intervals per minute were as follows: the average during baseline was 0.22 per minute, attention

0.12 per minute, escape 1.68 per minute, play 0.04 per minute, intervention 0.37, and during follow-up observations the rate of demands was 0.06 per minute.

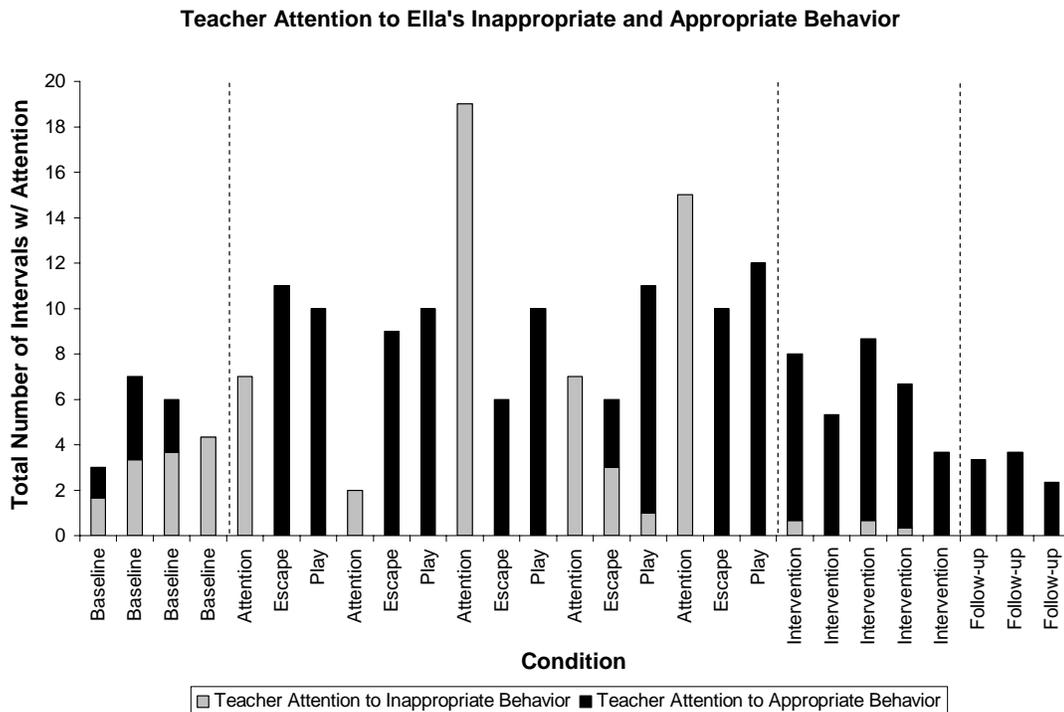


Figure 3. Total number of 10-s intervals with teacher attention to the participant's inappropriate and appropriate behaviors per 5 min of observations.

Procedural Integrity

Figure 4 describes the fidelity of implementation by the teacher during each session of each condition of the functional analysis and intervention for Ella. During the functional analysis, the teacher's overall average percent of correct responses during 30, 10-s intervals was 98% (range = 90% - 100%). The teacher's overall average percent of correct responses was 100% during the attention condition, 96% (range = 90% - 100%) during the escape condition, and 99% (range 97% - 100%) during the play condition. During the function-based intervention, the teacher's

overall percent of correct responses was 99% (range = 96% - 100%). Overall, integrity was high across all conditions and observations.

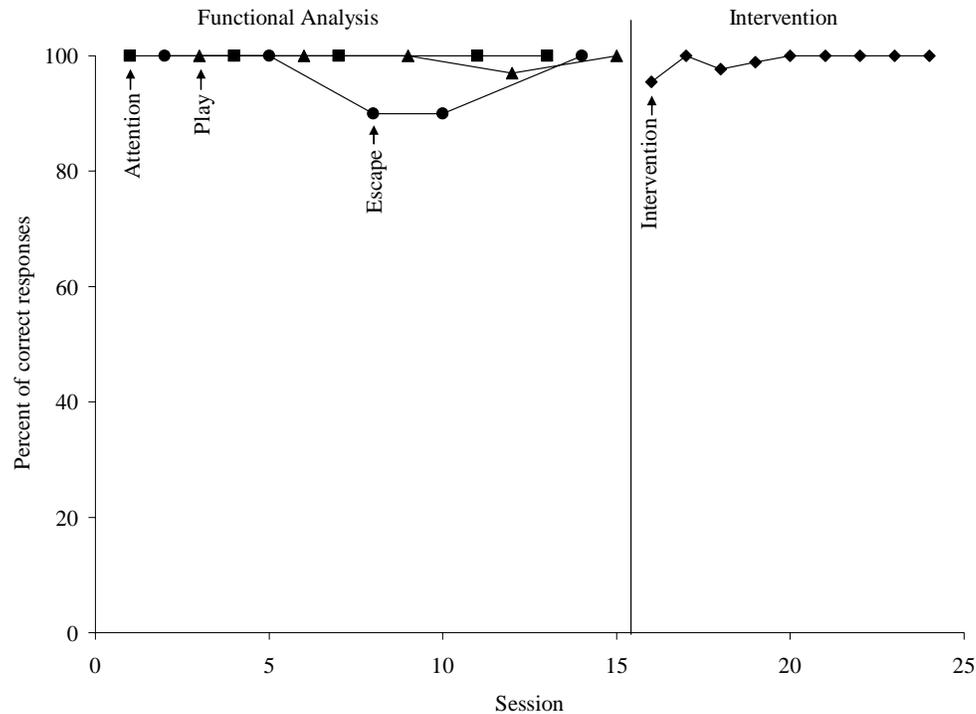


Figure 4. Percent of 10-s intervals scored as correct teacher responses across 5-min functional analysis and 15-min intervention observations.

Social Validity

Using a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree), data were collected on the acceptability of the current procedures. Eight questions were rated as strongly agree (rating = 1), and one question was rated as agree (rating = 2). For example, the teacher strongly agreed that the procedures for running the functional analysis were easy to learn and perform. He also strongly agreed that the procedures for running the intervention were easy to learn and perform. He summarized that the intervention helped him “to focus on the

needs of the students individually. It was very easy to follow along with, even when other students needed my help.” The teacher also stated that it helped him be positive with other students in the reading group. The teacher strongly agreed that the function-based intervention increased Ella’s on-task behavior and productivity while decreasing her inappropriate behavior. The teacher agreed that he would recommend the use of functional analysis and function-based interventions to other teachers working with students with behavior problems and strongly agreed that he would continue using what he had learned if he worked with Ella again during the next school year. Finally, the teacher reported that what he liked best about the results of the intervention was Ella’s increase of on-task behavior and “her attitude became more manageable.”

