8-2009

Applied behavioral self-control intevention for impulsive preschoolers

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APPLIED BEHAVIORAL SELF-CONTROL INTEVENTION FOR IMPULSIVE PRESCHOOLERS

by

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Bachelor of Art, University of North Dakota, 2002
Master of Science, North Dakota State University, 2004

A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

In partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota

August
2009

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Department Clinical Psychology

Degree Doctor of Philosophy

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ABSTRACT

The present study evaluated the effectiveness of a 12 week school-based behavioral intervention with preschoolers age 4 to 5 with self-control problems. Teachers were trained to use instruction, modeling, rehearsal, and role-playing to increase the children's self-control. Children were taught self-monitoring, self-verbalization, the use of production cues, and self-control skills during one on one training. The classroom intervention consisted of weekly educational sessions on the proper classroom behaviors that are indicative of good self-control. The treatment program aimed to improve the child's self-control skills and to decrease impulsive behaviors. It was also intended to train self-control skills to children so that they can internalize these skills to modify their behavior at school and in other settings. The study implemented a combination of several treatment components that have been lacking in the past literature in order to enhance, maintain, and generalize trained self-control skills, including: self-verbalization, cueing, self-monitoring, and teacher and classroom training.

The interventions were effective in reducing some behaviors, but not all, for each participant. Many of these effects maintained during follow-up. Since the individual training was tailored for each child, the intervention affected each child differently. The classroom intervention was effective in reducing many behaviors in combination with the individual intervention, as well as, on its own. Overall, when the individual intervention was administered alone the results that were produced indicated that the training was

effective and the results maintained. When the classroom intervention was administered alone for 8 of the behaviors the results that were produced displayed a decrease in 5 of the target behaviors during training and maintained for 4 of those behaviors. When both the classroom and individual interventions were administered, the combination was shown to be effective in 4 out of the 9 applications and three maintained. Overall 100% of the children displayed a decrease in frequency for at least 1 target behavior and 4 out of the 5 children's decreases in target behavior also maintained into follow-up. Furthermore, the teachers reported that the classroom intervention not only positively affected the participants' behavior; they saw a positive effect on the classroom as a whole and thought it was a very useful strategy.

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Applied Behavioral Self-Control Intervention for Impulsive Preschoolers

Conduct and behavioral disorders are a serious problem with a prevalence rate in the United States of 3% to 9% of youth (Kamps & Tankersley, 1996). According to the Diagnostic and Statistical Manual fourth Ed (DSM-IV), diagnoses that fit into this category have prevalence rates for children with: attention deficit/hyperactivity disorder of 3-7%, conduct disorder ranging from >1 to <10%, and oppositional defiant disorder of 2-16%. These prevalence rates are comparable to many other disorders listed in the DSM-IV that are of great concern for child psychologists, such as learning disorders, feeding disorder, separation anxiety disorder.

Although this is clearly a problem for many children in the United States, most self-control problems that are detected in kindergarten are not diagnosed until 5th grade, which is when they are often first treated. It is predicted that half of the children with self-control problems will continue to have these problems into their school years and into adulthood (Campbell, 1995; Kamps & Tankersley, 1996). Furthermore, Kamps and Tankersley (1996) suggested that even if young children receive treatment in elementary school or kindergarten, it may be too late. Kochanska, Murray, and Coy (1997) suggest that the preschool period is a crucial time during childhood for developing an active control system that impacts one's behavioral control and internalization of rules, with

marked increases in ability for control between ages 3 to 6 (Carlson & Moses, 2001). Since self-control problems that are noted in the preschool and early education years are predictive of long-term academic and social impairment (Kochanska & Knaack, 2003), it is imperative that early intervention techniques are developed to improve self-control as early as possible in an effort to prevent future impulse control problems. The current study implemented self-control training in a preschool with children 4-5 years of age. The efficacy of this new intervention strategy in the school environment was assessed.

Gambling, addictions, eating disorders, and over-spending are self-control problems that many adults deal with and that many can relate to. But self-control is a common problem for children as well. Lack of self-control is a daily interfering aspect early in life for many children. In the preschool years, self-control problems are likely to appear as talking out of turn, getting out of one's seat at inappropriate times, getting off task, acting aggressively towards others, and not following rules.

There are several childhood disorders that are related to self-control problems. These include Attention Deficit/Hyperactivity Disorder (ADHD), conduct disorder, oppositional defiant disorder, and disruptive behavior disorder not otherwise specified (NOS). According to the DSM-IV (1994), ADHD is characterized by inattention, hyperactivity, and impulsivity that is first present before the age of 7. Conduct disorder is characterized by aggression, destruction of property, deceitfulness, theft, and serious violations of rules. Oppositional defiant disorder is characterized by symptoms of negativistic, hostile, and defiant behavior. Disruptive behavior disorder NOS is characterized by a combination of symptoms for conduct disorder and oppositional defiant disorder. In order for a child to receive one of these diagnoses, the behavior of

interest must cause clinically significant impairment in social or academic functioning. Although children might not meet the criteria for a disorder in the preschool years, symptoms of self-control problems may become more serious over time, becoming a diagnosable disorder by their middle elementary school years. Therefore, the focus of this dissertation is to implement a behavioral school-based intervention that is preventative in nature, in order to avoid further development and diagnosis of self-control behavioral problems.

