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Comparison of Intervention Strategies Based on Experimental Analysis, Descriptive Analysis, and Reinforcer Assessment in Addressing Off-Task Classroom Behaviors.

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COMPARISON OF INTERVENTION STRATEGIES
BASED ON EXPERIMENTAL ANALYSIS, DESCRIPTIVE ANALYSIS,
AND REINFORCER ASSESSMENT
IN ADDRESSING OFF TASK CLASSROOM BEHAVIORS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
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in

The Department of Psychology

by

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ABSTRACT

Independent descriptive and experimental analyses as well as preferences assessments, were conducted. Descriptive analyses were conducted to identify baseline levels of off-task behavior, and to systematically describe the co-variation between off-task behaviors and peer attention, teacher attention, and the instructional task. Data on off-task behavior were analyzed by computing conditional probabilities associated with maintaining stimuli (e.g., peer attention). Intervention development was based on a simple contingency reversal. Experimental analyses were conducted to examine the extent to which off-task behavior was related to task difficulties or to consequences (i.e., peer attention) that were systematically programmed by the experimenter. Hypotheses and intervention development were developed in a manner similar to the interventions used for the descriptive analyses.

In addition to developing interventions based upon descriptive and experimental analyses, an intervention for each case was derived from a reinforcer preference assessment. The procedures were applied to five children between the ages of 6 and 11 years. The results showed that interventions derived from any of the three assessments were effective. For 4 of the 5 students there was little difference between interventions, derived from different assessment methods, and applied to the same child. When a
difference in intervention efficacy was present, the intervention derived
from the preference assessment generally was more effective than
interventions derived from descriptive and experimental analyses. Results
are discussed in terms of costs and benefits of various assessment
procedures.
CHAPTER 1

INTRODUCTION

Developing interventions for students with behavioral excesses that interfere with the learning process continues to be a major challenge for consultants practicing in school settings. Although there are suggestions for interventions that prevent or alleviate off task behaviors, (Maher & Zins, 1987; Thomas & Grimes, 1987; Witt & Elliott, 1985) the determination of the nature of the problem through some type of information gathering and problem solving process is necessary (Dunlap, et al. 1993). Increasingly, functional assessment is being viewed as an important process for the development of interventions. For intervention development, functional assessment data are critical in hypothesis formation (Dunlap, et al., 1993; Dunlap, Kern-Dunlap, Clarke, Robbins, 1991; Lentz, & Shapiro, 1986; Umbreit, 1995). Behavioral consultants employing direct assessment methods rely on such data to construct interventions that can be applied to the identified problems. However, traditional assessment (i.e., assessment conducted for description and classification of behavior) of disruptive children has been less useful for developing effective interventions (Elliott, Witt, & Kratochwill, 1991; Gresham & Witt, 1997). Hence, for the purpose of intervention development, functional assessment based on direct assessment of problem behaviors in the natural setting has been viewed
Increasingly as best practice (Carr, 1994; Elliott, Witt, & Kratochwill, 1991; Horner, 1994; Martens & Witt, 1988; Ysseldyke & Marston, 1990). Recently functional assessment has been incorporated into the Individuals with Disabilities in Education Act (IDEA).

Increasingly, functional assessment is being advanced as a process that can identify variables (i.e., antecedents and consequences) related to problem behavior (Dunlap, et al., 1993; Dunlap, et al., 1991; Lentz & Shapiro, 1986; Repp, Felce, & Barton, 1988; Taylor & Romanczyk, 1994; Umbreit, 1995). Assessment methods that attempt to identify relationships between environmental events and targeted behaviors come under the general category of functional assessment (Dunlap, et al., 1993). These methods seek to “identify the maintaining variables and stimulus conditions that govern the occurrence of the problem behaviors” (Dunlap, Kern-Dunlap, Clarke, and Robbins, 1991). Once the maintaining variables are identified, treatments can be developed. For example, when peer attention is associated with an increase in problematic behavior, then intervention design would typically seek to reduce access to peer attention for inappropriate behavior or increase peer attention contingent upon appropriate behavior.

There are three distinctly different, yet similar approaches to the identification of meaningful controlling stimuli: descriptive analysis,
experimental analysis, and preference assessment. Typically the first of these, descriptive analysis, has been used to identify both antecedents and consequences whenever the latter two have been used primarily to identify consequences. Descriptive assessment attempts to determine behavior-environment interactions in the setting in which the problem behavior occurs through systematic observation and without manipulating variables suspected to influence the behavior (Mace & Lalli, 1991). Experimental analysis has been defined as the "experimental manipulations of environmental variables to identify factors that maintain or suppress a target behavior" (Vollmer and Northup, 1996, p. 76). Finally, reinforcer or preference assessment, includes procedures directed toward the selection and use of appropriate and meaningful stimuli that may be used to decrease or increase targeted behaviors (Cooper, Heron, & Heward, 1987; Durand, Crimmins, Caulfield, & Taylor, 1989).

Given that each of these three methods has been the subject of investigations supporting its effectiveness, it is of interest to compare the three methods. One important means of evaluating assessment procedures is to determine the extent to which they have treatment utility (Hayes, Nelson, & Jarrett, 1987). The treatment utility of assessment is defined as "the degree to which assessment is shown to contribute to beneficial outcomes" (Hayes et al., 1987, p. 936). Importantly, each of these functional
assessment procedures have been shown to reliably identify consequences that improve the efficacy of treatments. That is, they have treatment utility (Hayes et al. 1987). In comparing assessment methods, certain questions are of interest: (a) To what extent does descriptive assessment yield data similar to experimental analysis? (b) Do similar interventions derived from descriptive and experimental analysis data compare to reinforcement-based interventions derived from preference assessment data? and (c) If the treatment utility of the three forms of assessment is approximately equal, then will other variables such as ease of implementation dictate their use in certain settings?

One purpose of this study was to provide a demonstration of the feasibility of conducting experimental analyses, descriptive analyses, and preference assessment within the classroom setting in order to identify variables associated with disruptive classroom behavior. A second purpose of this study was to extend our knowledge of assessment approaches in the regular education setting by examining the treatment utility of the three assessment strategies to determine which leads to treatments that produce the greatest reduction of off task behaviors. The goal being to identify consequences that can be applied by the teacher in the classroom to the problem of disruptive behavior and produce the most favorable outcome in the most efficient manner. Before discussing the methodology, a brief
review of the three assessment methods is presented below. Following that, is a review of treatment utility as a means to evaluate assessment procedures.
CHAPTER 2

REVIEW OF THE LITERATURE

Descriptive Analysis

Descriptive analysis is employed to determine behavior-environment interactions and does not include manipulating variables suspected of maintaining target behaviors (Bijou, Peterson, & Ault, 1968; Mace & Lalli, 1991). These data are used to develop a hypothesis about maintaining variables (e.g., peer attention, teacher attention, escape). Data derived from descriptive analyses are generally not used in isolation to develop interventions but instead are used to generate hypotheses about behavior which are tested within the context of controlled experimental conditions (Lalli, Browder, Mace, and Brown, 1993; Lerman & Iwata, 1993; Mace & Lalli, 1991). Three styles of recording behavioral events in field situations are sequence analysis which includes logging (i.e., narrative reports) behavioral events such as antecedent, behavior, and consequence as they occur; scatter-plot assessment which includes recording the occurrence of target behaviors within predetermined blocks of time; and, recording frequencies of occurrences and non occurrences of behavior within a time interval (Bijou et al. 1968; Cooper et al. 1987). The latter type of recording requires the observer to develop specific observational codes for targeted behaviors and determine the size of a time unit. For example, during
observation, the observer makes a mark in each time interval (i.e., 5-second intervals) in which the target response occurred. This data collection procedure is preferred to as scatter-plot assessment (Touchette, MacDonald, & Langer, 1985) and sequence analysis (i.e., antecedent-behavior-consequence; Sulzer-Azaroff & Mayer, 1977) because it reveals sequences of behavior and permits quantification of data (Bijou et al., 1968).

Most descriptive analysis derived from procedures originally described by Bijou et al (1968). These researchers detailed specific procedures for conducting descriptive field studies that result in data that can be interrelated with data from experimental studies. More specifically, Bijou et al (1968) put forth four basic rules that have become standard methodology for conducting descriptive analysis. For a precise account of behavior across time these authors stated that procedures should include (a) the formation of response definitions and categories, (b) the development of an interval-based observation procedure, (c) gathering objective data on behavior, and (d) assessing interobserver reliability. To demonstrate this methodology, Bijou et al (1968) observed the behavior of a four-year-old male with above average intelligence in a laboratory nursery school. An observational coding system was developed for recording two general categories of behavior: social contacts (e.g., subject verbalizes to adult) and sustained activities (e.g., sitting in a chair during story time, facing the
materials). Observers used frequency or interval/time-sampling procedures to record occurrences of the behaviors specified above. More specifically, the teacher recorded the occurrences of target behaviors every 10 seconds during a three-hour time period. The reliability of observations was evaluated by having a second observer simultaneously record occurrences of behaviors for 25% of the observation sessions. Data on child behavior were graphed and analyzed in terms of rate of occurrence. For example, researchers found that the subjects' "most dominant" behavior during art was talking to others (14% of the time). One purpose for gathering descriptive data as suggested by Bijou et al (1968) is that the data obtained on the behavior of the four-year-old in nursery school could be compared (normative information) to the behavior of another four-year-old child in the same nursery school. Also, behavior at the beginning of the school year could be compared to behavior at the end of the school year. These authors demonstrated that frequency of occurrence data obtained from descriptive analysis "may be used as a baseline for an experimental study in which conditions are manipulated to test for possible functional relationship"(Bijou et al., 1968, p.191).

Mace and Lalli (1991) sought to develop a methodology for linking descriptive and experimental analysis. In their study, they investigated the environmental determinants of bizarre vocalizations in a 46-year-old man.
with moderate mental retardation by first conducting a descriptive analysis under naturally occurring conditions. Descriptive data were collected to narrow the possible hypotheses. Observations were conducted at random times and lasted between 30 and 60 minutes. These observations were conducted in various rooms of the group home where the man lived. Antecedent and subsequent events were recorded using a continuous 10-second partial-interval recording system. The descriptive data were analyzed by way of conditional probabilities which revealed two plausible hypotheses: negative reinforcement concerning task-related demands; or positively reinforced by receiving attention after making bizarre vocalizations. The authors stated that collecting data under naturally occurring conditions was necessary for hypotheses formation and they suggested that the descriptive data allowed them to design more appropriate analogue conditions. Two hypotheses were formulated from the descriptive data and tested along with two other conditions designed to test a possible treatment package. They determined through experimental analysis that the behavior was maintained by positive reinforcement alone. Although the researchers contend that these two assessment strategies, when combined, are beneficial in terms of permitting more appropriate experimental conditions to be designed, they also showed that the data
obtained differed. Hence, the methodology allowed a direct comparison of
the two assessment approaches.

Given that descriptive data are described as correlational (Bijou et al,
1968) and the data obtained during experimental assessment are
functional, Lalli, Browder, Mace, and Brown (1993) stated that “it makes
intuitive sense to combine them” (p. 228). Also, the process of conducting
observations in the environment in which the problem behavior occurs
permits consultants to provide teachers with highly effective treatments in
a more timely manner. These authors conducted two field studies with the
first study consisting of collecting descriptive (Mace & Lalli, 1991) data on
three individuals described as children with mental disabilities and
exhibiting ongoing behavior problems that interfered with activities
associated with instruction. The second study detailed the procedures for
hypothesis selection and experimental analysis. The procedures for
pretreatment assessment were similar to the Mace and Lalli (1991) study,
but differed by increasing the amount of information obtained. A four-
phase assessment was conducted that included a problem identification
interview, scatter plot analysis, narrative recordings, and direct observation
using a 10-second partial-interval recording procedure. During systematic
observations, reinforcement contingencies between target behaviors and
environmental events were recorded. These descriptive assessment data
were used to design individualized treatments for problem behavior. Results of this study provided support for conducting descriptive assessments to generate hypotheses about variables maintaining problematic behavior in the classroom setting (Sasso et al. 1992). Mace et al. (1993) extended previous research (e.g., Mace & Lalli, 1991) by conducting the experimental analysis procedures in the natural setting with teachers providing the reinforcers. They suggested that staff members be trained to conduct these procedures and that the “continued refinement of functional analysis procedures will facilitate their more widespread use in community settings” (p.238). Sasso et al (1992) also used descriptive and experimental data to identify functional properties of aberrant behavior in the school setting. Researchers conducted conventional functional analyses outside the classroom and teachers conducted A-B-C assessments and classroom functional analyses. Although their data collections procedure differed across forms of assessments, the three methods yielded comparable findings suggesting similar maintaining contingencies.