Study 2

Functional Assessment Interview

Results from the interviews suggested problem behaviors were disruptive behaviors and off-task behavior for all 3 participants. When asked to identify the “function” of each participant’s disruptive and off-task behaviors, (i.e., when asked, “After the occurrence of a problem behavior, what does the participant gain or avoid?”) the teacher responded that for Brandon and Paul it was to avoid work. The teacher reported that for LaTonya the function of her disruptive and off-task behavior was to gain attention and to avoid work. This was inconsistent with the researcher’s hypotheses based on the direct behavioral observations in which attention appeared to

be the maintaining function. Therefore, a functional analysis was needed to empirically identify the function of disruptive and off-task behavior.

Descriptive Baseline, Functional Analysis, and Intervention

Figures 4 and 5 represent the descriptive baseline, functional analysis, and intervention data for each participant. Figure 4 represents the percentage of intervals with disruptive behaviors and Figure 5 represents the percentage of intervals with off-task behaviors. For Brandon, as depicted in Figure 5, there was an upward trend during baseline and during the functional analysis there was an elevated percentage of disruptive behaviors in the teacher attention condition while maintaining zero to near zero rates during the escape and play conditions. These results suggest that attention was the maintaining variable for Brandon's disruptive and off-task behavior. As depicted in Figure 6, there was an upward trend during baseline and a high level of off-task behaviors during the attention condition, while maintaining a low level of off-task behavior during the escape and play conditions, further supporting that attention was the maintaining variable for Brandon's disruptive and off-task behaviors. After the FM-DRO, DRA, and extinction intervention was implemented, disruptive behaviors decreased and maintained at zero to near zero levels, while off-task behavior demonstrated a downward trend and then maintained at low rates.

For LaTonya's, as depicted in Figure 5, there was an upward trend during baseline and during the functional analysis there was an elevated percentage of disruptive behaviors in the teacher attention condition while maintaining low rates during the escape and play conditions, suggesting that attention was the maintaining

variable for LaTonya's disruptive and off-task behaviors. In Figure 6, there was an upward trend during baseline and high and variable rate of off-task behaviors during the attention condition, while maintaining low levels of off-task behavior during the escape and play conditions, further supporting that attention was the maintaining variable. After the FM-DRO, DRA, and extinction intervention was implemented, disruptive behaviors decreased to low levels, while off-task behavior also decreased and maintained at low levels.

As depicted in Figure 5, Paul's data were variable with an upward trend during baseline. During the functional analysis there was an elevation in the percentage of intervals disruptive behaviors occurred in the teacher attention condition while maintaining zero to near zero rates during the escape and play conditions. This suggests that attention was the maintaining variable for Paul's disruptive and off-task behaviors. As depicted in Figure 6, there was a high but variable rate of off-task behavior during baseline and an increasing trend of off-task behavior during the attention condition, while maintaining a low level of off-task behavior during the escape and play conditions, further supporting that attention was the maintaining variable. After the FM-DRO, DRA, and extinction intervention was implemented, disruptive behaviors decreased and maintained at zero to near zero levels, while off-task behavior also decreased and maintained at low levels.

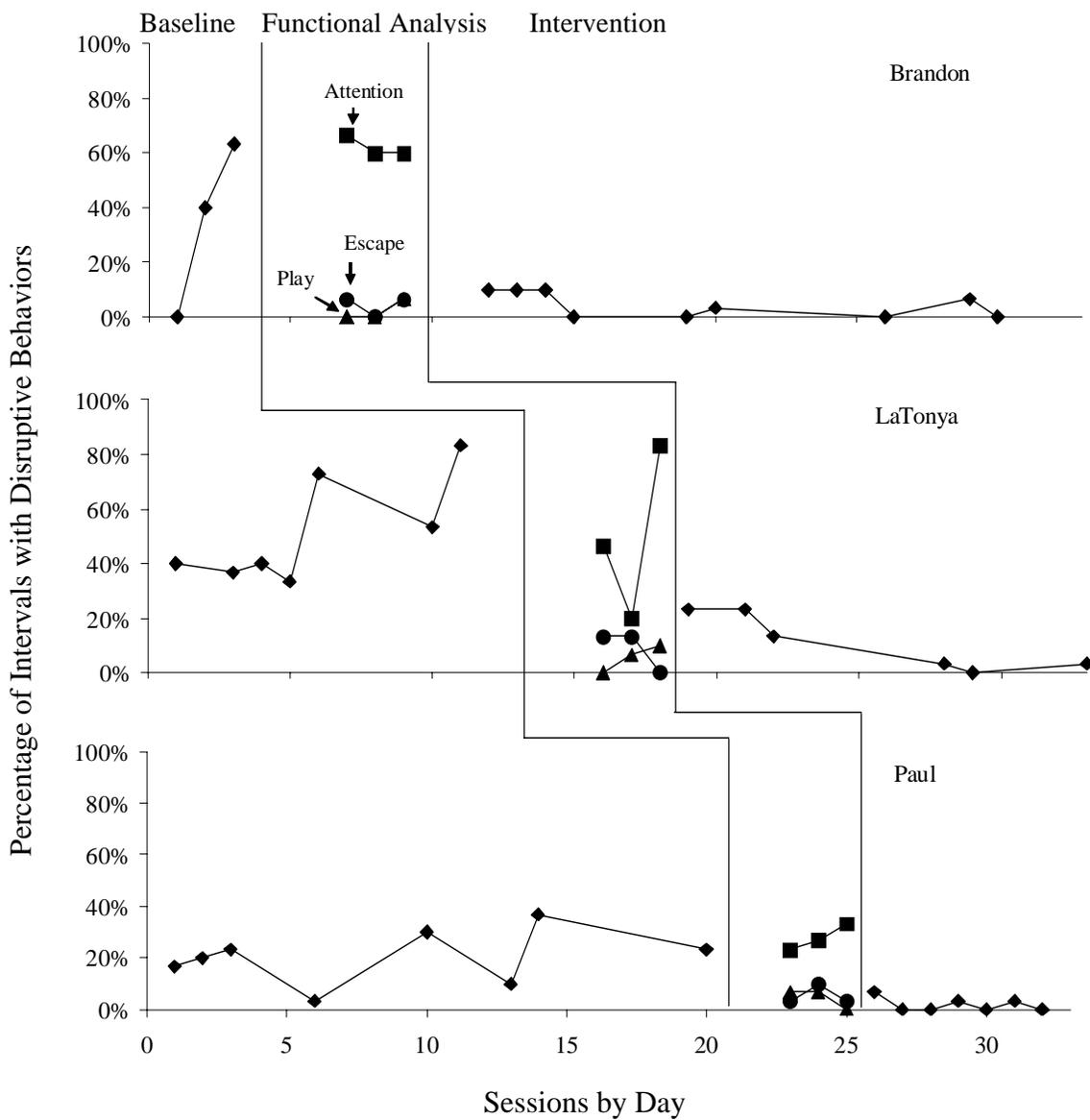


Figure 5. Descriptive baseline, functional analysis, and treatment evaluation results for Brandon, upper panel, LaTonya, middle panel, and Paul, lower panel. Data are presented as the percentage of 10-s intervals in which disruptive behaviors occurred.