Research shows that many young children with self-control problems not only continue to have self-control problems *throughout* their lives, but also display problems in many different *areas* of their lives. Several studies have suggested that self-control deficits, mainly ADHD, greatly reduce educational performance and achievement (Barkley, 1997; Kamps & Tankersley, 1996; Mischel, Shoda, & Rodreiguez, 1989; Whalen, Henker, & Hinshaw, 1985). The current study did not focus on ADHD due to the age range of choice, of which the diagnosis of ADHD is not age appropriate. The studies that have been conducted on the topic of self-control with children have found that children who lack self-control, as compared to their peers, talk out of turn and are off task more, respond more quickly and make more errors (Pulkkinen, 1996), have deficits in inhibiting responding, planning, executive functioning, metacognition, and self-monitoring (Miranda, Precentacion, & Soriano, 2002), and have difficulty following rules and actively participating in classroom activities (Pulkkinen, 1996).

Some of these behaviors may also be displayed by children who do not have an "impulse control problem" per se, rather could just be bored in the classroom. Even if so, they are still displaying disruptive behaviors in the classroom and affecting the other

children. They even may be incorrectly labeled by their teacher as a problem child, which may follow them their through their years of schooling. Furthermore, most young children could benefit from self-control training within the classroom.

Miranda et al. (2002) conducted a study on the effectiveness of a multi-component treatment in the classroom for 3rd and 4th grade children with ADHD, who exhibited self-control problems. The study compared two groups of ADHD children, including one group whose teachers were trained on treating hyperactivity. The teachers received training across several training sessions. The first session focused on general knowledge of ADHD. The second and third teacher training sessions consisted of behavior modification techniques. The fourth session provided instructional guidelines for the classroom that focused on the classroom arrangement, use of explanations, directions, and feedback for performance, as well as organizational techniques and management of classroom materials. Sessions five and six consisted of cognitive-behavioral techniques. Specifically, session five focused on self-control and the "Think Aloud" self-instructional training techniques. The think aloud procedure involved teaching the children to use four self-instructions: 1) What is my problem?, 2) What is my plan?, 3) Am I following my plan?, and 4) How did I do it? Session six focused on reinforced self-evaluation via token economy for the whole class. The self-evaluation procedure was taught in three phases: 1) discussion of classroom rules, 2) discussion of the importance of following the rules, and 3) development of the reinforcement plan. In order to evaluate the training program effectiveness, a battery of assessment measures were administered pre and post-treatment, such as several neuropsychological measures, parent and teacher behavioral rating scales, and direct behavioral observation. Results

indicated that the teacher training was effective in reducing hyperactive/impulsive behaviors and increasing self-control in the children in the classroom and in the home as noted by lower scores on the Abbreviated Conners Rating Scale, the Iowa Hyperactivity Factor and the Self-Control Rating Scale at posttest.

Social competence and functioning is also affected by low self-control (Kamps & Tankersley, 1996; Mischel et al., 1989), such that people with low self-control are found to experience difficulty with social adjustment, interacting with peers, following rules, difficulty with adult social relationships, marriage, and employment (Barkley, 1997). Similarly, interpersonal relations (Bryant, Vizzard, Willoughby, & Kupersmidt, 1999; Kamps & Tankersley, 1996; Whalen et al., 1985; Zentall, 1989) are also impaired by lack of control, specifically peer and family relations (Barkley, 1997), and interpersonal trust (Schwarz, Schrager, Lyons, 1983).

Coping with stress and frustration (Mischel et al., 1989) is also an area affected by lack of self-control. It is suggested that people with self-control problems may experience problems with emotional expression, arousal, anxiety, depression (Barkley, 1997), anger management (Whalen et al., 1985), aggression, and conduct problems (Barkley, 1997). Delinquent activity (Patterson & Yoerger, 1993; White, Moffit, Earls, Robins, & Silva, 1990) is also a possible concern, such that there is an increased probability, with children who lack self-control, of school suspensions and expulsions, early substance experimentation and abuse, driving accidents and speeding (Barkley, 1997) and arrests (Bryant et al., 1999). Lastly, self-perception (Whalen et al., 1985) is also an area of concern since there is the possibility of lower self-esteem and negative self-attributions (Reid & Borkowski, 1987).

Reid and Borkowski (1987) conducted a study on causal attributions of hyperactive children. They combined the effects of attribution and self-control training on maintenance and generalization of behavior, impulsivity, and self-efficacy with second, third, and fourth graders. The study consisted of pre and post-test administration of cognitive measures, an attributional beliefs measure, the self-control Matching Familiar Figures Test (MFF test), and teacher ratings of the children's behavior. Children were trained in self-control via modeling of general self-verbalization procedures. These self-control verbalizations were modeled by instructors by repeating them out loud as they proceeded through each step of a task. Then the instructor proceeded to another task as the child verbalized the self-statements out loud, which continued four times. The skills were faded to whispering, then covert speech. Next these skills were discussed and encouraged to be applied in the classroom by brainstorming. Children were rewarded via tokens when they returned to proceeding sessions and reported applying their self-control skills in the classroom. Each review session ended with self-evaluation. Another group received attributional training as well as the self-control training. This additional attributional training consisted of training an attributional dialogue to enhance antecedent attributions and decrease negative, self-defeating beliefs.