Lerman and Iwata (1993) conducted descriptive (correlational) and functional (experimental) analyses to determine the degree to which results of both assessments led to similar conclusions about behavioral function. They suggested that it may not be possible to conduct experimental manipulations of variables in some settings and that the use of descriptive
analysis that permits quantification of data about multiple events may be the most viable alternative. To test this hypothesis, they conducted independent descriptive and functional analysis for six adults diagnosed as having profound mental retardation and exhibiting self-injurious behavior. The order and location of assessments varied. Descriptive analysis observations took place in different living areas of a residential home and experimental conditions were conducted during the day-treatment program in a room with a table and several chairs. Some sessions were conducted during physical therapy and during off-residence programs. Descriptive analyses were conducted during varied times between 9:00 a.m. and 5:00 p.m. Also, subjects were observed during 15 minute sessions once or twice daily for a total of six hours to twelve hours. These descriptive data were compared to the data from the experimental conditions which consisted of four conditions (i.e., attention, demand, alone, and play; Iwata et al., 1982) presented in a multielement design and conducted for three to five 15 minute sessions daily. Descriptive and experimental data on self-injurious behavior were analyzed by computing conditional probabilities. Their results demonstrated that systematic manipulation of antecedent and consequent events revealed behavioral function and that descriptive analysis did not yield consistent data leading to similar conclusions. However, these data are difficult to interpret because descriptive
observations should be conducted during classroom activities "that most closely approximate the conditions of the experimental analysis" (Lerman & Iwata, 1993; p. 317). These authors suggested their finding are similar to the Mace and Lalli (1991) study in that conducting descriptive analysis for the purposes of identifying what is maintaining self-injurious behavior may not be necessary.

Although conducting descriptive analysis is a well-accepted procedure for developing hypotheses about the function of behavior (e.g., Dunlap et al. 1991; Mace, Lalli, & Lalli, 1991), this assessment procedure has its advantages and disadvantages. The advantage is that a best practice model of intervention development calls for direct observations of target behaviors as they occur in the naturalistic environment (Bijou et al., 1968; Iwata, Vollmer, & Zarcone, 1990; Whaler, 1975). After an observation period, hypotheses are developed and tested and the treatment that yields the best results is implemented on a long term basis. The disadvantage of this type of method is that it can be time consuming and complex. However, Martens and Witt (1988) have suggested that descriptive assessments which involves the systematic and direct observation of child behavior in the classroom is ecologically valid. This assessment method has also been described by Iwata et al. (1990) as an objective approach because it
"involves firsthand observation of an individual's behavior in environmental contexts that are relevant to the problem" (p. 306).

**Experimental Analysis**

Experimental analysis refers to an operant methodology that allows for close examination of the effects of the environment on the occurrence of problem behavior (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982, 1994). This method has been defined as "the experimental manipulations of environmental variables in order to identify factors that maintain or suppress a target behavior" (Vollmer & Northup, 1996, p. 76). The goal of experimental analysis is to identify variables that maintain problem behavior so that the variables may be subsequently manipulated in order to intervene on problematic behaviors (Iwata et al., 1982, 1994). Typically, the manipulations are first evaluated using a multielement design and then the interventions derived are tested within the context of reversal or alternating treatments design (Iwata et al., 1990).

The advent of experimental (functional) analysis allowed behavior analysts to discover the conditions under which behaviors occur (e.g., Hawkins, Peterson, Schweid, & Bijou, 1966). Initial investigations considered only one behavior function in isolation, and did not investigate the possibility of behaviors being maintained by more than one variable. However, it was not until 1977 that Carr synthesized earlier works and
described three environmental events that could influence problem behavior: positive reinforcement, negative reinforcement, and automatic reinforcement. Since 1977, four key categories of controlling variables have emerged: attention-seeking (Carr & McDowell, 1980) escape from a task (Carr & Newsom, 1985), access to tangibles (Durand & Crimmins, 1988), and sensory reinforcement (Rincover, 1978).

Shortly after Carr described three events that could influence problem behavior, Iwata et al. (1982/1994) developed an operant methodology to test the hypotheses proposed by Carr. Iwata and his colleagues were interested in understanding the relationship between self-injury and specific environmental events for the purpose of improving treatments. By determining the function of behavior, it was expected that interventions other than those that include punishment could be used to eliminate self-injury (Iwata et al., 1982). Also, this was considered a movement away from subjecting individuals to “arbitrarily determined and seemingly endless series of interventions” (Iwata et al., 1994, p.198).

In their investigation of self injury and negative reinforcement, positive reinforcement, and automatic reinforcement, Iwata et al. (1982, 1994) exposed nine developmentally delayed subjects to a series of four analogue conditions that lasted 10 minutes each. More specifically, the conditions presented in a randomized fashion consisted of consequences.
presented or withheld. The four conditions were (a) attention which included adult attention in the form of a reprimand contingent on self-injury; (b) demand which included the presentation of a difficult task and its removal contingent on self-injury; (c) alone in which the subject was not provided with any materials to play or work with, and no attention was provided; and (d) play or control condition which consisted of no attention for self-injury, no demands, play materials present, and attention contingent on the absence of self-injury. The results demonstrated that the occurrence of self-injury varied between and within subjects. However, for six of the nine subjects, self-injurious behaviors were related to specific environmental events. This methodology has been "a major breakthrough in assessment research" because empirical research was translated into a practical method facilitating intervention development (Carr, 1994; p. 4).

Carr and Durand (1985) extended the functional analysis literature by examining the effect of social attention from adults and the level of task difficulty on problem behaviors such as aggression, tantrums, and self-injury. A major difference was the manipulation of antecedent events such as task difficulty instead of affecting behavior by manipulating consequence events. The results of their research demonstrated similar results to the Iwata et al. (1982) study in that problem behaviors such as aggression can be maintained by specific antecedent variables that can be manipulated.
Also, inappropriate behaviors may be considered forms of communication. An effective intervention was designed that involved providing individuals with ways of communicating their needs more appropriately. Functional communication training was provided and subjects were able to contact reinforcers without engaging in inappropriate behaviors. Importantly, the intervention was developed based on understanding the function of the behavior rather than its topography (Carr & Durrand, 1985). Additionally, an investigation by Mace and Knight (1986) focused on expanding the use of functional analysis to examine the relationship between antecedent and concurrent environmental variables and aberrant behavior such as pica. The authors found that when they varied the amount of interaction (i.e., limited, frequent, or no interaction) the amount of pica varied. Also, when the type of protective equipment varied, the amount of pica varied.

Using the procedures developed by Iwata et al. (1982) Northup et al. (1991) extended the procedural application of functional analyses to include an evaluation of replacement behavior during a brief (i.e., 90 minutes) analysis. The time frame of 90 minutes was considered typical of psychological evaluations. The procedures were considered brief because a series of analogue conditions lasting 10 minutes or less was implemented during a 1-day outpatient evaluation. Importantly, the results indicated that these procedures could be conducted in a classroom setting within a
hospital's inpatient unit. This study differed from previous research in that the functional analyses were not conducted in a highly controlled, long-term inpatient setting and the procedures were considered to be less complicated and time consuming. Also, the assessments provided useful information for individualized treatment development.

Within the area of developmental disabilities, there is an extensive literature demonstrating the utility of functional analysis and the development of interventions for self-injurious and other aberrant behaviors (e.g., Iwata et al. 1982; Mace, Page Ivanic, & O'Brian, 1986). An epidemiological study conducted by Iwata et al. (1994) summarized data from 152 single-subject analyses of the reinforcing functions of self-injurious behavior. The authors recommended continued research in this area although the findings summarized from 11 years of research in the area of self-injurious behavior provide support about the benefits of functional analysis as basis for treatment selection. Given these results, Carr (1994) recommended researchers continue to examine other functional properties of problem behavior, explore the role of context and social factors (e.g., sequencing of task, crowding, group interactions), and finally, consider conducting assessment in the naturalistic setting in which the behavior is a problem.
Since Iwata et al.'s (1982/1994) study, a significant amount of research has been presented in the literature demonstrating the utility of experimental analysis procedures. More recently, these procedures have been extended in several important ways. The two extensions most germane to the present study are: (a) conducting experimental manipulations with children of average intelligence, and (b) conducting the assessments in the natural setting (i.e., regular education classrooms) rather than in analogue conditions (e.g., Broussard & Northup, 1995, Fusilier, 1998; Sasso et al., 1992). For example, Cooper, Wacker, Sasso, Reimers, and Donn (1990) working with children of average intellectual abilities, conducted brief (90 minute) functional analysis procedures in outpatient clinics. The subjects' parents were trained to conduct the assessments directed toward identifying variables that maintained conduct problems. Variables associated with the participants problematic behavior, such as task difficulty and adult attention, were experimentally manipulated. These authors showed that children's behavior problems changed as a function of the level of attention and academic demands. These authors reported that the assessments were conducted in less time than it typically takes to complete a clinic assessment and the intervention plans developed from the analyses were subsequently rated as acceptable by the participants' parents at follow-up.
Similarly, Cooper et al. (1992) demonstrated the comparability of assessments conducted in both an outpatient and in a special education classroom. The procedures used differed from others (e.g., Cooper et al. 1990) in that the experimenter and not the parent or teacher conducted brief functional analysis conditions to assess conduct problems for children of average intelligence. It was demonstrated that the subjects' target behaviors varied systematically with levels of attention and academic demands.

Broussard and Northup (1995) extended functional assessment and analysis procedures to the regular education classroom to develop treatments for children considered at risk for more restrictive educational placement. In addition the feasibility of the use of these procedures in the regular education setting with children of average intelligence was evaluated. Broussard and Northup developed a brief assessment procedure to test the operant effects of teacher attention (e.g., Madsen, Becker, & Thomas, 1968; Thomas, Becker, & Armstrong, 1968; Kazdin, 1982), peer attention (e.g., O'Leary & O'Leary, 1972), and escape (i.e., negative reinforcement; Iwata, 1987) from academic demands on disruptive behavior. To form hypotheses about what variables were maintaining disruptive behavior, descriptive information from parent and teacher interviews, academic permanent products and direct observation data collected by the
teacher and the researchers was used. The conditions used in this study were teacher attention (contingent and noncontingent), peer attention (no peers and two peers), and escape (difficult, nonpreferred task, and easy, preferred task). In the teacher attention condition whenever the participant displayed a target behavior the therapist made a disapproving statement. During the noncontingent teacher attention condition the therapist verbalized approving comments and praise every 60 seconds. Disruptive behavior of the target student was compared across conditions in which peers were absent and peers were present. In the no peer attention condition, the participant sat alone in a room and was given academic tasks to complete. During the peer attention condition, two peers sat with the subject only and all three received academic tasks to complete. It was found that disruptive behavior occurred more frequently and fewer appropriate academic behaviors occurred when peers were present. During the escape conditions, the level of difficulty of the task (i.e., easy, preferred, difficult, nonpreferred) was varied and escape (i.e., instructional materials were removed for one minute) was provided contingent upon inappropriate behavior. The treatments derived from the functional analysis resulted in an increase in academic performance (i.e., accuracy and work completion) and near zero levels of disruptive behavior for all three students. This study extended previous research by assessing the effects of peer attention.
with children of average abilities. Although these researchers did not experimentally test the influence of all hypothesized variables, their procedures may be viewed as a step toward the development of such an assessment methodology. Importantly, the results suggested that this type of evaluation process is feasible within the context of ongoing instruction in a regular education classroom.

In another recent study, systematic manipulation of contingent peer and teacher attention and contingent escape were analyzed (Northup et al. 1995). Three children of at least average intelligence and diagnosed with Attention Deficit Hyperactivity Disorder were observed in a classroom setting for disruptive behavior. This study differed from Broussard & Northup (1995) in that instead of testing a single hypothesized variable, they provided an investigation of three variables including contingent teacher attention, contingent peer attention, and contingent escape from academic task. Visual inspection of the data indicated the provision of contingent peer attention resulted in a higher percentage of target behaviors than did contingent teacher attention for all three participants. Peer attention consisted of peer confederates who were instructed to remind the target student to pay attention to their work when they engaged in target behaviors. Contingency reversals (i.e., providing access to a specific item or event contingent upon appropriate behavior and withholding that...
same variable contingent upon the occurrences of target behaviors) were conducted to confirm the results of the functional analysis. The authors suggested that the use of peer confederates appeared to be an efficient method of directly manipulating peer attention. However, the results suggested that “peer and teacher attention may not be functionally equivalent, that peer attention can function as a unique form of positive reinforcement, and that the differential effects can be identified during assessment” (p.228).

Broussard (1996) also contributed to an expanding research base concerning the use of functional analysis with developmentally normal children in a regular education setting. This study complimented the study conducted by Northup et al (1995) by demonstrating that the results of functional analysis can be used to develop interventions based on peer attention to decrease disruptive classroom behavior and increase an alternative appropriate behavior. Broussard (1996) investigated the effect of peer attention, teacher attention, and time-out on disruptive classroom behavior. The peer intervention was conducted during 10 minute sessions in the classroom and consisted of differential reinforcement combined with extinction. Differentiation was found for each participant between the experimental conditions presented, and one condition, peer attention, was associated with a higher average of disruptive classroom behaviors for four
of five participants. These data provide further evidence that conducting functional analyses in regular education settings during ongoing class instruction is feasible and can be a valuable assessment strategy.

In a recent study, Fussiler (1998) compared interventions based on functional analysis and reinforcer assessment for three children of average intelligence who exhibited behavior problems in their elementary school classroom. Descriptive assessments were conducted for the purpose of operationally defining target behaviors, confirming the occurrence of target behaviors in the natural setting, and to determine what types of consequences occurred following inappropriate behavior. The four conditions used during functional analysis were control, where a preferred activity was provided along with positive attention every 30 seconds and inappropriate behavior was ignored; teacher reprimand, where instructional level materials were presented and neutral reminders were provided to the student to stay on-task; time out, where instructional level materials were provided and removed contingent on inappropriate behavior, and during task removal, the participant's desk was turned away from activities for 30 seconds; and peer attention, where instructional level materials were provided and a peer was seated next to student reminding the student to pay attention. A reinforcer assessment survey was administered to identify preferred categories of reinforcers. The functional
analysis intervention was based on DRO and extinction and the reinforcer assessment intervention consisted of the experimenter providing the participant with coupons contingent upon one minute of on-task behavior. The results suggested that there was little difference between the treatment for the immediate reduction of disruptive behavior. However, overall the reinforcer assessment intervention showed lower percentages of disruptive behavior. Fussiler (1998) suggested that “the results may have substantial applied implications as the reinforcer assessments may be considered less complex, and were less time consuming” (p. 57). These results are similar to Piazza et al. (1997) in that functional analysis results were undifferentiated and the treatment based on the reinforcer assessment reduced the problematic behavior.