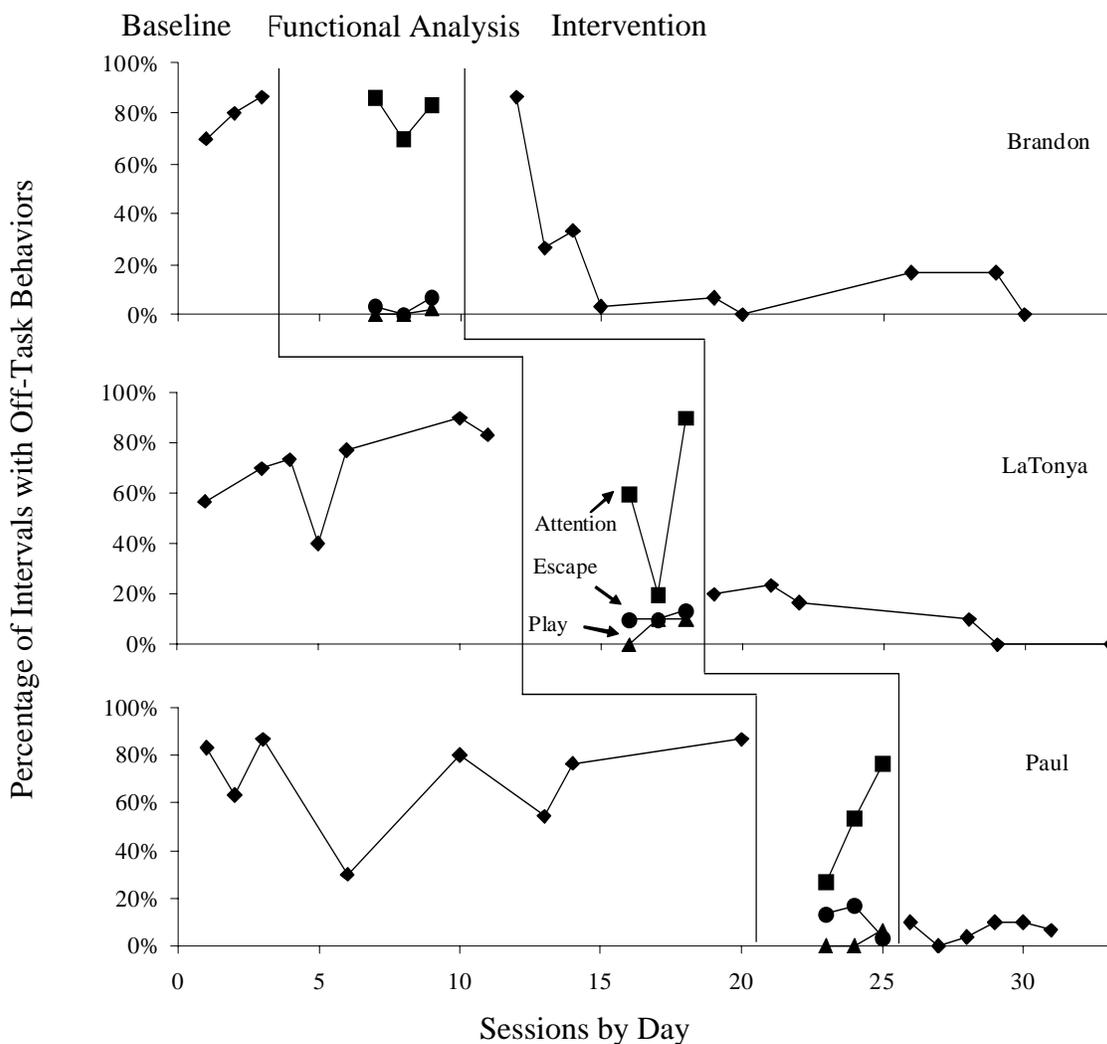


Figure 6. Descriptive baseline, functional analysis, and treatment evaluation results for Brandon, upper panel, LaTonya, middle panel, and Paul, lower panel. Data are presented as the percentage of 10-s intervals in which off-task behaviors occurred.

Teacher behavior. Figure 7 reports the average number of intervals per 5-min session for each condition with teacher attention to the participants' inappropriate and appropriate behaviors. During baseline, higher rates of attention were provided contingent on inappropriate participant behaviors. This contingency was reversed during intervention; higher rates of attention were provided contingent on appropriate

participant behaviors. This data provides further support that attention was the maintaining function for the participants' disruptive and off-task behaviors.

The number of intervals per minute with teacher presentation of demands during each condition was variable because the presentation of demands was only programmed during two of the functional analysis conditions. Demand presentation was programmed every 30 s in the escape condition during the functional analysis and only an initial demand was presented during the play condition. Otherwise, demand presentation was allowed to occur naturally during baseline, the attention condition of the functional analysis, and intervention. The highest number of intervals with demand presentation per min occurred during the escape condition. The average rates across all participants were as follows: the average during baseline was 0.09 per minute, attention 0.16 per minute, escape 1.84 per minute, play 0.11 per minute, and intervention 0.30 per minute.