Reid and Borkowski's (1987) study found that the combination of self-control and attributional training was effective due to the self-regulation and active participation during training to activate appropriate program-specific attributions. They also found that the effects of the self-verbalization increased self-control skills and generalization, but these effects were enhanced by attributional training. Results indicated that the overall group means demonstrated an increase in self-control performance on the MFF

test for children in the self-control plus attributional training. These results also continued 10 months after training. Overall it was suggested that improved attributional beliefs increases beliefs of personal control within the individual, which in turn increases their perception of control over their own behavior.

Despite this large body of research on the long term negative effects of self-control problems, there is a tendency to delay applied interventions and services for these children and their families until the later elementary school years. This delay may be due to the theory that many children lack self-control due to their age and maturity level, which is "normal," and they will soon "grow-out" of these behaviors. Often times, unless children are recommended for special help due to cognitive or language developmental delay, preschoolers with behavioral problems do not qualify for special help (Campbell, 1995) and therefore will not receive it. Regardless of this notion, for many young children, applied self-control interventions are especially needed (Mischel et al., 1989) and the younger the age of the child the more positive the child's behavior at home and school in later years (Bryant et al., 1999). Applied behavioral interventions with children typically consist of a combination of behavioral training components, usually including direct behavioral observations in the child's natural environment and one-on-one training with the child.

Kamps & Tankersley (1996) define prevention as early intervention. They found that prevention is most effective if it involves (1) parents, (2) teachers, (3) peers, (4) modification of family variables, (5) intervention implemented across settings, (6) multiple interventions, (7) proactive intervention, and (8) is applied to young children (before maladaptive behavior becomes a firmly learned way of living). Other key

preventative variables of childhood self-control problems are to also include skills training to support maintenance and generalization and collaboration among families, schools, and service providers. It is also suggested that basic prevention programs in schools should be universally applied to all students and not only to those who already display a deficit in control in order to preventatively improve the current and future behavior of all children within the class.

Key Self-Control Variables

Self-control is defined as the voluntary regulation of behavior according to a preset standard or rule (Hughes and Hall, 1989; Kanfer and Karoly, 1972). This standard or rule can be previously set by the individual, parent, or society. Self-control is a voluntary process that must be learned, such that individuals do not automatically internalize control from others (Blackwood, 1970). Other approaches to self-control will be described later.

Self-control begins with self-monitoring one's behavior and requires an awareness of the behavior that needs to be regulated or modified. If there is a conflict with the individual's behavior and a standard then a self-controlling behavior must be performed. Self-control problems can be one of many, such as, failure to 1) control response intensity, 2) appropriately time behaviors either in magnitude or frequency, or 3) inhibit high-probability behavior that produce immediate gratification and instead choose a more appropriate low-probability behavior that produces longer-term gains.

Self-control is dependent on one's awareness of and control over current environmental factors including one's own behavior. Self-control is significantly improved by one's ability to identify the factors that influence one's behavior, such as

antecedents, cues, and consequences (Bolstad & Johnson, 1972). Children with self-control problems often attend to external stimuli, reinforcement, and control, instead of internally attending to and monitoring of one's own behavioral control and reinforcement (Zentall, 1989).

Meichenbaum and Goodman (1971) describe self-control from a cognitive framework in which children develop self-control by adequately moving through three stages, comprehension, production, and mediation. One must learn to first verbally mediate one's overt behavior, then spontaneously produce appropriate mediators for their behavior, and lastly comprehend the situation or behavioral standard in which one then chooses which mediators to produce. According to Vygotsky (1962), internalization of verbal commands is critical for a child to develop voluntary behavioral control.

Theoretical Approaches to Self-Control

In theory, children lack the skills necessary to appropriately control their behavior (Horn, et al., 1991). Children may automatically learn to self-control through vicarious learning, modeling, and reinforcement, but there is no set process for which they proceed or a predetermined rate of learning and therefore some children need extra training to learn, maintain, and generalize these self-control skills. The goal of self-control training is to teach children the skills to self-control and then to be able to maintain and generalize those skills. There are several theories on how this skill development is trained and learned, including the social learning, behavioral, cognitive, and cognitive-behavioral approaches. Each will be discussed in turn.

The social learning approach places more control over what is appropriate and inappropriate behavior on society and the individuals in the child's environment, rather

than placing the choice or control within the individual. The goal is to train parents and teachers to reinforce appropriate behaviors while punishing or ignoring inappropriate behavior. It also involves teaching the child what behaviors are socially acceptable and appropriate and focuses mainly on teaching them to accommodate their behavior to a social norm or standard.

Unlike the social learning theory, the behavioral approach focuses on modifying the antecedents and consequences of the behaviors to be controlled (Zentall, 1989). This can be achieved through response cost contingencies, shaping, positive and negative reinforcement, role-playing, extinction, and progressive delay with distraction (Coates & Thoresen, 1986). Response cost approaches provide reinforcement contingent upon the presence or absence of a predetermined target response or behavior. The reinforcement may take on the form of a token, to be exchanged at a later time for a reward (e.g. food, money, praise, punishment, etc); (Kendell & Braswell, 1982).

Shaping consists of a gradual process of reinforcing behaviors such that they become more and more similar to the target behavior. Once one step of the behavioral chain is modeled and then learned by the individual, the next step is introduced and reinforced. Each step is slightly more complicated than the prior and is closer to the predetermined end target behavior that consists of several steps for achievement. Once later steps of the target behavior are learned, the prior steps that were once reinforced are gradually faded and the new steps are reinforced.