In summary, functional assessment procedures have proved to be valuable for both developmentally disabled and developmentally normal children. However, researchers with developmentally normal children have begun to identify some concerns with that population. Broussard and Northup (1995) for example, suggested that researchers consider two factors that may complicate the refinement of procedures for developmentally normal children. First, specific variables to be included in functional analyses for developmentally normal children have not been clearly identified when compared to variables used with developmentally delayed
individuals. Second, “procedural variations necessary to accommodate more complex verbal repertoires in more complex environments have not been adequately demonstrated”. Also, Lewis and Sugai (1996) emphasized the need for additional investigations with children of normal intelligence in the school-based setting because “variables unique to general education setting, such as instructional content and delivery, large groups of students, and high demand for independent work, will necessitate expanding the current functional analysis experimental format” (p. 9). In addition to these considerations, Mace and Lalli (1991) suggested that the validity of functional analysis may be improved by “linking” descriptive and experimental analysis. Research such as this conducted in the regular education setting may have beneficial effects in terms of designing more appropriate educational settings for children consider at risk of placement in more restrictive settings (Broussard et al. 1995; Mace, Lalli, & Lalli, 1991).

**Reinforcer Assessment**

Various reinforcement-based procedures have been used successfully for the short term reduction of classroom disruptive behavior (Sulzer-Azaroff & Mayer, 1977). The goal of a reinforcer assessment is to identify stimuli that will increase appropriate behaviors. The selection and use of appropriate reinforcers is considered a crucial variable in intervention.
success (Hall & Hall, 1980; Northup, George, Jones, Broussard, & Vollmer, 1996). Reinforcer assessments are considered common practice when developing interventions for developmentally delayed and nonverbal children (Cooper et al. 1987; Hall & Hall, 1980). Also, it is generally recognized that different reinforcers have different effects or meaning depending on the individual and the setting. Given this, several methods of selecting reinforcers have been developed. Basic methods for determining which stimuli are reinforcing to an individual are (a) asking the individual what they like or would like to earn for appropriate behavior, (b) conducting multiple observations of the individual and keeping data on what types of activities or events they participate in or choose to do given free time and an array of choices, (c) administering surveys, (d) providing an individual the opportunity to sample or experience unfamiliar reinforcers’ non contingently, (e) forcing a choice given two stimuli presented simultaneously, and (f) testing the effectiveness of stimuli by delivering various stimuli contingent on the appropriate behavior.

The most common and simple method for selecting potential reinforcers, especially with verbal children, is accomplished by asking what he or she would like to earn for appropriate behavior (Barrett, 1962; Cooper et al. 1987). This method can also be accomplished by using surveys or open-ended questions (e.g., what is your favorite . . . ). Such methods,
while simple, are problematic in that what people say they want does not always correlate with what they will work for (Guevrement, Osnes, Stokes, 1986; Risley & Hart, 1968). Also, some specific individuals are not verbal. Hence, more systematic methods have been developed that include direct observation.

Pace, Ivancic, Edwards, Iwata, & Page (1995) developed a way systematically to validate stimulus preferences of six clients with profound retardation. Two experiments were conducted: the first experiment consisted of exposing the clients to 16 stimuli representing a variety of types (e.g., mirror, fan, heat pad) and observing their responses to each. The stimuli were presented one at a time at five second intervals for 10 trials. Stimuli approached on at least 80% of the trials were defined as preferred and nonpreferred stimuli were stimuli approached on 50% or less of the trials. In Experiment 2, preferred and nonpreferred stimuli were tested to determine their reinforcing properties. The stimuli were delivered contingent on the occurrence of selected responses. The results showed that preferred items produced higher rates of responding.

Fisher et al. (1992) extended the Pace et al. (1985) approach by modifying how the stimuli were presented and then comparing their effects on levels of responding. The modified version involved presenting two reinforcers simultaneously and recording the participants' choice. The
participants were given the reinforcer they approached first. This study demonstrated that a forced-choice preference assessment better indicated which stimuli would maintain higher levels of responding.

Northup, Jones, Broussard, and George (1995) evaluated the utility of verbal forced-choice questionnaire, child nomination, and direct observation to determine which method was the best in terms of identifying reinforcers for verbal children diagnosed with ADHD. The method involved first showing each child five toys and asking them to nominate their favorite. Next, they were asked to choose preferred items in a forced-choice format. This involved verbally presenting all combinations of the five toys in pairs and asking "would you rather play with toy 1 or toy 2?" The toys were ranked based on how frequently they were chosen. Finally, the children were observed during 10 minutes of free play in which all five toys were available. Toys were ranked based on the number of intervals in which the child engaged with each toy. In addition, subjects were asked to complete academic work in order to gain access to preferred reinforcers. Their data indicated that preference varied across assessment methods and that only one of ten subject's preferences indicated agreement between the three methods. Preliminary results indicated that subjects were more likely to work for reinforcers they played with during free play and those identified through the verbal forced-choice procedure rather than
reinforcers based upon nomination. In a follow-up study, Northup, George, Jones, Broussard, & Vollmer (1996) did a comparison of treatment utility of a reinforcer survey, a verbal stimulus-choice questionnaire, and a pictorial stimulus choice questionnaire for verbal children with ADHD. Results indicated that the pictorial and verbal stimulus-choice assessments identified high and low preference categories relatively accurately for three of four participants. In addition, surveys used alone were less likely to correspond with the results of a reinforcer assessment.

In summary, reinforcement-based interventions are often effective in altering problematic behavior of children. One advantage of the use of a reinforcer assessment is that the time required for assessment is often minimal in comparison to other procedures. Additionally, administering a reinforcer assessment does not require extraordinary materials or expense. Therefore, this method is practical for identifying potent reinforcers for appropriate alternative behaviors. Also, Schwartz and Baer (1991) suggest that individual preferences may be more accurately assessed if the items are made available simultaneously. Having to choose one item from an array of items is more similar to the natural environment. Alternatively, a disadvantage of reinforcer assessment is that the methodology has not yet been widely utilized to identify reinforcers for inappropriate behaviors. In the event a reinforcer assessment can effectively identify variables that
maintain inappropriate behavior, "then the methodology might be an alternative or adjunct to more complex functional analysis procedures" (Broussard, 1996; p. 46).

**Treatment Utility**

Treatment utility refers to "the degree to which assessment is shown to contribute to beneficial treatment outcomes" (Hayes et al., 1987, p.963). The three functional assessment procedures reviewed previously (i.e., experimental assessment, descriptive assessment, and reinforcer assessment) each have been shown to reliably identify consequences which are important to children and adults. The ultimate criteria for each of these assessment procedures, however, is treatment utility or the extent to which the data derived from the assessment can be used to develop effective treatments. Given that each of the assessment methods reviewed are designed to be linked to treatment, they lend themselves to an analysis of treatment utility within single case studies.

Commonly the multielement or alternating treatments design is used to evaluate treatment utility. This is an experimental design "in which two or more treatments are concurrently or simulataneously presented to the subject and in which by his behavior the subject chooses between treatments" (Cooper et al., 1987; p. 179). Given that consultants are typically asked to determine which treatment will produce the greatest
improvement in behavior, one way to test for differential treatment effects is to develop at least two distinct treatments and then test them by rapidly alternating them across or within daily sessions. Ahearn, Kerwin, Eicher, Shantz, and Swearingin (1996) compared two treatment packages for three children with chronic food refusal. One treatment included physical guidance contingent on noncompliance, whereas the second treatment involved nonremoval of the food until the child accepted the food. An alternating treatments comparison was implemented in a multiple baseline design for each subject. Each child was exposed to at least nine sessions of each treatment with the goal of 80% food acceptance. Both treatments were found to be effective however physical guidance was associated with fewer corollary behaviors. After goal attainment, the caregivers selected the treatment they preferred. Sainato, Strain, Lefebvre, and Rapp (1987) developed two treatments to increase appropriate, independent movement of handicapped preschoolers during transitions times. They used alternating treatments design to see if treatment A, peer-mediated prompt, or treatment B, an antecedent prompt would yield increases in the target behavior. Visual analysis of data showed that the antecedent prompt condition was more effective in terms of children transitioning more independently.
The effectiveness of using an alternating treatments design to determine treatment utility has the following advantages: (a) sequence effects are minimized, (b) treatment withdrawal is not required, (c), treatment comparison can be made quickly, (d) irreversibility is minimized the problem of irreversibility, (e) unstable data can be used, (f) generalization of behavior can be continually assessed, and (g) an initial baseline is not necessary (Cooper, et al., 1987). Alternating treatments design that includes a baseline phase, alternating treatments phase, and a final phase consisting of the most effective treatment is the design that offers the most information (Cooper, et al., 1987).

Purpose of the Present Study

Descriptive analysis, experimental analysis, and reinforcer assessment have been demonstrated to be effective assessment methods. This study has two purposes: (a) to provide a demonstration of the feasibility of conducting experimental analysis, descriptive analysis, and preference assessment within the classroom setting in order to identify variables associated with disruptive classroom behavior; and (b) to extend our knowledge of assessment approaches in the regular educations setting by examining the treatment utility of the three assessment strategies to determine which leads to treatments that produce the greatest reduction of off task behaviors. This study focused on assessment, treatment
development, and treatment utility using objective data derived from the assessment methods.

This study was guided by the following research questions:

1. To what extent does descriptive assessment yield data similar to experimental analysis?

2. Do similar interventions derived from descriptive and experimental analysis data compare to reinforcement-based interventions derived from preference assessment data?

3. If the treatment utility of the three forms of assessment is approximately equal, to what extent will other variables such as ease of implementation dictate their use in certain settings?
CHAPTER 3

METHOD

Overview

Treatments were developed by analyzing information from descriptive and experimental assessment data. The treatments were applied to target behaviors exhibited during math class by regular education children ages five through ten years. This study was conducted in five phases. The first phase involved conducting a teacher interview and a descriptive assessment to identify consequences most often associated with target behaviors. The second phase consisted of an experimental analysis with the teacher conducting experimental conditions designed to identify the extent to which target behaviors are sensitive to particular consequences (e.g., peer attention). The third phase involved introducing a reinforcer survey for identifying stimuli that may function as reinforcers. In the fourth phase, data were reviewed and hypotheses derived for intervention development. The final phase evaluated the effectiveness of a minimum of two treatments on off task classroom behaviors using an alternating treatment design.

Subjects

Teachers within a large urban school district served as the referral source. Participants in this study were five elementary school children
between the ages of five and ten years who were exhibiting behavior problems during math class. Participants were selected based on the following criteria: (a) the student was participating in regular education, (b) the student was referred by his or her teacher and the teacher was asking for assistance with behavior problems occurring during math, (c) problems displayed during math class often result in decreased academic engagement, (d) the student reportedly exhibited disruptive off-task behaviors (i.e., out of seat, talking out, object play) on a daily basis for at least a two-week period, (e) the classroom teacher agreed to conduct classroom-based assessment procedures and the interventions derived from

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<th>Student and Teacher Characteristics</th>
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the assessment, and (f) consent to participate was obtained from parents (Appendix A). Refer to Table 1 for a summary of student and teacher characteristics. Participation by teachers was voluntary. Informed consent (Appendix B) was obtained from all teachers who agreed to: (a) complete pencil and paper measures pertaining to the student and procedures used, (b) participate in a structured interview (Appendix D), as well as other informal meetings, and (c) allow multiple observations in the classroom during math class.

**Setting and Materials**

This study was conducted in the elementary classrooms in which the students were enrolled. Descriptive analyses, experimental analyses, and interventions were conducted in the participants’ usual classroom setting. Direct observation data were collected in an unobtrusive manner during naturally occurring math lessons while the participating student was in their assigned seat or designated work area. The curriculum-based assessment procedures were conducted outside the classroom.

Task materials for the experimental and intervention conditions were math, multi-skill worksheets which were individually derived for each student and presented at the appropriate level of difficulty. Sessions conducted during the final phase of intervention used math tasks presented by the classroom teacher according to her lesson plan.
Response Definitions

Student off-task behaviors included any diversion from the teacher defined math task. The following off-task behaviors were recorded using partial interval recording:

(1) Passive off-task was defined as looking away or turning from instructional materials. The student could not be engaged in talking out, out of seat or object play while passively off-task.

(2) Talking out included any vocalization or noise made by the student while not academically engaged.

(3) Out of seat was defined as the participants body breaking contact with the chair while not academically engaged.

(4) Object play was recorded if the student manipulated any instructional or non instructional materials while not academically engaged.

(5) Teacher and peer attention were defined as any contingent or noncontingent vocalizations, gestures, or physical contact between the participant and the teacher and/ or peer.