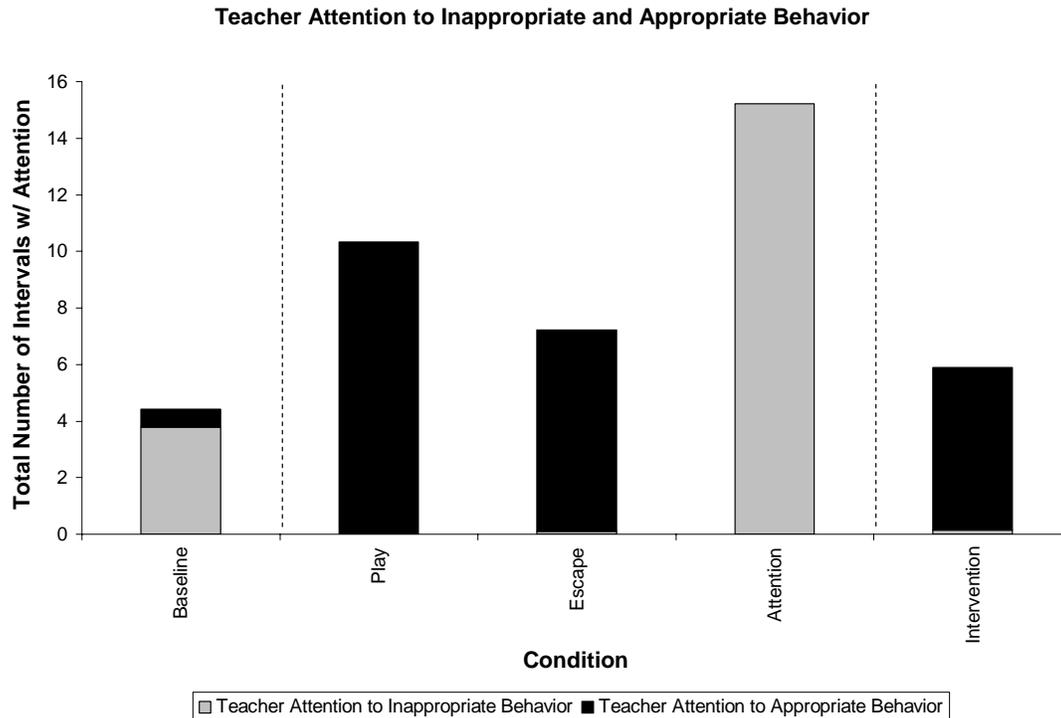


Figure 7. Average number of intervals with teacher attention to the participants' inappropriate and appropriate behaviors per 5-min observations across all conditions.

Procedural Integrity

Figure 8 reports the average fidelity of implementation by the teacher during each session of each condition of the functional analysis and intervention observation for all participants. During the functional analysis, the teacher's overall average percent of correct responses was 97% (range = 80% - 100%). The teacher's overall average percent of correct responses was 99% (range = 97% - 100%) during the attention condition, 91% (range = 80% - 100%) during the escape condition, and 100% during the play condition. During the function-based intervention, the teacher's overall percent of correct responses across all 3 participants was 99% (range = 97% - 100%). Overall, integrity was high across all conditions and observations. The lowest

percentage of integrity was observed during the functional analysis escape condition. This was due to the teacher not providing praise following the participant complying with the academic demand. During the intervention observations, the only observations that were not scores of 100% were due to the teacher providing attention contingent on the participant's disruptive and off-task behavior. This was recorded a total of three times during all intervention observations.

Social Validity

Using a 5-point Likert scale (1 = strongly agree, 2 = agree, 3 = not sure, 4 = disagree, 5 = strongly disagree), data were collected on the acceptability of the current procedures. Four questions were rated by the teacher as strongly agree (rating = 1), three questions were rated as agree (rating = 2), and two questions were rated as not sure (rating = 3). For example, the teacher strongly agreed the procedures for running the functional analysis were easy to learn and perform. He also strongly agreed the procedures for running the intervention were easy to learn and perform. He summarized that the intervention “gave the kids more immediate positive motivation and feedback.” The teacher agreed that the intervention increased on-task behavior, increased the participants' productivity, and decreased inappropriate behaviors. The teacher was undecided if he would recommend using a functional analysis and function-based interventions to other teachers working with students with behavior problems, and was undecided if he would continue using these procedures next year if he has the same students.

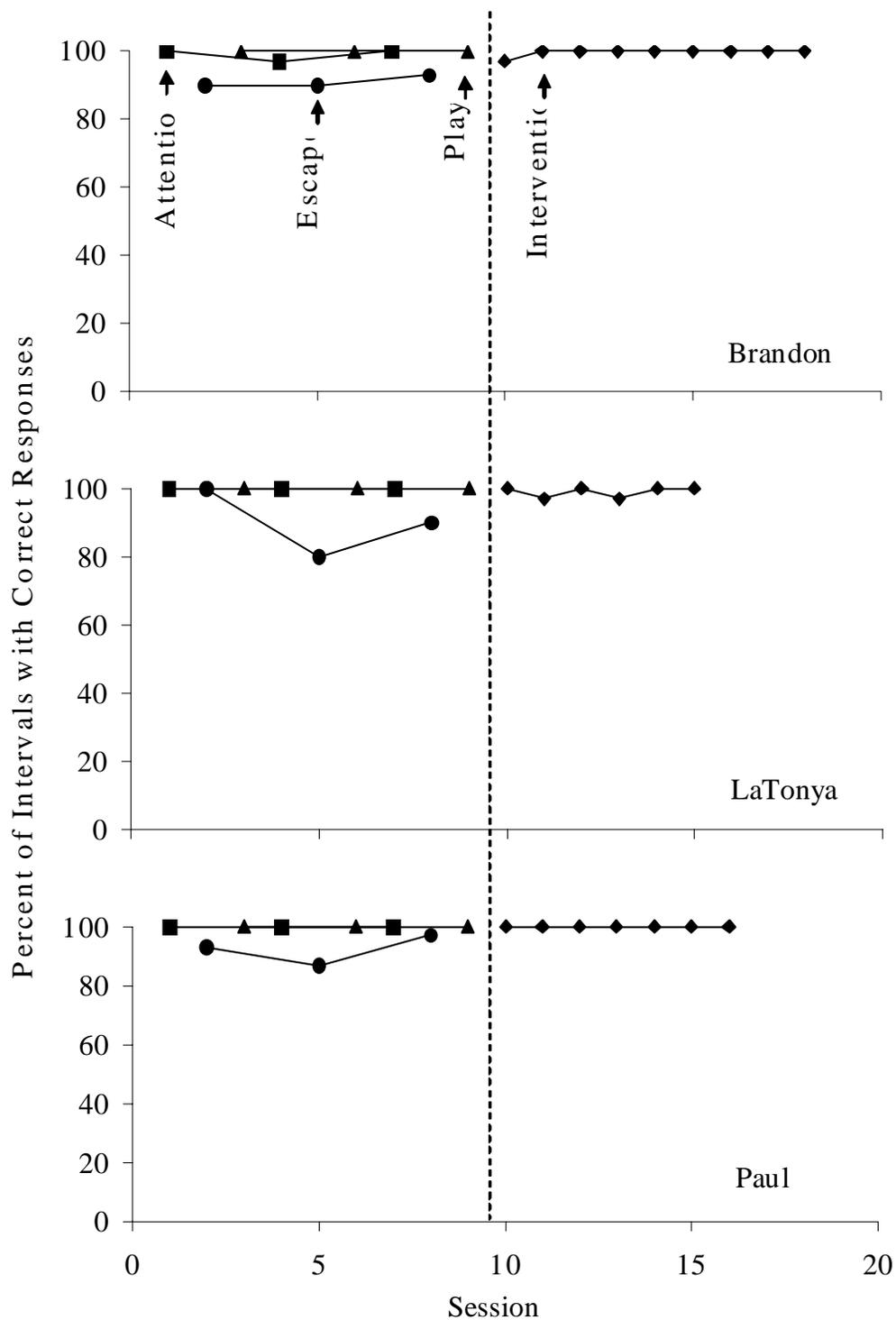


Figure 8. Percent of 10 s intervals scored as correct teacher responses across 5 min functional analysis and intervention sessions