Role playing involves acting out different situations together, while providing the individual with guidance and the opportunity to practice the appropriate behavior in a neutral situation. Extinction occurs when the behavior is no longer exhibited.

Progressive delay with distraction teaches the individual to wait for progressively longer periods of time for a larger delayed reward, while providing a distracting activity during the delay. Similarly, the choice task paradigm or progressive delay procedure is a technique in which children are taught to choose a larger more delayed reward over a smaller, more immediate reward. Schwarz et al. (1983) found that children as young as 3 years old were able to delay gratification to maximize reward, but were sensitive to the length of the delay (Hughes & Hall, 1989). Dixon, Hayes, Binder, Manthey, Sigman, & Zdanowski (1998), suggest that self-control can be strengthened by gradually increasing the delay to the larger reinforcer, but as that delay increases, impulsive behavior may begin to reoccur. Therefore, a distracter task may be used to surpass this effect. Binder, Dixon, and Ghezzi (2000) found that the type of distracter task was not related to their ability to demonstrate self-control. This approach to behavioral change appears to work during training but fails to maintain past training. Conceptually, the reason appears to be that the behavior they are teaching to delay, is actually only being delayed and not controlled. The distracting task prior to the delayed behavior is only replacing the current behavior with another by external distraction and not from internal self-control. Therefore, once the external control is alleviated or the training commences, the behavior is no longer delayed.

The cognitive theory of self-control suggests that the problem is maladjusted information processing, such that there is a cognitive deficiency. This is a deficiency in the ability to "stop and think" or to slow down one's behavior. According to the cognitive approach, children with self-control problems do not produce internal strategies to regulate their own behavior in relation to behavioral standards. Individuals with self-

control problems have less verbal control over their behavior and use covert speech less. The goal of the cognitive approach is to teach children to use self-instruction, problem solving, and self-directive cues to cognitively slow down (Kamps & Tankersley, 1996). It has been suggested that very young children are less likely to verbalize or use other behaviors to aid in controlling their behavior (Mischel & Mischel, 1983). Therefore, cognitive self-control training uses language as the attentional mediator between internal and external standards (Zentall, 1989), which may increase young children's ability to utilize these techniques on their own and improve their level of self-control.

The cognitive behavioral approach focuses on teaching the child a generalizable set of self-control and problem-solving skills (Horn, Ialongo, Pascoe, Greenberg, Packard, Lopez, Wagner, & Puttler, 1991). According to Bornstein and Quevillon (1976) self-instructions may modify behavior by mediating between the current situation and the appropriate behavior. This consists of teaching children to use self-instruction and self-directive cues to cognitively "slow down" at appropriate times (Hughes, 1988). The cues are taught though modeling, fading, and direct instruction. Meichenbaum & Goodman's (1971) original study addressed self-control problems using verbal self-instructions to improve attention and performance on cognitive tasks. They used self-directed verbalizations including questions about the nature and demands of the task, answered questions by planning and rehearsal verbalizations, and self-guidance statements.

Limitations of Previous Research

Currently the literature on self-control interventions is rather limited, especially with young children (Bryant et al, 1999; Kazdin, 1993). Of the research that has been conducted, very few interventions have proven to effectively maintain decreases in

behavior in the short term and even less have shown long term effects (Kazdin, 1993; Schweitzer and Sulzer-Azaroff, 1988). It is often the case, that when interventions have proven effective, the problem behavior soon returns after treatment is withdrawn, the effects do not generalize to other situations and settings, and often have very limited effects on academic functioning (Friedling and O'Leary, 1979).

Karoly (1977) has emphasized several of the problems with the current research on self-control. These problems with self-control training consist of 1) limited application of training in naturalistic settings such as the home or classroom, 2) overlooking developmental and individual differences for specific individual needs such as the possible maintaining reasons for inappropriate behavior and the needed reinforcement for appropriate behavior, 3) failure to assess pretreatment behavioral levels for comparison to posttreatment levels, which aids in the assessment of treatment effectiveness 4) failure to consider possible motivational deficiencies or lack of reinforcement for appropriate behaviors, 5) lack of multiple treatment components or treatment packages, 6) use of self-referred families only, and 7) focus on a relatively narrow range of self-control behaviors, such as only one or two classroom specific behaviors.

Moreover, Bryant et al. (1999) found several problems in the literature of interventions specifically with preschoolers with behavioral problems. They found that the majority of the studies consisted of school-aged children and few with preschoolers and focused on predicting behavior rather than implementing behavioral interventions. Another problem was that most studies measured intervention effectiveness by parent or teacher recall, reports, or ratings, rather than actual behavioral observations in naturalistic

settings. Overall the studies did not provide or use treatment manuals, address generalization or maintenance issues, and did not include teacher or parent training.

Another failure is the lack of pretreatment assessment, as previously mentioned, to determine whether the child has the appropriate behavior in their behavioral repertoire, the prerequisite skills needed, or a good measure of baseline functioning to compare with the treatment effects (Zentall, 1989). It is not clear in many cases whether or not the child already had the skills to perform the appropriate behavior, but is not using it. If this is the case, the intervention cannot be appropriately adjusted to the individual's specific needs (Abikoff, 1987; Miranda et al., 2002). Therefore, it is important to understand what is maintaining problem behavior or why children fail to perform appropriate behavior. Also, in the past the self-control interventions have been suggested to be too brief (Abikoff, 1987). Overall, Kendall and Zupan (1981) found that the limited literature base failed to replicate, maintain, or generalize results.