(6) Student work productivity and accuracy. Data were collected on the percentage of academic work completed by the student and the accuracy (i.e., percentage correct) of work completed during the experimental and intervention sessions. The data on student work productivity and accuracy
were collected to investigate the correspondence between off-task behaviors and academic work.

Measurement

Data Collection. An observational coding system was devised for recording student and teacher behaviors during the descriptive and experimental analyses, and intervention sessions (See Appendix E). The observation system permitted data to be collected concurrently on naturally occurring events such as off-task behaviors and peer and teacher attention.

Direct observational data were recorded by trained researchers who, prior to beginning the study, participated in direct instruction and practice on the coding system. First, observers were provided with written definitions of all variables of interest. Secondly, observers viewed videotapes of actual child behavior and coded their behavior according to the established definitions. Observers were considered trained after achieving 80% agreement criterion for two consecutive 10 minute observations.

All responses were recorded manually using a 10-second interval recording procedure. A cassette of a recorded voice cuing the observer every 10 seconds was used to allow a more precise and focused view of student, peer, and teacher behavior. During unobservable intervals (e.g., target
students' face blocked by teacher or peer) or brief interruptions (e.g., teacher talked to the observer) an "X" was written over the relevant interval.

**Interobserver Agreement.** Two independent observers simultaneously but independently collected data for a minimum of 50% of sessions, which were approximately equally dispersed across all phases of the study. Agreement was calculated on an interval-by-interval basis for each response definition by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100% (Kazdin, 1982).

**Procedural Integrity.** Experimenter, teacher, and peer behaviors were observed to assess the degree to which experimental analyses and intervention sessions were conducted as intended. Researchers noted whether the occurrence or nonoccurrence of target behaviors were followed by the appropriate contingencies during the same or subsequent 10-second interval. Procedural integrity was calculated by dividing the number of appropriate contingent responses by the number of opportunities to deliver the response.

**Curriculum-Based Assessment.** Each participant's math level was determined through the administration of multi-skill math probes and calculating the number of correct problems. Mastery level tasks were defined as those on which the participants averaged 90% correct. Tasks at
the frustration, or "difficult" level were defined as those on which participants achieved a correct score of 70% or lower (Deno & Mirikin, 1977; Starlin, 1982; Shapiro & Lentz, 1985). Math worksheets for prekindergarten were taken from the Houghton Series for Kindergarten students or from teacher developed materials. First through fourth grade materials were obtained from the Addison-Wesley Math Series. Mastery level math tasks were used during peer and teacher attention conditions, and frustration level tasks were used during the academic demand conditions.

**Treatment Acceptability.** The degree to which teachers found the interventions acceptable was determined using the Intervention Rating Profile - 15 (IRP-15; Martens, Witt, Elliott, & Darveaux, 1985). The IRP-15 was designed to measure whether a teacher considers an intervention appropriate for the student (Appendix F). Items are rated on a 6-point Likert-type scale, with the lowest point (1) being "strongly disagree" and the highest point (6) being "strongly agree." Reliability of this instrument has been reported as coefficient alpha of .98 for the total score (Witt & Elliott, 1985). The IRP-15 was administered after implementation of the intervention phase.
Teacher Training

Teachers received training prior to implementing experimental conditions and before intervention implementation. Both training sessions were conducted in the same manner, except the steps were different. Training included four phases. First, teachers were furnished a Classroom Coach (CC) which is a one page step-by-step description of teacher procedures that is intended to serve as a reminder for the teacher when carrying out the procedures (see Appendices G-L). Second, the experimenter provided verbal instructions explaining each step described in the CC and answered any questions. Third, the experimenter modeled the correct application of each condition or intervention. Finally, the teacher role played each of the procedures to demonstrate knowledge of the procedures. Experimental manipulations and treatment implementation were considered successful when the teacher executed the defined steps correctly resulting in 100% integrity.

Phase I: Descriptive Analysis

Teacher consent and interview. Details of the investigation were explained in verbal and written form to each teacher. They received information about the rational of the study, the role they would have in conducting the experimental analyses and interventions, as well as details
about each phase of the study. Teachers signed the consent to participate in which they indicated that they understood the experiment and agreed to participate.

Each teacher was interviewed in order to obtain more information about the referral problem and to clarify targeted behaviors. For each case, a modified Problem Identification Interview PII (Bergan & Kratochwill; 1990) was used. The interview content was based on the objectives addressed by Bergan and Kratochwill (1990) and included identification of target behaviors in observable terms and the specification of expected conditions surrounding the behaviors. The interview process was used to determine if the student met criteria for participation in this study (See Appendix D). An informal observation followed the PII to validate the presence of high frequency target behaviors.

Observations for descriptive analyses. The purpose of these observations was to identify baseline levels of targeted behaviors, and to systematically describe the co-variation between off-task behaviors and teacher and peer attention. Multiple structured classroom observations of the target student's behavior and interactions with teacher and peer were conducted during the naturally occurring math class (Bijou, Peterson, & Ault, 1968) and continued until data were stable. Frequency-of-occurrence data were used to develop hypotheses about variables potentially related to
off-task behaviors. Hypotheses were derived by first comparing base-rate conditional probabilities of off-task and comparing these data to the conditional probabilities of off-task given particular consequences.

**Phase II: Experimental Analyses**

*Experimental analysis and design.* The purpose of the experimental analyses was to examine the extent to which off-task behavior was related to consequences that were systematically programmed by the experimenter. The independent variables manipulated were peer attention, teacher attention, and task difficulty. The peer and teacher attention conditions were based on those used by Broussard & Northup (1995/1996). Peer attention was defined as any peer talking to, gesturing toward, and/or making physical contact with the target student. Contingent teacher attention was defined as the teacher talking to, gesturing toward, and/or making physical contact with the target student. Academic demand referred to the presence of frustration level versus mastery level math problems.

The sequence in which conditions were presented was randomized and students received 5-10 minutes break between conditions. Trained researchers recorded student off-task behaviors and peer and teacher attention using the identical observation form used during the descriptive
observations. An experimenter provided visual cues as needed during the teacher and peer attention conditions to ensure procedural integrity.

An alternating treatment design (Barlow & Hayes, 1979) consisting of three initial conditions were used to test differential effects of the independent variables on the responses described above (i.e., off-task student behaviors exhibited during math class and work productivity and accuracy). A description of each condition follows.

(1) Peer attention condition (PA). Peer attention was provided contingent on off-task behavior. During the contingent peer attention conditions, the participant was given work at mastery level based on prior CBA. Peer confederates were given similar work. All target behaviors of the participant as well as occurrences of peer attention were recorded. The experimenter maintained a proximity of approximately 3 m and ignored the behavior of the target student and provided cues to the confederate.

The teacher selected a peer to sit next to the subject and to act as the confederate during PA conditions. Peer confederates were selected by teachers based on past interactions with the target student, their willingness to participate, and parental consent. Experimenters instructed peer confederates to provide attention only when the student was not working. Examples of not working were role played with the experimenter. Confederates were instructed to say “you need to keep working” or a similar statement each time they were cued by the experimenter, which occurred.
following off-task behaviors. Student confederates demonstrated each part correctly before proceeding. At the end of the condition, the teacher was cued to pick up all worksheets and give the student a five to ten minute break.

(2) Teacher attention condition (TA). In the teacher attention condition, participants were seated in the back of the room facing away from the rest of the class. Participants were given mastery level worksheets to complete. The experimenter maintained a proximity of approximately 3 m and provided cues to the teacher. The teacher gave the student the following instructions prior to each condition: “You need to work on your math quietly and stay in your seat.” Each instance of off-task behavior was followed by a verbal prompt from the teacher (e.g., “you need to get back to work”). The experimenter cued the teacher to ensure procedural integrity. At the end of the condition, the teacher was cued to pick up all worksheets and give the student a five to ten minute break.

(3) Academic Demand Condition (AD). In the academic demand condition, the target student was seated in the back of the room away from the rest of the class. Participants were given math problems at the frustration level based on prior CBA. The teacher gave the following instructions: “I want you to work on your math quietly. I will check back with you in a little while. Do you have any questions?” During the condition, the teacher was instructed to ignore or avoid any interactions
with the target student, except in the case of potentially harmful behaviors such as aggression. The teacher was told that if these behaviors occurred, the experimenter would provide immediate physical redirection. At the end of the condition, the teacher was cued to pick up all worksheets and give the student a five to ten minute break.

**Phase III. Reinforcer Survey**

**Reinforcer survey.** The teacher administered a reinforcer survey to identify preferred stimuli for each participant. The teacher read potential reinforcers aloud from a master list which was similar to the items found on the Child Reinforcer Survey (CRS; Fantuzzo, Rohrbeck, Hightower, & Work, 1991) (See appendix M). The teacher read aloud to all students in the classroom and asked them to raise their hand each time they heard an item that they would like to earn for doing good work at school. An experimenter was present during the assessment to record the target student's responses.

Items chosen by participants were purchased or collected and put into the school treasure chest. The treasure chest was a large, walk-in storage closet located within the main office. The items in the closet were divided into the following categories: (a) edibles (e.g., candy, cookies, coke, juice, etc.), (b) teacher attention (e.g., statements such as “sit next to teacher during lunch” were typed on tickets and eight by 11 inch posters and displayed on a separate shelf), (c) peer attention (e.g., statements such as “play a game with a peer” were displayed in the same manner as teacher
attention), (d) tangibles (e.g., toy cars, pencils, jump rope, etc.), and (e) escape (e.g., statements such as “5 free minutes on the computer” were displayed in the same manner as teacher and peer attention).

**Phase IV: Hypothesis Formation and Intervention Development**

Hypothesis statements that described behavioral and environmental relationships provided the framework for treatment development. Hypotheses statements were based on direct observation data and identified variables (i.e., teacher attention, peer attention, and the instructional task) the teacher and researcher could manipulate within the classroom context. CBA data were used to confirm the hypothesis that off-task behavior may be associated with task difficulty.

**Descriptive data analysis and intervention development.** The descriptive analyses examined variables supporting three possible hypotheses: a) off-task behavior was sensitive to teacher attention, b) off-task behavior was sensitive to peer attention, and c) off task behavior was sensitive to the instructional task. Data on off-task behavior were analyzed by computing conditional probabilities (occurrences) based on relative frequencies of off-task and consequent events (i.e., teacher and peer attention). The proportion of teacher and peer attention that occurred following (i.e., next interval) off-task behavior was calculated by dividing the number of intervals containing off-task behavior that occurred prior to teacher or peer attention by the total number of intervals scored with off-
task behavior (see Table 2 for a description of conditional probability formulas). This type of analyses was conducted to allow direct comparison of results from descriptive and experimental data sets. Hypothesis were derived consistent with a prediction that off-task behavior was most sensitive to the event (e.g., teacher attention) associated with the highest conditional probability.

Table 2

<table>
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<tr>
<th>Consequences:</th>
<th>Conditional Probability Formulas for the Descriptive Analyses</th>
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<tr>
<td>*A- Off task intervals that preceded teacher attention</td>
<td>Intervals scored with off task</td>
</tr>
<tr>
<td>*B- Off task intervals that preceded peer attention</td>
<td>Intervals scored with off task</td>
</tr>
<tr>
<td>C- Off task intervals that preceded teacher attention</td>
<td>Intervals scored with teacher attention</td>
</tr>
<tr>
<td>D- Off task intervals that preceded peer attention</td>
<td>Intervals scored with peer attention</td>
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</table>

*note. Conditional probability formulas A - D were computed for all students. Formulas A and B were computed and these data are displayed graphically on each participants descriptive analysis graph along with off-task behavior.

Intervention development was based on a simple contingency reversal. Generally, the type of reinforcement associated with off-task behavior was provided for appropriate behavior on a defined schedule and withheld following any instance of inappropriate behaviors. For example, in the event peer attention was associated with off-task behavior, the peer confederate praised the target student when cued by the experimenter following task engagement. The schedule of attention was determined based on baseline levels of peer attention (Heward, 1980). For example, the total number of minutes the student was observed was computed and
divided by the total number of peer responses. This served as an estimated schedule of reinforcement. If off-task behavior occurred before the specified reinforcement occurred, the subject was not reinforced and the schedule was reset. If teacher attention correlated with off-task behavior, a similar treatment was derived except the teacher provided contingent attention (e.g., praise) on a defined schedule for appropriate behavior while ignoring off-task behaviors.

In the event off-task behavior was not sensitive to peer or teacher attention, but hypothesized to be associated with task difficulty (confirmed by CBA data), the intervention consisted of providing the student with mastery level math worksheets and having them sit alone facing away from the rest of the class. All interventions included instructions and each session was approximately 10 minutes in duration.

**Experimental analysis and intervention development.** Based on the results of the experimental analysis, treatments were developed in a manner similar to that used for the descriptive assessment. Intervention development was based on contingency reversal. The variable most closely associated with off-task behaviors during the experimental analysis were provided on a schedule and withheld following any instance of inappropriate behaviors.

**Reinforcer survey intervention.** Similar to other interventions derived from reinforcer surveys, this intervention included access to the
reinforcer contingent on appropriate on-task behavior. Students were provided with mastery level math work and received stickers contingent on the absence of off-task behaviors. The schedule of reinforcement was based on baseline levels of attention. When cued, the teacher walked to the student and placed the sticker in the designated place on a reinforcer card and immediately turned and walked away. Teachers avoided any physical or verbal gestures directed toward the student during sticker delivery. Access to the treasure chest was provided immediately following the 10 minute session.