Discussion

The purpose of these studies was to address limitation in the literature related to the effective use of experimental functional analyses conducted by school personnel in school settings. As previously stated, a limited number of studies have evaluated the effectiveness of experimental functional analyses conducted by teachers in school settings and even fewer studies describe the methods used to train the teachers (Shumate, 2008). Another limitation of the current literature is the dearth of studies evaluating the use of functional analyses with children without disabilities. Furthermore, few data exist regarding the level of integrity of teacher implemented functional analyses or the social validity of using this methodology in school settings (Shumate, 2008). In summary, the studies conducted here were a response to documented needs in the area of conducting functional analyses with children without disabilities in a school setting. Seven research questions were addressed and the results of both studies will be discussed as they relate to each of the research questions. This paper will conclude with a discussion of limitations within these studies and recommendations for future research in this area.

Teacher Implemented Functional Analysis (question 1 both studies)

Across Study 1 and 2, the time required to train the teacher to conduct the functional analysis and implement the experimental conditions was minimal. Training was 15 min during Study 1 and a review of the procedures was 10 min during Study 2. During Study 1, the functional analysis was conducted for a total of 15, 5-min sessions; totaling 75 min across 5 days. The functional analysis indicated that

disruptive and off-task behavior was maintained by attention. Additionally, escape was ruled out as another possible function for these behaviors, even though they occurred during academic periods. During Study 2, fewer sessions were required to effectively identify the function; only 9, 5-min sessions were conducted for each participant. Thus, for each participant the functional analysis took a total of 45 min (i.e., 15 min each day for a total of 3 days). The functional analysis indicated that disruptive and off-task behavior was maintained by attention for all 3 participants. Furthermore, escape was ruled out as a possible function for all 3 participants.

Findings from the current study support prior research using the functional analysis methodology for students in school settings engaging in behavioral problems (Ervin et al., 2001), specifically in general education settings (Scott et al., 2004), and with typically developing children (Moore et al., 2001). For example, the finding that off-task and disruptive behavior in the classroom setting was maintained by attention (versus escape) for all 4 participants is consistent to previous research (Ervin, et al., 2001; Lewis & Sugai, 1996; Volmer & Northup, 1996). Additionally, other studies have found that classroom teachers can play a vital role in conducting functional analysis (Moore et al., 2001; Kamps et al., 2006).

Teacher Implemented Function-based Intervention (question 2 both studies)

The functional analysis demonstrated that teacher attention maintained disruptive and off-task behaviors for all participants across both studies. Based on this hypothesis, a function-based intervention including a FM-DRO, DRA, and extinction was implemented. This intervention programmed reinforcement for other behaviors

and alternative behaviors, while extinction was implemented for all disruptive and off-task behaviors. This function-based intervention was successful in decreasing the rates of disruptive and off-task behaviors for all participants, in turn resulting in an increase of on-task behavior.

These results add to the literature by providing further support of the effectiveness of function-based interventions when the function is identified through the use of an experimental functional analysis. Several researchers have demonstrated larger improvements in behavior when using function-based versus non-function-based interventions (Moore et al., 2001; Wright et al., 2006), and in turn, the use of function-based treatments has decreased the use of punishment-based procedures (Pelios, Morren, Tesch, & Axelrod, 1999). Behavioral interventions that are based on the maintaining function of the problem behavior are more likely to be effective because they modify the maintaining contingency rather than rely on strong reinforcers and/or punishers that override the conditions maintaining the behavior (Mace, 1994).

In these two studies, the function-based intervention implemented modified the contingencies that had previously resulted in the participants gaining the teacher's attention. More specifically, the disruptive and off-task behaviors that previously gained attention no longer resulted in gaining the reinforcer, systemically interrupting the response-reinforcer contingency. Additionally, more socially appropriate behaviors (i.e., on-task behaviors and raising one's hand without engaging in

disruptive behaviors) resulted in gaining the preferred reinforcer (i.e., teacher attention).

Integrity and Social Validity (question 3 both studies)

Integrity. A recent review of the literature found only eight school-based functional analysis studies that used school personnel as the therapist and collected integrity data (Shumate, 2008). Integrity data increases internal validity by demonstrating that the conditions are run with high accuracy. In Study 1 and 2, the reading teacher implemented the functional analysis conditions with high procedural integrity (Study 1, mean = 98%; Study 2, mean = 97%). It should be noted that in Study 2, levels of integrity decreased below 90% (80%; 87%) for two of the escape condition sessions. It was observed that although the participant was compliant with a teacher directive, no praise or attention was provided for appropriate behavior during both sessions because the teacher was monitoring other students. The integrity of implementation is a concern when the teacher is not fully focused on the participant, because they are also monitoring and conducting regular academic activities with other students. Importantly, this teacher was able to maintain high integrity with a total of 4 participants.

While these studies are an additional demonstration that school personnel can implement experimental sessions and a function-based intervention with high fidelity, there are still too few studies to make the assumption that all school personnel would be able to implement these procedures with high integrity. It is essential that future research include measures of integrity to allow an empirical basis to support the use

of functional analysis conducted by school personnel and during on-going instruction and to provide internal validity to the results of such studies.

Social validity. While the teacher reported that the functional analysis procedures were easy to use and the function-based intervention was effective, there is some concern that he was undecided if he would recommend or use the procedures in the future. Based on the teacher's verbal report and additional comments made on the survey following Study 2, the teacher stated that he had learned the effectiveness of giving attention to appropriate behaviors versus inappropriate behaviors and in the future would employ this specific behavior management strategy before considering the need to run a formal functional analysis. The teacher anecdotally reported that when he used these strategies with other students, they appeared more focused and on-task during academic times. It is hypothesized that the teacher may have had concerns regarding the efficiency of the functional analysis procedures similar to conclusions reported by Scott et al. (2004). As elaborated by Scott et al., school personnel may question the efficiency of running a functional analysis in the regular classroom during normal instruction when there are more students and demands being placed upon the teachers. In the current study the setting included a small group of students in a reading intervention classroom, in contrast to the majority of general educational settings with larger numbers of children. It is unknown if the reading teacher would have been able to efficiently and accurately conduct the functional analysis during normal instruction with a larger class of 20 or more students or without the support of a researcher. Scott et al. suggested the need to make the

functional assessment process efficient and effective for teachers, and summarized that functional assessment methods are currently a mix of trial and error in uncontrolled and unmonitored experiments. While the current study demonstrated the ability of a teacher to efficiently and effectively run a functional analysis and implement a function-based intervention for 4 participants in a small group setting, it is unknown if these procedures could be used in a larger group setting.