Schweitzer and Sulzer-Azaroff (1988) suggest that self-instructional programs, specifically, were not appropriate for younger children because they lack an adequate verbal repertoire, therefore they suggest that progressive delayed procedures could be utilized to increase a child's ability to choose a larger, delayed reinforcer. They found that with the progressive delayed procedure, at pretreatment assessment six hyperactive or impulsive preschoolers ages 3 to 5 years of age consistently chose a single, immediate reinforcer, rather than a larger, delayed reinforcer. Treatment consisted of training the children to press different boxes that were learned to distribute varying amounts of reinforcement, which depended on how long they were willing to delay their gratification. Gradually the length of delay increased for the larger reward. Results

showed that self-control behaviors increased when both large and small reinforcers were delivered initially. As the delays were gradually increased, the children were able to choose the larger delayed reinforcer over immediate, but smaller rewards. On the contrary, Ragotzy, Blakely, and Poling (1999) suggest that, as delays become increasingly lengthier, impulsive behavior may return because it becomes more difficult to choose the delayed reward.

Horn et al. (1991) reviewed past research conducted with psychostimulant medication and argued that when children are treated with medications, they may learn to attribute their behavioral improvements to the medication (external control) and not to themselves (self-control). Consequently, they may learn to view themselves to be unable to control their own behavior and begin to depend on the medications for control of their behavior for them. Furthermore, it has been found that psychostimulant medications have not produced long-term changes (Miranda et al., 2002). Conversely, Horn et al. (1991) found that medication alone was equally as effective as medication combined with behavioral intervention. Although they did find limited evidence that similar effects of combining low dose medication with behavioral interventions to that of high dose of psychostimulant medication.

Overall the current literature on self-control and children is very limited. There is a consistent pattern of limitations across the research indicating an obvious need for further research. It is suggested that the research needs further investigation of the results that have been found, but not maintained or generalized. There is a clear need for effective treatment interventions that are: 1) effective with younger kids, 2) implemented earlier, 3) trained to teachers and parent, and 4) trained across settings. It is believed that

if these above listed treatment aspects are appropriately integrated into preventative interventions with children, there will be greater treatment effectiveness, maintenance, and generalization.

Generalization and Maintenance

As suggested by Ninness, Glenn, & Ellis (1993), in order for self-control training to be effective, skills must be: learned, maintained, and generalized to new areas. Currently, research is seriously lacking not only on self-control interventions with children that have been empirically proven to be effective, but also interventions that maintain (Whalen et al., 1985) and generalize to other settings (Barkley, 1981; Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004; Kendal & Braswell, 1982; Kendall and Zupan, 1981; Zentall, 1989). It is important for interventions to not only produce reductions in problem behavior during interventions, but to maintain these results when the intervention is withdrawn. This should be a goal behind every self-control intervention, such that the behavior changes are not temporary or situationally determined. Furthermore, another key to self-control interventions is for behavioral changes to generalize to other behaviors and situations, such as at school, home, on the bus, etc. Generalization of behavior changes to other situations is a true test of the self-control interventions effectiveness. Obviously, it is good to observe behavioral change in one situation, especially if the situation is school and the behavior is distracting others or impeding learning. But it is optimal for the changes to occur in all other areas of children's daily functioning as well.

It is suggested that in order for behavioral change to maintain, one must learn to shift control from external reinforcement to the individual or to self-control (Ninness et

al., 1993). Similarly, Barkley (1981) suggests that the key to maintaining self-control procedures with children is to provide external consequences, train others (parents and teachers) to reinforce the self-control procedures other than just therapists, and to develop procedures that can be taught to younger children. It is also suggested that multiple procedures can be used to increase maintenance and generalization (Reid & Borkowski, 1987; Zentall, 1989), rather than just individual treatment components. Bornstein and Quevillon (1976) found that with imagination and rehearsal, maintenance of appropriate classroom behavior can be promoted. Furthermore, Kendall and Zupan (1981) suggest that several issues should be considered when measuring an intervention's generalizability, including child self-instructions, the measures used to assess generalization, the form of therapy (group versus individual), and combination of cognitive and behavioral procedures.

In summary, even with the use of multiple materials, trainers, and settings, and training teachers and parents to use self-control techniques in the child's natural environments, there has been limited success of maintenance and generalization in the literature (Whalen et al., 1985). Therefore research needs to take the literature and established interventions two steps further: maintenance and generalization of findings. There are many steps that can be taken in order to enhance chances of maintenance and generalization of behavioral change. These steps will be described in the following paragraphs.

Parent Training

One option to increase maintenance and generalization is to include in-home training and parent training. Unfortunately, it is often the case that parent training is not a

feasible option. Most often training does not take place in the home, rather in the laboratory or school settings, therefore limiting parents' training. There is also limited success with parents volunteering to participate in these studies. Further, research has shown that parent training alone does not result in long-term behavioral improvements in approximately 30-40% of children (Webster-Stratton, & Hammond, 1997). There is also the issue of training parents, even if it is a free service, having them consistently attend the training sessions, as well as to ensure that they are consistently following through at home and in different settings.