**Phase V: Treatment Validation**

*Treatment validation design.* The effects of a minimum of two treatments were examined within the context of an alternating treatment design for decreasing off-task behavior. Intervention sessions were conducted during the regularly scheduled math class. All students received the treasure chest intervention. In addition to the treasure chest, students could receive the following interventions based on previous descriptive and experimental analyses: a) academic intervention which included mastery level math work and no attention, b) contingency reversal with peer attention and mastery level math work, and c) contingency reversal for teacher attention and mastery level math work. Sequence effects were controlled by counterbalancing (e.g., ABBAAB).
Evaluation of treatment effects for each participant was determined through consideration of a variety of data. Most important was the percent of intervals across intervention sessions in which off task behavior occurred, and the trend in these data. After establishing clear differentiation of treatments, the consultant met with the teacher to discuss the data. If more than one treatment was effective, the teacher was provided a choice.
CHAPTER 4

RESULTS

Erica

Descriptive analysis. Results of Erica’s descriptive analysis is presented in Figure 1 A. Erica’s off-task behaviors averaged 47% of intervals (range, 21% to 88%). Figure 1 A shows teacher attention contingently followed off-task behaviors an average of 7% of intervals (range, 0% to 18%), and peer attention contingently followed off-task behaviors an average of 4% of intervals (range, 0% to 12%). Thus, the probability that Erica’s off-task behavior was followed by teacher attention was .07. The probability that off-task behavior was followed by peer attention was .04. Both figures are relatively low and undifferentiated.

Generally, Erica received very little attention from her teacher or peers when engaged in off-task behaviors. Data from the CBA math probes confirmed that Erica was functioning at a frustration level in her current math placement. Given that Erica’s behavior did not appear to be sensitive to peer and teacher attention and she was performing math at the frustration level, it was hypothesized that off-task behavior may be present as an escape from the instructional task. This hypothesis was supported by CBA data suggesting she was functioning at the frustration level with classroom assigned materials.
Experimental analysis. Erica’s experimental analyses are presented in Figure 2 B. During these analyses, the data show that Erica was off-task an average of 29% of intervals (range, 12% to 48%) during academic demand, 2% of intervals (range, 0% to 3%) during peer attention, and 7% of intervals (range, 3% to 14%) during teacher attention. Based on these results, the academic demand condition was determined to be associated with the most off-task behaviors.

Summary. From the descriptive and experimental analysis, off-task behavior did not appear to be sensitive to peer or teacher attention. However in both analyses it was hypothesized that off-task behavior may be sensitive to the instructional task. Hence, results from the experimental and descriptive analyses matched. Based on these data, along with the CBA findings, the academic and treasure chest interventions were selected.

Preference assessment. On the reinforcer survey, Erica indicated she preferred a variety of reinforcers for completing school work. These data are displayed in Table 4. The most preferred categories were ranked in the following order: teacher attention (80%), edibles (60%), peer attention (43%), tangibles (40%), and escape from school work (33%). All of these stimuli were included in the treasure chest.

Intervention validation. Figure 1 C shows the results of the academic and treasure chest interventions conducted in Erica’s classroom during
math. In phase 1, an alternating treatments design was used to evaluate the effects of two interventions. During four sessions of the academic intervention, Erica completed easy level math problems and received no attention from peers or the teacher. Her off-task behavior averaged 3% of intervals (range, 0% to 8%). During phase 1 of the treasure chest intervention, Erica received a sticker every minute for appropriate on-task behavior. Erica's off-task behavior averaged 1% of intervals (range, 0% to 2%). Out of four opportunities to contact reinforcers from the treasure chest, 50% of the time she chose edibles, and 50% of the time she chose tangibles (shown in Table 3). The reinforcer survey indicated Erica preferred teacher attention. However, when provided four opportunities to go to the treasure chest and make a choice from an array of items, she did not select teacher attention.

**Intervention.** Given that off-task behavior was low and stable for both interventions, the consultant met with the teacher to obtain input about the intervention the teacher preferred. Erica's teacher decided to continue with the academic intervention. Phase 2 shows that when the intervention was continued, off-task behavior remained low and stable averaging 6% of intervals (range, 2% to 12%).

**Generalization to grade level math.** For the final phase of the intervention, in collaboration with the teacher, Erica was provided with
grade level math on which the class was presently working. Her average off-task behavior averaged 8% (range, 0% to 24%).

**Academic performance.** Although consequences were provided only for off-task behavior, number of math problems completed and accuracy were evaluated during experimental analysis and treatment conditions. These data are displayed in Figure 6. During experimental analyses, Erica completed the least number of math problems (M = 3, range, 0 to 8) and achieved the lowest accuracy scores (M = 21%, range, 0% to 62%) during academic demand conditions. Conversely, Erica completed more math problems (M = 129, range, 101 to 190) during teacher attention conditions and her average accuracy was higher (M = 94%, range, 93% to 95%). Interestingly, her level of off-task behavior was higher during academic demand when compared with all experimental analyses and intervention sessions.

During the treasure chest intervention, Erica’s math productivity and accuracy were higher when compared to the academic intervention. During the treasure chest, she completed an average of 70 (range, 44 to 110) math problems and her accuracy averaged 95% (range, 88% to 98%). It is interesting to observe that during the final intervention phase when Erica’s teacher provided her grade level math work, she completed an average of 11 (range, 2 to 23) math problems and her average accuracy was 71% (range,
17% to 100%). Although her off-task behavior remained low (i.e., 8%), her average accuracy returned to the frustration level.

Jerry

Descriptive analysis. Results of Jerry's descriptive analysis are presented in Figure 2A. During this phase, Jerry's off-task behavior averaged 66% (range, 38% to 95%). Figure 2A shows teacher attention contingently followed off-task behaviors an average of 11% of intervals (range, 0% to 38%), and peer attention contingently followed off-task behaviors 25% of intervals (range, 5% to 43%). Thus, the probability that Jerry's off-task behavior was followed by teacher attention was .11. The probability that off-task behavior was followed by peer attention was .25. These data suggested that off-task behavior may be more sensitive to peer attention than teacher attention.

Data from the CBA math probes indicated that Jerry was functioning at the frustration level in his current math placement. Therefore, it also hypothesized that off-task behavior may be related to the instructional task.

Experimental Analysis. Jerry's experimental analyses are presented in Figure 2B. During academic demand, Jerry's off-task behavior averaged 6% of intervals (range, 0% to 10%), 3% (range, 3% to 4%) during peer attention, and 7% (range, 3% to 12%) during teacher attention. Based on
these data, the results of experimental analysis were judged to be undifferentiated.

**Summary.** From the descriptive analyses, observations were analyzed and off-task behavior was found to be more sensitive to peer attention. It was also hypothesized that off-task behavior may be related to the instructional task. During the experimental analysis, it did not appear that off-task behavior was sensitive to the task, peer, or teacher attention. Therefore, based on the data obtained during the descriptive analyses, the academic, peer, and treasure chest interventions were chosen.

**Preference assessment.** On the Reinforcer survey, Jerry indicated he preferred a variety of reinforcers for completing school work. These data are displayed in Table 4. The most preferred categories were ranked in the following order: teacher attention (100%), peer attention (71%), edibles (60%), tangibles (60%), and escape from school work (56%).

**Intervention validation.** Figure 2 C shows the results of the academic, peer, and treasure chest interventions conducted in Jerry's classroom during math. During the academic intervention, Jerry received no attention from peers or his teacher while completing mastery level math work. Off-task behavior averaged 4% (range, 2% to 7%). During the peer and treasure chest interventions conducted in phase 1, Jerry received peer attention or a sticker for appropriate on-task behavior every 3.5 minutes.
During the peer attention intervention, Jerry’s off-task behavior averaged 3% (range, 2% to 7%). During the treasure chest intervention, his off-task behavior averaged 1% (range, 0% to 2%). Jerry had the opportunity to access reinforcers from the treasure chest three times. He chose tangibles 100% of the time (shown in Table 3). The reinforcer survey indicated he most preferred teacher attention. However, when provided three opportunities to go to the treasure chest and make a choice from an array of items, he did not select teacher attention.

Intervention. Given that off-task behavior was low and stable for all three interventions, the consultant met with the teacher to decide which intervention the teacher preferred. Jerry’s teacher decided to continue with the treasure chest intervention. Phase 2 shows that when this intervention was continued, off-task behavior remained at 0% for two sessions. Jerry had the opportunity to access reinforcers from the treasure chest two times and both times he chose tangibles.

Generalization to grade level math. For the third phase of intervention, in collaboration with the teacher, Jerry remained in his original seat and was provided with the same math work the class was assigned. Jerry’s off-task behavior averaged 6% (range, 2% to 12%). He was permitted to access reinforcers from the treasure chest two out of three times and twice he chose tangibles. According to the initial survey, the
category he most preferred was teacher attention (i.e., 100%). However, when Jerry had the opportunity to go to the treasure, he selected tangibles 100% of the time (see Table 3).

**Academic performance.** Although consequences were provided only for off-task behavior, number of math problems completed and accuracy were evaluated during experimental analysis and treatment conditions. These data are displayed in Figure 6. During experimental analyses, Jerry completed the least number \((M = 13; \text{range}, 0 \text{ to } 38)\) of math problems and had the lowest accuracy score \((M = 14\%; \text{range}, 0\% \text{ to } 43\%)\) during academic demand conditions. Jerry completed the greatest number of math problems \((M = 77; \text{range}, 65 \text{ to } 84)\) during peer attention conditions and achieved the highest average accuracy score of 94\% \((\text{range}, 93\% \text{ to } 95\%)\).

During intervention phases, Jerry completed the greatest number of math problems \((M = 79; \text{range}, 40 \text{ to } 100)\) during the treasure chest intervention and he also achieved the highest accuracy score \((M = 97\%; \text{range}, 93\% \text{ to } 99\%)\). During the final intervention phase when Jerry's teacher provided him with grade level math, he completed an average of 57 \((\text{range}, 51 \text{ to } 61)\) math problems and his average accuracy was 89\% \((\text{range}, 67\% \text{ to } 100\%)\).
Descriptive analysis. Results of Billy’s descriptive analysis are in Figure 3 A. Billy’s off-task behavior averaged 82% of intervals (range, 42% to 100%). Figure 3 A shows that teacher attention contingently followed 10% of Billy’s off-task behaviors (range, 0% to 22%), and peer attention contingently followed 21% of off-task behaviors (range, 12% to 45%). Thus, the probability that Billy’s off-task behavior was followed by teacher attention was .10. The probability that his off-task behavior was followed by peer attention was .21. Data from the CBA math probes confirmed that Billy was functioning at a frustration level in his current math placement. These data suggested that off-task behavior may be more sensitive to peer attention and the instructional task.

Experimental analysis. Billy’s experimental analyses data are presented in Figure 3 B. Billy’s off-task behavior averaged 56% of intervals (range, 53% to 58%) during academic demand, 55% (range, 51% to 62%) during peer attention, and 24% (range, 17% to 30%) during teacher attention. Based on these results, Billy’s off-task behavior was highest during the academic demand and peer attention conditions.

Summary. Data from the descriptive and experimental analyses appear to support the same hypotheses concerning Billy’s off-task behavior. From both analyses, off-task behavior was found to be more sensitive to
peer attention. It was also hypothesized that off-task behavior may be related to the instructional task. This hypothesis was supported by CBA data suggesting he was functioning at the frustration level with classroom assigned materials. Based on these data, the peer, academic, and treasure chest interventions were selected.

**Preference assessment.** On the reinforcer survey, Billy indicated he preferred a variety of reinforcers for doing good school work. These data are displayed in Table 4. The most preferred categories were ranked in the following order: edibles (100%), teacher attention (100%), escape (78%), peer attention (43%), and tangibles (40%).

**Intervention validation.** Figure 3 C shows the results of the peer, academic, and treasure chest interventions conducted in Billy's regular education classroom. During the academic intervention conducted in phase 1, Billy completed easy math problems and received no attention from his teacher or peers. His off-task behavior averaged 32% (range, 10% to 53%). During phase 1 of the peer and treasure chest interventions, Billy received peer attention or a sticker every 50 seconds for appropriate on-task behavior. Billy's off-task behavior averaged 12% (range, 3% to 22%) during the peer intervention and his off-task behavior averaged 11% (range, 3% to 31%) during the treasure chest intervention. Billy had the opportunity to select reinforcers from the treasure chest five times. He chose edibles 80%
of the time and tangibles 20% of the time. Thus far, a match was observed between what Billy indicated he preferred on the survey (i.e., edibles) and what he actually chose given the opportunity.

**Intervention validation II.** Given that off-task behavior was variable and higher in the academic demand condition, this intervention was stopped and the peer and treasure chest intervention continued. During phase 2, Billy's off-task behavior averaged 9% (range, 7% to 13%) during the peer intervention and 4% (range, 2% to 5%) during the treasure chest intervention. Billy was permitted to go to the treasure chest for all four sessions. He chose edibles 25% of the time and tangibles 75% of the time.

**Intervention.** Given that off-task behavior remained low and stable for both interventions, the consultant met with the teacher to decide which intervention the teacher preferred. Billy's teacher decided to continue with the treasure chest intervention. During the continuation of this intervention, off-task behavior remained low and stable (M = 3%; range, 0% to 5%) across four sessions. Billy was permitted to go to the treasure chest for all four sessions. He chose edibles 100% of the time. Overall, when Billy had the opportunity to go to the treasure chest, he chose edibles 77% of the time which matched his surveyed preference for edibles (see Table 3).