The Extent to Which Study 1 and 2 Support the Use of Functional Analysis and Function-based Interventions in School Settings During Ongoing Instructional Activities

In contrast to Nelson, Roberts, Mathur, & Rutherford's (1999) finding that the results reported in the literature do not support school personnel conducting assessments, the current studies provide a demonstration that school-based personnel can implement effective behavioral assessments and across multiple participants. Furthermore, findings from this study extend previous research by demonstrating that a teacher can successfully perform functional analysis conditions during normal academic activities. One unique contribution these studies make to the literature is that there have only been two other studies that have included the teacher conducting the functional analysis in the classroom during normal instruction in which integrity data were also reported (see Moore & Edwards, 2003; Mueller, Edwards, & Trahan, 2003). While Study 1 and 2 extend previous research and support the use of this methodology in school settings by demonstrating a training method that took minimal time but resulted in the teacher conducting the functional analysis conditions during

normal ongoing academic instruction with high integrity, this remains an under researched area and more research is needed to evaluate the efficacy of these modification.

Additionally, direct behavioral observations were conducted to allow the comparison of naturalistic baseline rates to the rates obtained during each participant's functional analysis and intervention. While all participants had the highest rate of disruptive behavior during the functional analysis in the attention condition compared to the other conditions, only 1 participant had higher rates of disruptive behaviors during the baseline condition. In addition, 1 participant had comparable rates during the attention condition and baseline and 2 participants had overall higher rates during the attention condition than compared to the naturalistic baseline. While the overall rate of disruptive behaviors was higher for these 2 participants, Brandon from Study 2 had a steep upward trend during baseline and during the attention sessions all 3 data points were at the same level as the highest baseline point. If Brandon's baseline observations had been conducted longer, it is unknown if the rate of behavior would have become stable and maintained at the same level as observed in the attention sessions. In Study 1, Ella's rate of disruptive behavior was elevated and slightly variable during baseline and during the attention condition rates of behavior were elevated and highly variable with an upward trend during the attention condition. The mean rate of disruptive behaviors increased from 16% at baseline to 33% of intervals during the attention sessions.

The direct behavioral observations were also conducted to help address the concerns of school personnel regarding the direct manipulation of contingencies that could possibly increase problem behaviors. From the results, school personnel were able to observe that each participant's rate of behavior remained within manageable levels during the functional analyses. Additionally, the functional analyses were concluded as soon as a stable pattern of behavior was observed and the function of the participant's problem behavior was identified and then the intervention to decrease the behavior was implemented.

Following the identification that attention was the maintaining variable for all participants' disruptive and off-task behaviors across both studies, the teacher was trained to implement the treatment components. This resulted in the teacher demonstrating the ability to implement the intervention with a high degree of integrity across both studies. Moreover, during Study 2 he implemented the treatment with multiple participants simultaneously. One interesting finding was the difference in rates of attention during baseline across both studies. During Study 1, the teacher provided more attention to inappropriate behaviors (3.25 10-s intervals with attention per 5 min) during baseline, compared to the attention provided for appropriate behaviors (1.83 10-s intervals with attention per 5 min). During the baseline for Study 2, he provided more of his attention to inappropriate behaviors (3.78) as compared to appropriate behaviors (0.65). This was not what would be expected due to the teacher anecdotally reporting that he understood the effectiveness of providing attention to appropriate behaviors compared to providing attention contingent on disruptive and

off-task behaviors following Study 1. In addition, he had successfully applied this contingency during the previous school years. As demonstrated by the direct behavioral observations during Study 2, the teacher did not generalize the behavioral skills he mastered and implemented in Study 1 to the new group of students in Study 2 who engaged in the same type of problem behaviors. This brings into question how much training is necessary for school personnel to master a behavior management strategy and generalize the use of this skill across settings and students. While function-based interventions are best practice for students that engage in problem behaviors, it is also essential that school personnel have general behavior management strategies to help manage large groups of students and prevent behavior problems that interfere with learning. This is concerning and another area in need of research. Furthermore, this brings into question the ability of school personnel to independently conduct a functional analysis. It is unknown if the teacher would have been able to conduct the experimental sessions without the 10 min review of the procedures and without the researcher prompting him during those sessions. It is also unknown if this is even something that can be expected of school personnel. It is possible that a school psychologist or behavior specialist might be able to be responsible for conducting the functional analysis, although there are currently no published studies that include these personnel conducting the functional analysis. It has been suggested by other researchers that school personnel should not be expected to independently conduct functional analyses, but instead they should be able to have the resources to request that a behavior analyst come into the classroom to conduct

the functional analysis (Scott, Anderson, & Spaulding, 2008). While this is beyond the scope of the current studies, it is an interesting problem that future research needs to address so that schools are able to comply with federal mandates. Study 1 and Study 2 provide empirical support for having a behavior analyst (i.e., researcher) come into the classroom to assist the school personnel with the functional analysis and function-based intervention during ongoing instruction by demonstrating that a teacher can implement the experimental conditions with the aid of a researcher prompting and collecting data.

Limitations

The findings and conclusions discussed in this study may be limited by some important factors. One potential limitation of the present study was the decision to conduct the functional analysis conditions during regular reading instruction time. The establishing operation for escape was likely present during all three experimental conditions, thus possibly confounding the functional analysis results. The participants were instructed to begin reading at the beginning of every class and their reading materials were present during the attention and escape conditions, therefore the establishing operation for escape was present during these two conditions. In addition, during the control/play condition, participants were instructed to read the book of their choice in the special reading corner. Although the demand to read was presented at the beginning of the condition, the participants were allowed to pick a high preference book during the control/play condition. However, during the attention and control/play conditions, scheduled prompts to read were not delivered and

reading materials were not removed contingent on disruption. It is possible that the high level of responding during the attention condition could have occurred due to the presence of the establishing operation for escape, and not because the establishing operation for attention was present. Although this is theoretically possible, results from the functional analysis suggest that attention, not escape from demands, was the maintaining variable for all 4 participants. If the participants were engaging in target behaviors solely to escape the demands and not to gain attention, then the rate of behaviors would have also been high during the escape condition. During the demand condition, attention was provided contingent on on-task behaviors, and it was delivered every 30 s. Therefore, it is possible that the establishing operation for attention was also present during the demand condition, but only for appropriate on-task behaviors.

A second limitation is that the functional analysis and function-based intervention were only conducted in one setting within the school and with the same teacher. Additionally, the students were all typically developing and engaged in the same behaviors. Although the reading teacher was able to effectively replicate the procedures across two school years, it can not be overlooked that these procedures were only conducted in a reading classroom with a small group of typically developing students during a 20-min period. Generalization to other settings, such as to the general education classroom, was not programmed. Additionally, follow-up data were not collected with the participants in Study 2 as a result of the school year

ending. To further examine the generality of the procedures used in the present study, replication across multiple teachers, settings, and participants is needed.