As suggested by Zentall (1989), external consequences are necessary to maintain behavioral change with young children and parent training is one way of maintaining external consequences. Parent training provides parents with appropriate ways to deal with problem behaviors (Chronis et al. 2004), for example, if parents are involved in the behavioral training, it is more likely that the children will be appropriately prompted and reinforced for appropriate behavior in the home environment. Kamps & Tankersley (1996) suggest that the key feature to early prevention of self-control problems for children is to involve parents as key interventionists.

Horn et al, (1991) conducted a study with 117 children ages 7 to 11 years who displayed impulsivity problems that combined behavioral parent training with child self-control instructional training. Results indicated that the combined treatments were not superior to medication alone. Bryant et al. (1999) conducted a review of the literature on interventions for disruptive preschoolers and found that there were limited studies conducted on the effects of parent training, but the results that were found produced only short-term results. Overall, it is suggested that the younger the children are when parents

participate in training the more positive the child's behavior becomes at home and in school. It is unclear why there is currently a discrepancy in literature results. In theory though, it is conceivable that the earlier children learn the skills to enhance self-control, the more likely and earlier they will apply them.

Barclay and Houts (1995) conducted a review of the literature on parent training with preschool children and found that most parent training interventions focus on training parents to manage their children's behavior and how to interact positively with their child. It was also found in the review of the literature that physical punishment is linked to low impulse control. They suggest that the child-parent relationship, specifically the parenting style, plays an important role in a child's ability to internalize control. According to Barclay and Houts (1995) the authoritative parenting style is the most ideal approach for a child to develop self-control. This style sets standards for conduct and compliance with reasonable rules, but specifically the authoritative parents respect the child's autonomy and individuality. The specific techniques that parents were typically trained to utilize to teach their child self-control consisted of the use of contingent consequences, mild punishment, active involvement, acceptance of the child's feelings, and explaining rules, which are all representative of the authoritative style.

In general, the parents' role in teaching a child the skills of self-control should include knowledge of the skills involved, helping the child learn these skills, and encouraging and motivating the child to internalize the control of their behavior.

School Training

Another option to increase maintenance and generalization of self-control skills is to include teacher training and implementing training in the classroom (Forehand &

Wierson, 1993). Classroom studies have demonstrated that inappropriate individual and group behavior can be reduced by utilizing operant procedures that contingently reinforce appropriate behaviors (MacPherson, Candee, & Hohman, 1974).

Madsen, Becker, and Thomas (1968) found that teachers can be taught systematic procedures that can be utilized to more effectively produce appropriate behaviors from their students. They trained teachers from a kindergarten and second grade class in a teachers' workshop on the basic applications of classroom behavioral principles and the rationale for them. Teachers were also trained to rate and observe the children's behaviors in the classroom. The teachers were trained for 2 weeks to implement to the entire class: 1) the rules that were expected of the children in order to reduce inappropriate behavior, 2) to ignore inappropriate behavior, and 3) provide praise for appropriate behavior. Specifically, they found that the most effective teacher behavior was showing approval for appropriate behaviors. Furthermore, they found that rules alone were not effective on classroom behavior and neither was ignoring inappropriate behavior alone. Therefore, they concluded that positive social reinforcement in critical for classroom management.

Bolstad and Johnson (1972) found that first and second graders were able to self-regulate inappropriate classroom behaviors and that self-regulation procedures were slightly more effective than external regulation from the teacher. The children were observed in the classrooms and the frequency of their behaviors was recorded. During the first phase the children were externally rewarded for reductions of inappropriate behavior via a point system. During the second phase the children were taught self-regulation skills, which consisted of providing the children with self-observation cards

and told to record their behavior, which was matched to observers' behavioral ratings. The last phase that was implemented was extinction, in which they no longer received points to exchange for reinforcers. They found that the children were reliably capable of accurately observing their own behavior. They found that training children to use self-control techniques was not only slightly more effective than external control, but these self-control techniques were also more likely to maintain the behavior change during extinction.

Barkley et al. (1996) conducted a comprehensive comparison of interventions for kindergartners and found that only the classroom-based behavioral interventions were effective in reducing children's impulsive behaviors and improving self-control in the classroom. Unfortunately, there was a lack of evidence that these classroom-based interventions generalize outside the classroom. Bryant et al. (1999) also found in their review of the literature that teacher training in preschools is an effective training component for increasing children's self-control, but, in order to reduce disruptive behavior, parent involvement was important.

Training teachers to implement self-control within their classroom has several general benefits as well. In reference to teacher time and effort, self-control techniques are more practical and less expensive (Bolstad & Johnson, 1972). Initially, implementing self-control procedures requires much teacher involvement during the external control stages of behavior management, but eventually there is much benefit to the teacher when much of the behavioral management is turned over to the child to self-control. This turning of the teacher's external control over to the self-control of the child has been demonstrated without substantial increases in the rate of inappropriate behavior (Bolstad

& Johnson, 1972). Other than minimal checking of the child's self-monitoring and behavior management, the teacher's time and effort is significantly minimized compared to continuous monitoring of external control.

Therefore, the literature does support incorporating school-based training into self-control training in order to increase appropriate behaviors. As discussed above, it has been proven effective and optional to train teachers to enhance appropriate behavior and that there are benefits for the individual children, the classroom as a whole, and the teachers.

Self-Monitoring

Another method to increase maintenance and generalization of treatment affects is to include self-monitoring of behavior to help promote self-modification of one's own behavior as opposed to external control (Kamps & Tankersley, 1996). It has been suggested that behaviors maintained by self-reinforcement may be more resistant to extinction than those maintained by external reinforcement. This is especially the case in situations in which external reinforcement is not available to the individual (Bolstad & Johnson, 1972).