**Academic performance.** Although consequences were provided only for off-task behavior, number of math problems completed and accuracy
were evaluated during experimental analysis and treatment conditions. These data are displayed in Figure 6. During experimental analyses, Billy completed the least number of math problems \((M = 5; \text{ range, 2 to 7})\) and had the lowest accuracy score \((M = 19\%; \text{ range, 11\% to 35\%})\) during academic demand conditions. Conversely, Billy completed the most math problems \((M = 84; \text{ range, 65 to 84})\) during teacher attention conditions. However, he achieved the highest accuracy score \((M = 96\%; \text{ range, 92\% to 100\%})\) during peer attention conditions.

Across all intervention phases, Billy's academic productivity and accuracy were higher during the peer attention intervention. He completed an average of 101 (range, 45 to 151) math problems and his accuracy averaged 94\% (range, 62\% to 100\%).

**Ricky**

*Descriptive analysis.* Results of Ricky’s descriptive analysis are presented in Figure 4 A. Ricky’s off-task behavior averaged 49\% (range, 27\% to 83\%). Figure 4 A shows that teacher attention contingently followed 10\% of off-task behaviors (range, 0\% to 27\%), and peer attention contingently followed 9\% of off-task behaviors (range, 0\% to 42\%). Thus the probability that Ricky’s off-task behavior was followed by teacher attention was .10. The probability that his off-task behavior was followed by peer
attention was .09. Both conditional probabilities are relatively low and undifferentiated.

During these observations, Ricky received very little attention from his teacher or peers when engaged in off-task behaviors. Given that he was off-task an average of 49% of intervals and performing below grade level, these data suggested that off-task behavior may be sensitive to the instructional task.

**Experimental Analysis.** Ricky's experimental analyses data are presented in Figure 4 B. During these analyses, his off-task behavior during academic demand averaged 74% of intervals (range, 58% to 93%), 25% of intervals (range, 8% to 55%) during peer attention, and 13% of intervals (range, 10% to 18%) during teacher attention conditions. Based on these data, the academic demand condition was determined to be associated with the highest average off-task behaviors.

**Summary.** From the descriptive and experimental analyses, off-task behavior did not appear to be sensitive to peer or teacher attention. However, in both analyses it was hypothesized that off-task behavior may be more sensitive to the instructional task. Hence, the results from descriptive and experimental analyses matched. Data from the CBA math probes confirmed that Ricky was functioning at a frustration level in his
current math placement. Based on these data, the academic and treasure chest interventions were selected.

Preference assessment. On the Reinforcer survey, Ricky indicated he preferred a variety of reinforcers for completing school work. These data are displayed in Table 4. The most preferred categories were ranked in the following order: escape from school work (89%), peer attention (86%), edibles (80%), tangibles (60%), and teacher attention (60%).

Intervention validation. Figure 4 C shows the results of the academic and treasure chest interventions conducted in Ricky’s classroom during math. During phase 1 of the academic intervention, Ricky received no attention while completing mastery level math work. His off-task behavior averaged 15% (range, 2% to 30%). During the treasure chest intervention conducted in phase 1, Ricky received a sticker every minute for appropriate on-task behavior. His off-task behavior averaged 4% (range, 2% to 8%). Ricky had the opportunity to access reinforcers from the treasure chest five times. He chose edibles 60% of the time and tangibles 40% of the time (shown in Table 3). The reinforcer survey indicated he most preferred escape activities. However, when provided five opportunities to go to the treasure chest and choose from an array of items, he selected escape 0%.

Intervention. Given that off-task behavior was low and stable for both interventions, the consultant met with the teacher to decide which
intervention the teacher preferred. Ricky's teacher decided to continue with the academic intervention. Phase 2 shows that when this intervention was continued, his off-task behavior averaged 7% (range, 3% to 12).

Generalization to grade level work. During the third phase of intervention sessions and in collaboration with the teacher, Ricky was provided with grade level math on which the class was presently working. Ricky's off-task behavior increased to an average of 32% (range, 3% to 95%).

Grade level work and treasure chest intervention. During phase 4, the treasure chest intervention was reintroduced and Ricky was moved back to his original seat. Ricky's off-task behavior decreased to an average of 1% (range, 0% to 2%). Ricky was permitted to access reinforcers from the treasure chest on all three occasions. During his first trip to the treasure chest, Ricky asked if he could choose two items. He chose a tangible and an edible. The following two times he chose edibles. Overall, when Ricky had the opportunity to go to the treasure chest, he chose edibles 63% of the time which did not match his surveyed preference of escape (see Table 3).

Academic performance. Although consequences were provided only for off-task behavior, number of math problems completed and accuracy was evaluated during experimental analysis and treatment conditions. These data are displayed in Figure 6. Ricky completed the least number (M = 3; range, 0 to 8) of math problems and had the lowest accuracy score.
(M = 24%; range, 0% to 73%) during academic demand conditions. Ricky completed the highest number of math problems (M = 99; range, 13 to 166) during peer attention conditions however, he achieved his highest accuracy scores (M = 100%; range, 99% to 100%) during teacher attention conditions.

During the treasure chest intervention, Ricky completed more math problems and had the highest accuracy score when compared to the academic intervention. For the treasure chest intervention, he completed an average of 96 (range, 69 to 116) math problems and his accuracy averaged 97% (range, 96% to 99%).

During the academic intervention which included grade level math, his math productivity decreased to an average of 5 (range, 0 to 12) math problems and his average accuracy was 47% (range, 0% to 86%). Interestingly, Ricky's off-task behavior increased to an average of 32%. However, when the treasure chest intervention was reintroduced, his work completion and accuracy remained the same but his off-task behavior decreased to 9%.

**Ralph**

Descriptive analysis. Results of Ralph's descriptive analysis are presented in Figure 5 A. Ralph's off-task behavior averaged 51% (range, 10% to 87%). Figure 5 A shows that peer attention contingently followed off-task behavior 46% of intervals (range, 0% to 92%), and teacher attention
contingently followed off-task behaviors 26% of intervals (range, 0% to 50%). Thus, the probability that off-task behavior was followed by peer attention was .46. The probability that Ralph’s off-task behavior was followed by teacher attention was .26. These data suggested that off-task behavior may be more sensitive to peer attention. Data from the CBA math probes confirmed that Ralph was performing math on grade level.

**Experimental Analysis.** Ralph’s experimental analyses data are presented in Figure 5 B. During academic demand conditions, his off-task behavior averaged 22% of intervals (range, 18% to 25%). During peer attention conditions, off-task behavior averaged 65% of intervals (range, 55% to 77%) and 23% of intervals (range, 22% to 24%) during teacher attention conditions. Based on these data, peer attention was determined to be associated with the highest average off-task behaviors.

**Summary.** The results obtained from both descriptive and experimental analyses showed that Ralph’s off-task behavior was more sensitive to peer attention. Based on these data, the peer and treasure chest interventions were chosen.

**Preference assessment.** On the reinforcer survey, Ralph indicated he preferred a variety of reinforcers for completing school work. These data are displayed in Table 4. The most preferred categories were ranked in the
following order: teacher attention (100%), peer attention (100%), edibles (100%), escape from school work (100%), and tangibles (73%).

**Intervention validation.** Figure 5 C shows the results of the peer and treasure chest interventions conducted in Ralph’s classroom during math. During the peer and treasure chest interventions conducted in phase 1, Ralph received peer attention or a sticker for appropriate on-task behavior every 40 seconds. For the peer intervention, Ralph’s off-task behavior averaged 60% of intervals (range, 32% to 80%). During the treasure chest intervention, Ralph’s off-task behavior averaged 18% (range, 7% to 28%). Ralph had the opportunity to access reinforcers from the treasure chest 5 times. He chose tangible items 3 times and edible items 2 times. On the reinforcer survey Ralph indicated he preferred all categories equally, except for tangibles. When provided 5 opportunities to go to the treasure chest and make a choice from an array of items, he selected tangibles items more often.

**Intervention.** Given that off-task behavior was the lowest during the treasure chest intervention the consultant met with the teacher to recommend the treasure chest intervention. Ralph’s teacher decided to continue with the treasure chest intervention. During phase 2 of the treasure chest intervention, Ralph’s off-task behavior averaged 18%. He had the opportunity to go to the treasure chest two more times. Ralph chose
and edible item on the first occasion and a tangible item the second time. Overall, when Ralph had the opportunity to access reinforcers from the treasure chest, the majority of the time he chose tangible items which was the one category he indicated he preferred less (see Table 3).

Academic performance. Although consequences were provided only for off-task behavior, number of math problems completed and accuracy was evaluated during experimental analysis and intervention conditions. These data are displayed in Figure 6. Ralph completed the least number (M = 29; range, 13 to 45) of math problems and had the lowest accuracy score (M = 63%; range, 59% to 66%) during academic demand conditions. Ralph completed the highest number of math problems (M = 89; range, 84-93) and achieved the highest accuracy scores (M = 98%; range, 97% to 98%) during the teacher attention conditions.

During the treasure chest intervention, Ralph’s math productivity and accuracy were higher when compared to the peer intervention. He completed an average of 80 (range, 18 to 124) math problems and his average accuracy was 96% (range, 86% to 100%).

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Figure Caption

The following is a description of the data presented in Figures 1 through 5, graphs A, B, and C, for each participant.

Figures 1 - 5. A. Represent the results of the descriptive analysis of off-task behavior observed in each student's classroom during math class. The star represents percentage of intervals with off-task behavior that occurred during naturalistic classroom observations. The open circles represent the proportion of off-task intervals preceding peer attention. The black circles represent the proportion of off-task intervals preceding teacher attention. The "Y" axis represents the proportion of off-task intervals preceding events such as peer and teacher attention. The second "Y" axis represents the percent off-task.

Figures 1 - 5. B. Percentages of intervals with off-task behavior during experimental conditions conducted in the classroom. The "Y" axis shows the percent of off-task behavior across seven session.

Figures 1 - 5. C. Percentage of intervals with off-task behavior during intervention validation, intervention, and generalization conducted in the classroom. The "Y" axis represents the percent of off-task behavior observed across the intervention validation and intervention phases.
Figure 1. Erica
Figure 3. Billy

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A. Descriptive Analysis

B. Experimental Analysis

C. Intervention Validation & Intervention

Figure 4. Ricky Sessions

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A. Descriptive Analysis

![Graph showing proportions of off-task intervals](image)

B. Experimental Analysis

![Graph showing percentages of off-task](image)

C. Intervention Validation & Intervention

![Graph showing phases of intervention](image)

Figure 5. Ralph
Figure 6. Number of Math Problems Completed, Accuracy, and Off-task Behavior Across Experimental Conditions and Interventions for all participants.
AD = Academic Demand, PA = Peer Attention, TA = Teacher attention
* denotes grade level math provided by the teacher
Reinforcer Survey Results

Survey results. Students were surveyed to determine which items they would like to have in the school treasure chest. The items they initially indicated they preferred were categorized and are shown in Table 4. Based on survey results, if a student indicated their preferred category was tangibles, this information was compared with the choices they made when provided access to the treasure chest. For example, if a student earned the opportunity to go to the treasure chest, they were given the opportunity to choose from all categories, not just tangible. The items students indicated they preferred were compared to the items they choose during the treasure chest intervention. These data are categorized and presented in Table 3.

Table 3
Comparison: Reinforcer survey and treasure chest intervention

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<th>TC</th>
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RS - reinforcer survey, TC - treasure chest intervention. The top two categories selected during the survey are highlighted. Students' actual choices made during treasure chest survey are also highlighted.
## Reinforcer Survey Results

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<tr>
<td>L. Bows</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
<table>
<thead>
<tr>
<th>M. Barrettes</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N. Bands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Extra recess</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B. Extra Library Time</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C. Jump rope time</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>D. Puzzle time</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>E. Computer time</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>F. Leisure reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>G. Extra PE</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>H. Coloring time</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>I. Art</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Rewards Earned for whole class**

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Helping a peer</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>B. Helping in a lower grade</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C. Play Games</td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

- D. Story time
- E. Video/Movie
- F. Lollipops
- G. Popsicle

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<table>
<thead>
<tr>
<th>Task</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Taking good work to counselor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>B. Running Errands</td>
<td>NA</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>C. Sitting next to teacher at lunch</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>D. Sitting at teacher's desk for a work assignment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>E. Help the janitor</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Reliability

Interobserver agreement. To establish reliability of student behavior using the data observation form, 50% of the total observations were conducted by two observers. Reliability was assessed for 46% of baseline sessions, 63% of experimental sessions, and 46% of observations during intervention sessions. Interval-by-interval interobserver agreement was calculated for each behavior code. Table 5 summarizes interobserver agreement across baseline, experimental, and intervention sessions for each behavior code.