A third limitation is the methodological flaws in Study 1. First, only an AB design was used to evaluate the effects of the function-based intervention. While the inclusion of the multi-element design for the evaluation of the functional analysis conditions increases the internal validity of this study, it still cannot rule out that other uncontrolled variables may have been responsible for the decrease in disruptive and off-task behaviors. Second, the play/control condition was always conducted as the last session of the day, while the escape and attention condition were randomized. One potential side effect of this could have been order effects. For example, it is unknown if the participant would have been more likely to engage in off-task behaviors at the end of the 20-min class, and therefore more escape behavior could have been seen if all the conditions were randomized during Study 1.

A fourth limitation is the possible side effects of the utilized behavioral procedures. One side effect that can arise from using a DRA in a classroom is that students may engage in a high rate of the alternative behavior to gain the reinforcer (i.e., attention), causing classroom disruptions (Wright-Gallo et al., 2006). While this did not happen in the current study, the participants could have recruited the teacher's attention appropriately by raising their hand on a repeated basis (i.e., unnecessarily), causing a decrease in academic engagement. Also, if the teacher were to continue to respond immediately when the participants raised their hands, the teacher could have

potentially spent the entire class period responding to only the 3 participants and not be able to rotate around the room and monitor all the students in his class.

Moreover, instead of reading while waiting, the participants could have sat quietly waiting for the teacher to respond if he was working with another student, resulting in a lack of productivity. Future studies should monitor the frequency that the participants engage in the alternate behavior and if there are any potential negative side effects if the frequency is high.

Future Directions

The ability of teachers or school personnel to implement this methodology with high integrity during their typical duties without assistance from researchers needs to be demonstrated (Scott et al., 2004) prior to recommending experimental functional analysis as an FBA procedure for independent use in school settings. Future research should address whether or not other school personnel trained using the same procedures utilized in this study can successfully conduct the experimental sessions in similar instructional settings (i.e., small group), in instructional settings with larger groups of students (e.g., general classroom instruction, gym class), and across multiple settings. Research is also needed to evaluate whether school personnel can be trained to perform a functional analysis, collect data, interpret data, make data based decisions, and design a function-based intervention for students engaging in problem behaviors with and without the assistance of a researcher. This will allow for an empirical foundation in which to develop a technology of functional analysis for

schools to use. Further research is also necessary to determine the efficiency of the teacher conducting all these roles compared to other school personnel.

Summary

In summary, these studies add to the literature by demonstrating the effectiveness of a classroom teacher implementing a functional analysis and function-based intervention with four typically developing students. It has been suggested that more functional analysis research is needed with children without any identified disabilities (Hanley et al., 2003) and that the current literature does not support the use of FBA methods in school (Nelson et al., 1999). These studies were an attempt to address these research needs by conducting the experimental analysis in the classroom with the teacher implementing the experimental conditions and intervention with an under researched population. Additionally, integrity and social validity data were collected to provide internal and external validity to the evaluated procedures. Overall, the teacher effectively conducted the functional analysis for each student which identified attention as the maintaining variable for off-task and disruptive behaviors for all participants. Then the teacher effectively implemented a function-based intervention which resulted in low rates of off-task and disruptive behaviors.

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APPENDIX A
DATA COLLECTION SHEETS FOR EACH CONDITION

Functional Analysis Data Collection Sheet for the Baseline Condition

Date: _____

Student _____
Teacher _____

Observer _____ (Reliability Y/N)
Activity _____

Setting _____
Time _____

	10s	20s	30s	40s	50s	60s
1 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
2 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
3 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
4 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
5 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 

Behaviors

Disruptive= student disruptive behaviors

Adult Rec= student approp. recruiting teacher attention

TA - = Teacher attention was given to disruptive or off-task behaviors

TA + = Teacher attention was given to socially appropriate behaviors

Demand= An instruction was given

 =Off-task

Functional Analysis Data Collection Sheet for the Attention Condition

Date: _____

Student _____
Teacher _____

Observer _____ (Reliability Y/N)
Activity _____

Setting _____
Time _____

	10s	20s	30s	40s	50s	60s
1 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
TARGET(Attend) Non-target (Ignore) Approp. (Ignore)						
2 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
TARGET(Attend) Non-target (Ignore) Approp. (Ignore)						
3 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
TARGET(Attend) Non-target (Ignore) Approp. (Ignore)						
4 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
TARGET(Attend) Non-target (Ignore) Approp. (Ignore)						
5 min	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec _____ TA - _____ TA + _____ Demand _____
TARGET(Attend) Non-target (Ignore) Approp. (Ignore)						

Behaviors

Disruptive=
student
disruptive
behaviors

Adult Rec.=
student
approp.
recruiting
teacher
attention

TA - =
Teacher
attention
was given to
disruptive or
off-task
behaviors

TA +=
Teacher
attention
was given to
socially
appropriate
behaviors

Demand=
An
instruction
was given

=Off-task

Functional Analysis Data Collection Sheet for the Play Condition

Student _____ Observer _____ (Reliability Y/N) Date: _____
 Teacher _____ Activity _____ Setting _____
 Time _____

	10s	20s	30s	40s	50s	60s
1 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (1g 5s) Non-target (1x 5s) Approp. (Respond)						
2 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (1g 5s) Non-target (1g 5s) Approp. (Respond)						
3 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (1x 5s) Non-target (1g 5s) Approp. (Respond)						
4 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (1x 5s) Non-target (1x 5s) Approp. (Respond)						
5 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (1x 5s) Non-target (1x 5s) Approp. (Respond)						

Behaviors

Disruptive=
student
disruptive
behaviors

Adult Rec=
student
approp.
recruiting
teacher
attention

TA - =
Teacher
attention
was given to
disruptive or
off-task
behaviors

TA + =
Teacher
attention
was given to
socially
appropriate
behaviors

Demand=
An
instruction
was given

=Off-task

Functional Analysis Data Collection Sheet for the Escape Condition

Date: _____

Student _____
Teacher _____

Observer _____ (Reliability Y/N)
Activity _____

Setting _____
Time _____

	10s	20s	30s	40s	50s	60s
1 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (Remove) Non-target (Ig & Cont.) Approp. (Ig & Cont.)						
2 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (Remove) Non-target (Ig & Cont.) Approp. (Ig & Cont.)						
3 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (Remove) Non-target (Ig & Cont.) Approp. (Ig & Cont.)						
4 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (Remove) Non-target (Ig & Cont.) Approp. (Ig & Cont.)						
5 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
TARGET (Remove) Non-target (Ig & Cont.) Approp. (Ig & Cont.)						