As defined by Zentall (1989), self-monitoring is a process by which a child becomes aware of unregulated behavior and of any cues or antecedents of that behavior. The training of self-monitoring consists of training the child to observer whether he or she is performing the appropriate behavior at the appropriate time. For many, self-observation is not automatic and must be learned. As suggested by Carver and Scheier (1981), one consequence of self-monitoring is that it may occur at the expense of attention to the environment, especially for younger children who are not skilled in

multitasking. Performing a behavior requires attending to the external environment as well as concentration, memory, and self-monitoring.

Self-monitoring was proven to be effectively trained to first and second graders in Bolstad and Johnson's (1972) study. The children were taught self-regulation skills, which consisted of providing the children with self-observation cards and told to record their own behavior, which was matched to observers' behavioral ratings for accuracy. They found that the children were reliably capable of accurately observing their own behavior and that this self-observation was a component of the self-regulation training that was found to be effective for increasing self-control and that the behavioral changes maintained during extinction.

Self-Statements and Instructions

Teaching children self-statements is yet another way to increase maintenance and generalization of self-control skills. Meichenbaum and Goodman (1971) found that teaching children to self-verbalize (overtly then covertly) utilizes cognitions as antecedents to appropriate behavior. They also found that reinforcing contingencies of self-talk produce greater behavioral change and are more generalizable.

The thought process of the child consists of words, whether overt or covert, and the child can be aware or unaware of his or her own verbalization. This self-talk acts as a mediator between temptation and appropriate behavior, as well as delay of gratification. As suggested by Blackwood (1970), by applying traditional behavior modification in

combination with conditioned self-verbalizations, more control is available. As is the case with self-control in general, self-verbalization is not automatically learned from external control. Rather, conditioning must occur for the child to produce his own self-verbalization at the time of impulse.

Self-verbalization can take on two roles: a warning and a commitment (Blackwood, 1970). Self-verbalizations acting as warnings prompt the child to stop and think before acting. Self-verbalizations as a commitment to behave a certain way can function as an effective discriminative stimuli and can increase the probability of acting appropriately. From a strict behavioral approach, in a classroom setting, when a child is tempted to act without controlling one's behavior and a teacher chains the appropriate behavior with the reinforcing consequences, operant conditioning occurs. This conditioning increases the probability of the appropriate behavior, while decreasing the opportunity to the impulsive behavior, especially when the two are incompatible (Blackwood, 1970). Furthermore, the child's own verbalization of a behavior's reinforcing consequences can also act as a conditioned reinforcer.

Self-statements can be either general or specific in nature (Barclay & Houts, 1995; Kendall & Braswell, 1982). Self-statements teach children to self-monitor their behavior rather than relying on the external control of others (Ninness et al. 1993). Further, if children learn general self-instructions, the self-statements are more likely to influence many different behaviors. When self-instructions are paired with self-monitoring and self-reinforcement, maintenance increases due to lack of need of external reinforcement or redirection from others.

Self-verbalizations have been proven useful to teach children to control behavior already in their repertoire, including slowing down and self-monitoring. It is suggested that self-verbalization is effective because it is an additional response that children have to perform, which naturally slows performance as well as providing additional stimulation (Craighead, Meyers, & Craighead, 1978). Research has shown that increased arousal due to increased stimulation improved performance of familiar behaviors, but not for new, to-be-learned behaviors (Zentall, 1989). This might be a reason why self-verbalizations have not worked well with preschoolers, since many tasks they encounter are fairly novel to them.

Self-verbalizations can be taught by initially modeling the self-control statements while performing the appropriate behavior and talking through each step aloud, proceeding slowly from one step to the next. Then the trainer can do the same for a different behavior, while the child performs it as they say the steps aloud. This modeling procedure continues until gradually fading from whispering the self-statements to covert speech. Physical signs of thinking may be modeled to reinforce the covert self-instructions. Lastly, the child may be encouraged to imagine ways that self-instruction would be used in the classroom, which also will enhance generalization. Once completed the child is instructed to use these skills in the classroom (Reid and Borkowski, 1987).

Bolstad and Johnson (1972) conducted a study with 38 first and second graders who were taught to self-monitor their disruptive behavior. They were provided with self-observation cards and told to record their own behavior. Their behavioral observations were compared to observer's records for accuracy. One group was provided with external reinforcement, while another was taught to self-reinforce appropriate behavior.

For external reinforcement the children's behavior was evaluated by an observer in the environment and then they were given a predetermined amount of points based on the observer's evaluation of the child's behavior. In the self-reinforcement groups, the children were taught to self-observe and record their behavior and then to distribute to themselves the appropriate amount of reinforcement points. Both methods were effective in reducing and maintaining those reductions in disruptive behavior. Further, it was found that these young children were capable of accurately self-monitoring their own behavior as compared to observers' ratings, as well as being able to correctly self-reward.