Table 5
Interobserver Agreement Results Across Behaviors and Phases

<table>
<thead>
<tr>
<th></th>
<th>OS</th>
<th>TO</th>
<th>OP</th>
<th>TA</th>
<th>PA</th>
<th>ENG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range 75% to 100% M = 97%</td>
<td>Range 73% to 100% M = 90%</td>
<td>Range 84% to 100% M = 96%</td>
<td>Range 92% to 100% M = 96%</td>
<td>Range 74% to 100% M = 93%</td>
<td>Range 71% to 100% M = 93%</td>
</tr>
<tr>
<td>Baseline</td>
<td>Range 81% to 100% M = 99%</td>
<td>Range 79% to 100% M = 97%</td>
<td>Range 84% to 100% M = 98%</td>
<td>Range 86% to 100% M = 97%</td>
<td>Range 95% to 100% M = 99%</td>
<td>Range 88% to 100% M = 97%</td>
</tr>
<tr>
<td>Experimental</td>
<td>Range 92% to 100% M = 100%</td>
<td>Range 83% to 100% M = 98%</td>
<td>Range 82% to 100% M = 99%</td>
<td>Range 88% to 100% M = 99%</td>
<td>Range 96% to 100% M = 100%</td>
<td>Range 90% to 100% M = 97%</td>
</tr>
</tbody>
</table>

OS = out of seat, TO = talking out, TA = teacher attention, OP = object play, PA = peer attention, ENG = engaged.
Procedural integrity. During all experimental analysis and intervention conditions, it was noted whether the occurrence or nonoccurrence of target behaviors were followed by the appropriate contingencies as specified in the method of the study. Procedural integrity was calculated by dividing the number of appropriate contingent responses by the number of opportunities to deliver the response. Average percentages are presented in Table 6.

Table 6
Percent Procedural Integrity Across Subjects and Phases

<table>
<thead>
<tr>
<th></th>
<th>Experimental Analysis: Academic Demand</th>
<th>Peer Attention</th>
<th>Teacher Attention</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TA</td>
<td>PA</td>
<td>PA</td>
<td>TA</td>
</tr>
<tr>
<td></td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>99%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>Peer Attention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>96%</td>
<td>100%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>TA</td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Teacher Attention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>100%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>98%</td>
<td>100%</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>TA</td>
<td>98%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>99%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Interventions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TC</td>
<td>99%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>95%</td>
<td>--</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>PA</td>
<td>99%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td></td>
<td>Academic</td>
<td>--</td>
<td>99%</td>
<td>100%</td>
</tr>
</tbody>
</table>

TA = Teacher Attention, PA = Peer Attention, TC = Treasure Chest
Acceptability

Treatment Acceptability. Ratings of acceptability of intervention procedures are reflected by the total score on the fifteen item scale, which has a possible range of 15 to 90 points. The data yielded a total mean of 73 for the treasure chest intervention (range, 49 to 90), 67 for the peer intervention (range, 45 to 87), and 56 for the academic intervention (range, 42 to 62). Table 7 summarizes treatment acceptability across treatment phases for all five teachers.

<table>
<thead>
<tr>
<th>Table 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Acceptability Total Scores</td>
</tr>
<tr>
<td>Ralph’s Teacher</td>
</tr>
<tr>
<td>Erica’s Teacher</td>
</tr>
<tr>
<td>Rickie’s Teacher</td>
</tr>
<tr>
<td>Billy’s Teacher</td>
</tr>
<tr>
<td>Jerry’s Teacher</td>
</tr>
</tbody>
</table>

Note: The highlighted scores represent the intervention the teacher chose to implement. Any score above 52.5 is considered acceptable. The IRP was given to all teachers to complete after the intervention phase.
CHAPTER 5

DISCUSSION

Independent descriptive and experimental analyses were conducted to determine the extent to which the data obtained from the two assessment methods would yield similar conclusions about variables associated with off-task behavior. Additionally, this study evaluated interventions derived from descriptive and experimental analyses as well as an intervention derived from a simple preference assessment. The findings are discussed below in terms of the contributions to the current literature, limitations, of the study, and some implications for future directions.

Research Question 1

The first research question was to examine the extent to which the descriptive analyses and experimental analyses yield similar results about maintaining contingencies. Results indicated that the two methods yielded similar findings about maintaining contingencies for 4 of the 5 students. For example, if it was hypothesized that off-task behavior was more sensitive to peer attention during the descriptive analyses, the data from the experimental analyses suggested the same hypotheses for 4 students. For one student, Josh, the descriptive and experimental analyses did not match. Josh engaged in very high levels of off-task behavior during descriptive observations. Also, the data showed that he received peer
attention following off-task behavior more often than teacher attention. However, he exhibited near zero levels of off-task behavior across academic demand, peer attention, and teacher attention conditions during experimental analyses. For Jerry, the close adult observation, clearly defined instructional tasks, specific rules for accomplishing the math tasks, and an isolated seating arrangement may have contributed to an increase in task-engagement.

The match for 4 of the 5 subjects is a promising finding because these results suggested that descriptive and experimental analyses identified similar variables associated with off-task behavior. Although descriptive analyses involved only the observation of naturally occurring behavioral events, and experimental analyses involved manipulation of behavioral events, a similar methodology (Bijou, et al. 1968) was employed for hypotheses formation. This included the generation of response definitions, the development of interval-based observation procedures, the assessment of interobserver reliability and similar data analyses based on relative frequencies of off-task behavior and consequent events.

The findings of the present study add to the literature supporting the effectiveness of using descriptive analysis data to design interventions for decreasing off-task behavior in the classroom setting (Lalli et al., 1993; Sasso et al., 1992). Similar to the present study, Lalli et al. and Sasso et al.
compared descriptive and experimental assessment procedures and reported the data from the two analyses were in agreement about the variables maintaining targeted behavior. These findings, unlike those of Lerman and Iwata (1993), support the applicability of descriptive analysis for identifying maintaining variables of off-task behavior. Lerman and Iwata suggested that “descriptive analyses may be neither necessary nor sufficient for identifying reinforcers for problem behavior” (p.314). However, descriptive analyses were conducted in an atypical manner in that study making it more difficult to compare the experimental and descriptive assessments. The present study has extended that work by developing a data collection and analysis procedure that was used during both descriptive and experimental assessments making the two data sets more comparable.

Research Question 2.

Research question 2 focused on how interventions derived from descriptive and experimental analysis data compare to reinforcement-based interventions derived from preference assessment data. It should first be noted that the purpose of conducting descriptive and experimental analyses is to identify events associated with inappropriate behavior. On the other hand, preference assessments are conducted to identify items or events that reinforce behavior (Schwartz & Baer, 1991). In this study, intervention
strategies based on the results of the descriptive and experimental analyses (i.e., peer and academic interventions) resulted in a reduction of off-task behavior except for Ralph. Also, for the 4 students who received the academic intervention, a reduction in levels of off-task behavior was also observed. Overall, results suggested that for 4 of the 5 students there was little difference between interventions derived from the descriptive and experimental analyses for the immediate reductions of off-task behavior. The intervention derived from the preference assessment (i.e., treasure chest intervention), was as effective, or in most cases, more effective than interventions derived from descriptive and experimental analyses.

Although the interventions derived from the descriptive and experimental analyses were successful, the treasure chest intervention resulted in the lowest levels of off-task behavior for all 5 students. Four participants also completed more math problems during the treasure chest intervention than during the peer or academic interventions derived from the descriptive and experimental analyses. Also, teachers rated the treasure chest intervention more acceptable for 4 out of 5 students.

Research has examined the relative effects of reinforcement-based interventions (e.g., Barrish, Sanders, & Wolf, 1969; Fussiler, 1998) designed to reduce disruptive classroom behavior. It has been found that when students are actively involved in choosing their reinforcers, they will engage
more frequently in appropriate behaviors (Raschke, 1981). In this study, the treasure chest intervention resulted in the lowest levels of off-task behavior. However, students did not always choose items they suggested they preferred. For example, four students suggested they preferred teacher attention activities but did not choose teacher attention when given the opportunity. The results of the reinforcer survey and the items students selected during the treasure chest intervention were compared. For example, on the survey, 4 out of 5 students indicated they preferred teacher attention. However, teacher attention was never chosen. Only edibles (M = 58%) and/or tangibles (M = 53%) were selected. This result will need further scrutiny and replication. The findings would seem to support Fussiler (1998) who suggested such results have “substantial applied implications as the reinforcer assessments may be considered less complex, and less time consuming” (p. 57). Obviously, this is not to suggest that items students selected for exhibiting appropriate behaviors would also function as a reinforcer for more complex responses (e.g., completing instructional level tasks or appropriate playground behavior) (Piazza, et al., 1996).

**Research Question 3.**

Research question 3 asked that if the treatment utility of the three forms of assessment is approximately equal then to what extent will other
variables such as ease of implementation dictate use. It was found that the three forms of assessment produced sufficient data to derive interventions for decreasing off-task classroom behavior. Differential treatment effects were tested within the context of alternating treatments designs. The intervention based on the reinforcer survey (i.e., treasure chest) resulted in lower percentages of off-task behavior. One indication of ease of implementation may be that teachers were given the opportunity to choose between interventions after the validation phase. The academic intervention was selected by two teachers and the treasure chest was selected by three teachers. Even though two teacher chose to continue the academic intervention, they rated the treasure chest as more acceptable.

Limitations

There are several advantages to using descriptive analyses in the classroom setting (e.g., it is more objective than verbal report) (Iwata et al., 1990; Repp & Karsh, 1994). However, specific limitations have been discussed in the literature (e.g., Iwata et al., 1990). For example, “naturally occurring events do not necessarily reveal functional relationships” (Iwata et al. 1990, p. 308). Also, observations conducted in the natural environment may not detect the effects of intermittent events maintaining behavior.
A limitation or disadvantage of this assessment strategy may be the time involved in conducting the assessment. It may be that assessments could be conducted over fewer sessions. However, it has been suggested that there is presently "no a priori reason to believe that a set number of sessions or total length of time is predictive of the function of problem behavior" (Repp et al., 1994; p. 30).

Several limitations concerning the experimental assessment should be noted. First, the academic demand condition only included frustration level math. The results may have been different if instructional level materials were used. Also, all possible variables hypothesized to influence student behavior were not experimentally tested which may be another limitation of this study. Although every effort was made to keep the situation as natural as possible, students were moved away from their assigned seat to the back of the classroom during test conditions. Although, still in the classroom setting, this movement away from the natural seating arrangement may have had an effect on off-task behavior.

The limited number of experimental conditions and sessions conducted for each variable hypothesized to be associated with off-task behavior is another limitation. Although research has demonstrated that brief functional analyses procedures (e.g., Cooper et al., 1992, Northup et al., 1991) conducted in the classroom can result in effective treatments,
verification that brief procedures in this context yield similar results to extended analyses has not been established. This research, was in part, an attempt to keep experimental analyses as simple as possible (e.g., Iwata, 1994).

The primary dependent variable was “off-task” behavior which represented several behaviors. The extent to which these separate behaviors were members of the same response class was not established.

Finally, conducting experimental manipulations with verbal children is an area in need of study. For example, verbal children are more sensitive to variation in the content and type of attention. Of particular interest would be conducting these procedures using different forms of attention that are more naturalistic.

Several limitations of the reinforcer intervention should be noted. The lack of more thorough treatment evaluations is a limitation. Generally, after intervention validation each teacher selected an intervention to continue in the classroom. Modifications were made in order to adapt to each teachers suggestions. Although one purpose of this investigation was to evaluate treatments derived from three different assessment method, more extended treatment evaluations are needed.

A limitation of the treasure chest intervention was the provision of teacher attention. Teachers walked to students and placed a sticker on the
designated place on the students desk. Although teachers ignored student behavior (i.e., no eye contact or verbal interaction), teacher attention was still provided in the form of physical proximity as well as the provision of a sticker.

Treatments derived from the assessment methods did produce notable decreases in student off-task behavior. However, students were completing easy level math problems. It may be necessary to conduct further assessment or add various components for skill development.

In summary, the present study demonstrated that three different forms of assessment can result in data that are sufficient for intervention development. Although the contributions are pertinent to a practical technology of functional assessment and intervention development, classroom-based assessment methods remain an area in need of investigation. In particular it seems important to examine cost / benefit of descriptive analyses, experimental analyses, and preference assessments. These results, although preliminary suggested the most time efficient method led to the most effective treatments. Obviously more treatment validity research is needed prior to that for it is impossible to speak of cost effectiveness without first addressing the issue of effectiveness.
REFERENCES


APPENDIX A: PARENT CONSENT

PURPOSE: Thank you for allowing your child to participate in this important project. In working with your child's teacher, we hope to provide some assistance to the teacher in developing some effective strategies for helping your child succeed in school.

PROCEDURE: As a participant in this project, your child's teacher will be asked to: complete questionnaires, participate in interviews, and to collect information about your child's behavior during class. In addition, we would like to conduct observations of your child in his or her class setting daily, with observations lasting between 30 and 90 minutes each day. These activities will be conducted to develop intervention recommendations. These recommendations will be shared with the classroom teacher. Your child's involvement in this project will last up to six to eight weeks. The benefits of this study are the potential of developing effective strategies for use in the classroom that will help my child increase appropriate classroom behavior.

All information will be coded and the identity of individuals participating will remain confidential throughout the study. Your child's name will not be placed on any material or records. Once the teacher terminates involvement, he or she will be provided a summary of any information which might assist your child in the classroom.

PARENT'S RIGHTS: Your agreement to allow your child to participate in this project is voluntary. You have the right to withdraw your child from this project at any time, and you may do so by contacting the experimenters named below. The researcher and other members of the team will be available throughout the study to answer any questions concerning the procedures and to ensure they are fully understood. There will be no cost for participation in this study.

I HAVE READ AND UNDERSTAND THE PURPOSE OF THE PROJECT, THE PROCEDURES INVOLVED, AND MY RIGHTS AS A PARTICIPANT. I AGREE TO PARTICIPATE IN THIS PROJECT.