Behaviors

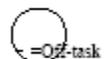
Disruptive= student disruptive behaviors

Adult Rec= student approp. recruiting teacher attention

TA - = Teacher attention was given to disruptive or off-task behaviors

TA + = Teacher attention was given to socially appropriate behaviors

Demand= An instruction was given



Functional Analysis Data Collection Sheet for the Intervention Condition

Date: _____

Student _____
Teacher _____

Observer _____ (Reliability Y/N)
Activity _____

Setting _____
Time _____

	10s	20s	30s	40s	50s	60s
1 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
2 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
3 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
4 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 
5 min	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____	Disruptive _____ Adult Rec. _____ TA - _____ TA + _____ Demand _____
	 	 	 	 	 	 

Behaviors

Disruptive= student disruptive behaviors

Adult Rec= student approp. recruiting teacher attention

TA - = Teacher attention was given to disruptive or off-task behaviors

TA += Teacher attention was given to socially appropriate behaviors

Demand= An instruction was given

 =Off-task

APPENDIX B
FUNCTIONAL ANALYSIS COLOR CODED CARDS

Attention Condition: Attend to all inappropriate behaviors, Ignore all appropriate behaviors.

Escape Condition: Every 30 seconds give a clear instruction “Name, start reading.” If the student complies within 5 seconds praise, if noncompliant repeat instruction, if still noncompliant, take away materials and ignore until the next instruction. If the student engages in a disruptive behavior, remove the task until the next instruction.

Play Condition: No demands (exempt for the initial instruction), attention given every 30 seconds, if an inappropriate behavior occurs do not give attention until 5 seconds after the behavior. When the student tries to appropriately interact, reciprocate. Ignore all inappropriate behaviors.

APPENDIX C

INTERVENTION DESCRIPTION PROVIDED TO THE TEACHER

Give positive attention once per minute as long as it is at least five seconds since an undesirable behavior. Ignore all undesirable behaviors. When she is holding her hand up nicely, attend to her.

Examples of positive attention: Hi (name), I like the way you are walking in the room, great job getting right to work, good job, keep up the good work, thanks for sitting so quietly, excellent job reading today.

As her behavior improves, and your ratings of her behavior continue to improve the schedule of positive attention will thin. So if her behavior is acceptable two days at once per minute, then the next day you can move to once every two minutes. After two good days at once per two minutes, you can move to once every three minutes. If at any time her disruptive and off-task behaviors increase, then you will go back to the previous schedule the next day (if using once every two minutes and she does not have a good day, the next day you will do once every minute again until she has two good days, then move ahead again to once every two minutes). If the schedule is once every 3 minutes and she has problem behavior, move her back to once every two minutes, and if she continues to have problems on that schedule, move her back to once every minute until the behavior improves again.

Acceptable days are defined as ratings of a 4 or 5 on all three categories (i.e., target behaviors, replacement behaviors, and engagement).

APPENDIX D
TEACHER SELF-MONITORING SHEET
FM-DRO INTERVENTION

Date: _____

Positive Attention (1x per min)

	5min	10min	15min	Over		
Target Behaviors	0	1	2	3	4	5
Replacement Behaviors	0	1	2	3	4	5
Engagement	0	1	2	3	4	5

Date: _____

Positive Attention (1x per min)

	5min	10min	15min	Over		
Target Behaviors	0	1	2	3	4	5
Replacement Behaviors	0	1	2	3	4	5
Engagement	0	1	2	3	4	5

Date: _____

Positive Attention (1x per min)

	5min	10min	15min	Over		
Target Behaviors	0	1	2	3	4	5
Replacement Behaviors	0	1	2	3	4	5
Engagement	0	1	2	3	4	5

APPENDIX E
TEACHER SOCIAL VALIDITY QUESTIONNAIRE
STUDY 1 RESULTS

Satisfaction Survey

Please circle your response to the following questions using the rating scale:

- 1=Strongly Agree
- 2=Agree
- 3=Not Sure
- 4=Disagree
- 5=Strongly Disagree

1. The procedures for running the functional analysis were easy to learn.

① 2 3 4 5

2. The procedures for running the functional analysis were easy to perform.

① 2 3 4 5

3. The procedures for running the intervention were easy to learn.

① 2 3 4 5

4. The procedures for running the intervention were easy to perform.

① 2 3 4 5

5. Overall, what did you like most about the functional analysis and intervention training?

“It helped me to focus on the needs of the students individually. It was very easy to follow along with, even when other students needed my help. It helped me to be positive with other students in my reading group.”

6. The functional analysis and intervention training would be better if....

“N/A”

7. The use of the function-based intervention increased on-task behavior of the student.

① 2 3 4 5

8. The use of the function-based intervention increased the student's productivity.

① 2 3 4 5

9. The use of the function-based intervention decreased inappropriate behavior of the student.

① 2 3 4 5

10. I would recommend the use of a functional analysis and function-based interventions to other teachers and paraprofessionals working with students with behavior problems.

1 ② 3 4 5

11. I will continue using what I have learned, if I work with this child next year.

① 2 3 4 5

12. What did you like best about the results for this student after using this intervention?

"The student increased in on-task work, and her attitude became more manageable."

13. What about the intervention could have been better?

"N/A"

14. Any other feedback and/or suggestions.

"None."

APPENDIX F
TEACHER SOCIAL VALIDITY QUESTIONNAIRE
STUDY 2 RESULTS

Satisfaction Survey

Please circle your response to the following questions using the rating scale:

- 1=Strongly Agree
- 2=Agree
- 3=Not Sure
- 4=Disagree
- 5=Strongly Disagree

1. The procedures for running the functional analysis were easy to learn.

① 2 3 4 5

2. The procedures for running the functional analysis were easy to perform.

① 2 3 4 5

3. The procedures for running the intervention were easy to learn.

① 2 3 4 5

4. The procedures for running the intervention were easy to perform.

① 2 3 4 5

5. Overall, what did you like most about the functional analysis and intervention training?

“It gave the kids more immediate positive motivation and feedback.”

6. The functional analysis and intervention training would be better if....

“N/A”

7. The use of the function-based intervention increased on-task behavior of the student.

1 (2) 3 4 5

8. The use of the function-based intervention increased the student's productivity.

1 (2) 3 4 5

9. The use of the function-based intervention decreased inappropriate behavior of the student.

1 (2) 3 4 5

10. I would recommend the use of a functional analysis and function-based interventions to other teachers and paraprofessionals working with students with behavior problems.

1 2 (3) 4 5

11. I will continue using what I have learned, if I work with this child next year.

1 2 (3) 4 5

12. What did you like best about the results for this student after using this intervention?

"The positive attention has caused the students to stay focused more on days when the intervention wasn't used."

13. What about the intervention could have been better?

"N/A"

14. Any other feedback and/or suggestions.

"N/A"