________________________  _________________  _______________
Signature                  Date                Subject Number

Joe Witt                  Lynn LaFleur
Supervising Professor     Graduate Student
388-4111                  272-2620
APPENDIX B: TEACHER CONSENT

PURPOSE: Thank you for cooperating in this important project on classroom interventions. Teachers who participate in this project will be providing valuable information about the instructional environment in the classroom as well as information about how interventions can be used to address the needs of children who are experiencing behavioral difficulties in the classroom. This information is important for future development of services for children and for teacher training as well. In addition, we hope to provide you with some assistance with a student in your class.

PROCEDURE: As a participant in this project, you will also be asked to provide some simple background information about yourself, complete two questionnaires about the identified student, participate in two meetings with the experimenter, and participate in some experimental conditions in which you will be required to ignore all inappropriate behavior displayed by the child for 10 minute sessions. In addition, you will be asked to allow classroom observations for the purpose of obtaining information pertaining to the classroom ecology. Permission will be obtained from the student's parent(s) to observe the student both within your classroom. You will be provided with a summary of any information which might assist you in the classroom. In addition, we wish to make ourselves available for additional consultation concerning this child at your request.

In order to maintain individual confidentiality, all information will be coded and the identity of all students and teachers participating will remain confidential.

TEACHER'S RIGHTS: Your agreement to participate in this project is voluntary. You have the right to withdraw from this project at any time. The researcher and other members of the team will be available throughout the study to answer any questions concerning the procedures and to ensure they are fully understood. Following completion of the study, the researcher will be available for discussion and will provide any requested details regarding study procedures.

I HAVE READ AND UNDERSTAND THE PURPOSE OF THE PROJECT, THE PROCEDURES INVOLVED, AND MY RIGHTS AS A PARTICIPANT. I AGREE TO PARTICIPATE IN THIS PROJECT.

Signature                      Date                      Subject Number
Joe Witt                      Lynn LaFleur
Supervising Professor         Graduate Student
388-4111                      272-2620
APPENDIX C: TEACHER BACKGROUND

Case Number: ____________

Sex: Male ____________ Female ______

Highest degree earned: ______________________

Number of years employed as a teacher: ____________

Type of teacher certification: ______________________

Number of years employed as a teacher: ____________

Grade levels taught: ______________________

Did you refer any children with behavior problems for psychological/medical evaluations last year? Yes No
APPENDIX D: PROBLEM IDENTIFICATION INTERVIEW

Behavior Specification
Definition: The consultant should elicit behavioral descriptions of client functioning. Focus is on specific behaviors of the child in terms that can be understood by an independent behavior. Provide as many examples of the behavior problem as possible (e.g. What does Cathy do?).

a. Specify the behavior(s);
b. Specify examples of each problem behavior;
c. Which behavior causes the most difficulty? (i.e., prioritize the problems from most to least severe)
d. Which if any of the behaviors generally occur together?

Behavior Setting
Definition: A precise description of the settings in which the problem behaviors occur (e.g., Where does John do this?).

a. Specify examples of where the behavior occurs:
b. Specify priorities (i.e., Which setting is causing the most difficulty?)

Identification of Antecedents
Definition: Events which precede the child's behavior. Provide information regarding what happens immediately before the problem behavior occurs (e.g., What happens right before Kirsty hits other children?).

What does the student do when you request her/him to work on a task?
What does the student do if you ignore them for a class period?
Is the student more likely to exhibit targeted behaviors in the presence of peers?
Is the student more likely to exhibit targeted behaviors when presented with a difficult task?

Sequential Conditions Analysis
Definition: Situational events occurring when the problem behavior occurs. Environmental conditions in operation when it occurs. For example, time of day or day of week when the problem behavior typically occurs. Sequential conditions are also defined as the pattern or trend of antecedent and/or consequent conditions across a series of occasions (e.g., What is happening when the behavior occurs?).

Is the student more likely to exhibit targeted behaviors when working on a difficult task?
Is the student more likely to exhibit targeted behavior when in close proximity of you?
Is the student more likely to exhibit targeted behaviors in the presence of peers?
Is the student more likely to exhibit targeted behaviors when no one is attending to them or interacting with them?

Identification of Consequent Conditions
Definition: Events which occur immediately following the client behavior (e.g., What happens after the problem behavior has occurred?).
When the student exhibits a targeted behavior is it likely to get your attention?
When the student exhibits a targeted behavior is it likely to get peers attention?
When the student exhibits a targeted behavior is it likely to get them out of doing something?
When the student exhibits a targeted behavior is it likely to get them some item they may want?

Behavior Strength
Definition: Indicate how often (frequency) or how long (duration) the behavior occurs. Behavior strength refers to the level or incidence of the behavior that is to be focused on. The question format used for each particular behavior strength will depend upon the specific type of behavior problem (e.g., How often does Shelly have tantrums? or How long do Brett’s tantrums last?).

Tentative-Definition-of-Goal Question
Definition: Appropriate or acceptable level of the behavior (e.g., How frequently could Matthew leave his seat without causing problems?).

Assets Question
Definition: Strengths, abilities, or other positive features of the child (e.g., What does Jane do well?)

Approach to Teaching or Existing Procedures
Definition: Procedures or rules in force which are external to the child and to the behavior (e.g., How long are Sue and other student doing seatwork problems?)

Data Collection Procedures
Definition: Specify the targeted responses to record. (See data collection procedures - explain how we are planning to take data)

Date to Begin Collection
Definition: Procedural details of when we will begin collecting data.
## APPENDIX E: OBSERVATION CODING FORM

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>DATE</th>
<th>CLASS</th>
<th>TIME</th>
<th>TEACHER</th>
<th>CONDITION/TREATMENT</th>
<th>OBS</th>
<th>REL</th>
</tr>
</thead>
</table>

### ANTECEDENT SETTINGS

<table>
<thead>
<tr>
<th>TD</th>
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<th>GRP</th>
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APPENDIX F: INTERVENTION RATING PROFILE 15
(Martens, Witt, Elliott, & Darveaux, 1985)

The purpose of this questionnaire is to obtain information about your reaction to the classroom intervention. Please circle the number which best describes your agreement or disagreement with each of the following statements:

1. This is an acceptable intervention for the child's problem behavior.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

2. Most teachers would find this intervention appropriate for behavior problems in addition to the one described.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

3. This intervention should prove effective in changing the child's problem behavior.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

4. I would suggest the use of this intervention to other teachers.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

5. The child's behavior is severe enough to warrant the use of this intervention.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

6. Most teachers would find this intervention suitable for the behavior problem described.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

7. I would be willing to use this intervention in the classroom setting.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

8. This intervention would not result in negative side-effects for the child.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

9. This intervention would be appropriate for a variety of children.
   Strongly disagree 1 2 3 4 5 6 Strongly agree

10. This intervention is consistent with those I have used in classroom settings.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

11. The intervention was a fair way to handle the child's problem behavior.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

12. This intervention is reasonable for the behavior problem described.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

13. I liked the procedures used in this intervention.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

14. This intervention was a good way to handle the child's behavior problem.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

15. Overall, this intervention would be beneficial for the child.
    Strongly disagree 1 2 3 4 5 6 Strongly agree

TOTAL SCORE

112

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APPENDIX G: EXPERIMENTAL ANALYSIS: PEER ATTENTION

Classroom Coach

✓ for off-task behaviors sensitive to PEER ATTENTION (PA)

◊ **Place** student and peer confederate at desk in back of room turned away from peers

◊ **Provide** them with an easy task worksheets

◊ **Ignore** all behaviors

◊ **Walk** away (avoid any further interactions)

◊ *(peer confederate will say the following or a similar statement to the target student when cued by the experimenter)*

◊ "**Sally, you need to keep working**"

◊ **Go** to student and **pick up** worksheets when 10 minutes are up
Appendix H: Experimental Analysis: Teacher Attention

Classroom Coach

✓ for off-task behaviors sensitive to TEACHER REPRIMAND (TA)

◊ **Place** student at desk in the back of the room turned away from peers

◊ **Provide** student with an easy task worksheet

◊ **Ignore** all behaviors *except when Cued*

◊ **Listen** or watch for cue
  
  Then walk toward student and say
  
  "Billy, you need to get back to work"

◊ **Walk** away and **Ignore** (avoid any further interactions)

◊ When cued, **Go** to student and **pick up** papers
APPENDIX I: EXPERIMENTAL ANALYSIS: ACADEMIC DEMAND

Classroom Coach

✓ For off-task behaviors sensitive to DIFFICULT TASK (AD)

◊ **Place** student at desk in the back of room turned away from peers

◊ **Provide** student with *difficult task worksheets*

◊ **Tell** them

  "do your best and I will check back with you"

◊ **Walk** away and **Ignore** (avoid any further interactions)

◊ When cued, **Go** to student and **pick up** papers
APPENDIX J: INTERVENTION: PEER ATTENTION

Classroom Coach

✓ for on-task behaviors sensitive to PEER ATTENTION (PA)

◊ Place student and peer confederate at desk in back of room turned away from peers

◊ Provide them with an easy task worksheets

◊ Ignore all behaviors

◊ Walk away (avoid any further interactions)

◊ (peer confederate will say the following or a similar statement to the target student when cued by the experimenter)

◊ "Sally, you are doing a good job"

◊ Go to student and pick up worksheets when 10 minutes are up
APPENDIX K: INTERVENTION: TEACHER ATTENTION

Classroom Coach

✓ for on-task behaviors sensitive to TEACHER ATTENTION (TA)

◊ **Place** student at desk in the back of the room turned away from peers

◊ **Provide** student with an easy task worksheet

◊ **Ignore** all behaviors *except when Cued*

◊ **Listen or watch for cue**
   Then walk toward student and say
   "Billy, you are doing a great job"

◊ **Walk** away and **Ignore** *(avoid any further interactions)*

◊ **When cued, Go to** student and **pick up** papers
Complete reinforcer survey

Place student at desk in the back of room turned away from peers

Provide student with easy math worksheets

Tell
"Billy, you need to work on this math. Do your best and I will check back with you"

Walk away and Ignore (avoid any further interactions)

When cued, Go to student and pick up papers
Teacher: say the following to students:

"The office is getting ready to fill the treasure chest. Mrs. Crawford has asked that we ask the students what they would like in the treasure chest. I am going to read from a list of items and if you hear something you like, raise your hand and I will check it."

Read items to class.

✔ only the items the target student wants.

Ask students for other ideas not found on the list.

Have students write what they want on a sheet of notebook paper.

Collect all papers.
# APPENDIX N: REINFORCER SURVEY

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<th>Date</th>
<th>Item</th>
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<td>B. Popcorn</td>
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<td>C. Coke</td>
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<td>D. Fruit Punch</td>
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<td>E. Popsicle</td>
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<td>2. Special Desk Supplies</td>
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<td>A. Pencils</td>
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<td>B. Erasers</td>
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<td>C. Pens</td>
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<tr>
<td>D. Stickers (specify)</td>
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<td>3. Awards</td>
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<td>A. Ribbons</td>
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<td>4. &quot;Time&quot; Awards</td>
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<td>A. Extra P.E.</td>
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<td>B. Computer Time</td>
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<tr>
<td>C. Free Time</td>
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<td>Leisure reading</td>
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<td>Coloring</td>
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<td>D. Extra recess</td>
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<td>E. Extra Library Time</td>
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<td>5. Small Toys</td>
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<td>A. Cars</td>
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<td>B. Yo-Yo</td>
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<td>C. Jax</td>
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<tr>
<td>D. Jump Rope (Jumping time)</td>
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<td>E. Balloons</td>
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<tr>
<td>F. Puzzle (Puzzle time)</td>
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<td>6. School supplies</td>
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<td>7. Hair Decorations</td>
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<td>A. Bows</td>
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<td>B. Barrettes</td>
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<td>C. Bands</td>
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<td>8. “Good Job” Poster/Stickers</td>
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<tr>
<td>B. Helping in the library</td>
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<td>C. Helping the janitor</td>
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<tr>
<td>D. Helping in a lower grade</td>
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<td>E. Taking good work to counselor</td>
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<td>F. Running Errands</td>
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<td>G. Sitting next to the teacher at lunch</td>
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<tr>
<td>H. Sitting at teacher's desk for a work assignment</td>
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12. Rewards Earned for the whole classroom.

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<td>B. Video/Movie</td>
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<td>C. Lollipops</td>
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<td>D. Popsicle</td>
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please list other items below
VITA

Lynn Habyan LaFleur was born in Long Island, New York, and grew up in New Castle, Pennsylvania. She received a bachelor of arts and master's degree in Education from Northeast Louisiana State University. She entered the doctoral program in School Psychology at Louisiana State University in 1992 and received a master of arts degree in 1995.

Lynn's research interests include school-based behavioral assessment and intervention. Her educational experiences include teaching in the elementary grades and higher education, mental health counselor in a middle school, working as project director on state grants, program development for an alternative elementary school program in East Baton Rouge Parish, and she has published a book for teachers along with three other authors. She is presently employed as a Behavior Analyst for East Baton Rouge Parish School System in Louisiana.
DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Lynn Habyan LaFleur

Major Field: Psychology

Title of Dissertation: Comparison of Intervention Strategies Based on Experimental Analysis, Descriptive Analysis, and Reinforcer Assessment in Addressing Off-task Classroom Behaviors

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination: September 15, 1998
IMAGE EVALUATION
TEST TARGET (QA-3)

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1.4
1.6

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1.1
1.25
1.4
1.6

150mm
6"

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