Unfortunately, as mentioned above, Kamps & Tankersley (1996) have found limited success of self-instruction with preschoolers. They suggest that cognitive self-control is age-related and relies on verbal ability. It also consists of the ability to plan, monitor, and delay behavior via rules and language (e.g., abstract thought). Further, there is evidence that younger children respond better to specific self-instructions that are relatively short, rather than general statements, which limits generalization (Copeland, 1981, 1982). On the other hand, the literature suggests that if children are taught general self-statements such as, "What should I be doing right, now?" the behavior interrupts current behavior and redirects the appropriate behavior (Zentall, 1989). Moreover, other research suggests that either nonspecific or specific self-statements are effective (Barclay & Houts, 1995; Kendall & Braswell, 1982).

Bornstein and Quevillon (1976) have found self-instruction to be effective with preschoolers and effectively implemented a self-instructional package on 4-year-old preschoolers. The intervention package involved verbal modeling, prompts, reinforcement, fading, massed practice, brief use of material rewards, and "story-like"

self-instructional training. The children were trained to increase on task behavior in the classroom during a 2 hour self-instruction session. During this session the experimenter first modeled a task while self-instructing the steps aloud, then the child performed the task as the experimenter spoke the steps aloud, then the child performed the task while talking aloud and the experimenter whispered the steps, then the child performed the task and whispered the steps and the experimenter silently mouthed the steps, then the child performed the task while silently mouthing the steps, and lastly the child performed the task and covertly self-instructed the steps. Several tasks were performed in the training session as the child verbalized the nature of the task and problem-solved the situation. The behavioral improvements of increased on-task behavior maintained for 22 weeks and generalized to the classroom.

Similarly, Kendall and Zupan (1981) found positive results when implementing a verbal self-instructional self-control training with 30 children age 8-11. Training was provided via modeling with response-cost contingency for errors on the Matching Familiar Figures test and two cognitive tests and reinforcement for appropriate behavior on the tasks in either an individual or group format. They found significant improvements from pretest to posttest in both individual and group training that did not differ from each treatment.

Moreover, Bem (1967) was successful via fading at experimentally producing verbal self-control with 3 year-olds. Specifically she found that the lack of ability to teach self-control was due to learning deficits, not because of developmental deficiency, as previous research suggests. MacPherson et al. (1974) found that verbally mediated self-control training was effective in decreasing and even eliminating problem behaviors

in the lunchroom. Meichenbaum and Goodman (1971) found that a self-instruction package was effective with impulsive school-aged children.

Dixon et al. (1998) found the effects of self-control training were most effective with children with higher verbal ability. Reid and Borkowski (1987) utilized a self-verbalization method using modeling and fading procedures with 2nd, 3rd , and 4th graders. They also implemented a generalization technique, in which they had the child imagine how they would use the newly learned skills in the classroom and were encouraged to come up with multiple ways to apply them in the naturalistic setting. During the preceding sessions the children were then to report instances of when they had used the new skills in the classroom since the last session and were rewarded for doing so. They found results that maintained at a 10 month follow-up for the children who had received the self-control verbalization training (as well as self-attribution training).

As with self-verbalization training, the skills that help children learn self-control change over time. Preschoolers, specifically, are best able to resist temptation and delay gratification if they self-verbalize, or talk to themselves. It is most affective with this age group if the self-talk is irrelevant or focused directly on the object of temptation (Barclay & Houts, 1995).

Cues

Another way to promote generalization and maintenance of self-control skills with young children is to prompt them to use their skills by the use of a verbal or physical cue. Most often a production cue is presented to a child at random intervals or when an appropriate behavior is needed, which signals the child to attend to his or her own behavior (i.e. self-monitor) (Zentall, 1989). Palkes, Stewart, and Kahana (1968) taught

hyperactive children to verbalize "stop", "look", "listen", and "think", using four visual-aid card prompts. Others have used taped auditory production cue signals in order to decrease problem behaviors (Barkley, Copeland, & Sivage, 1980).

Cues can be very useful in the classroom, especially with preschoolers. As previously mentioned, even after a child learns self-control skills, monitoring by others needs to continue including prompting and cueing to remind young children to self-monitor, self-control, and self-reinforce. It is hypothesized in the current study that, through the use of cues, preschoolers can be reminded to utilize their established self-control skills when appropriate, if they forget. Also the use of a simple one-word cue can be easily trained and implemented by several individuals throughout their day across multiple settings, therefore increasing maintenance and generalization of behavior self-control.

Limited Success with Preschoolers

Considering the limited literature on self-control training with children, the literature is even further limited among preschool children (Bryant, et al, 1999; Bryant, 1976). Moreover, the research that has been conducted with preschoolers has provided limited success (Bryant, 1976; Clark, Beck, Sloane, Goldsmith, Jenson, Bowen, & Kehle, 1993; Kamps & Tankersley, 1996). Schweitzer and Sulzer-Azaroff (1988) suggested that very young children are less likely to utilize appropriate behaviors to prevent impulsive behavior, but with the use of distracters, self-control behaviors increase, especially when they are to delay gratification. Spivack, Platt, and Shure (1976) found that 4- and 5-year old disruptive preschoolers could be trained to generate alternative solutions to problems efficiently. In one study by Bornstein and Quevillon

(1976), which was previously described in detail, overactive preschoolers who received self-instructional training showed behavioral improvement that maintained for 22 weeks and generalized to the classroom. Results showed an observable, immediate increase in on task behavior once training began. There was an average increase in on task behavior from 11.7% at baseline to 77% at posttreatment, which maintained at follow-up. They implemented training by verbally and physically modeling the self-instructional steps. They also emphasized generalization by telling the children that it was their teacher asking them to perform each task and not the experimenter.

Age and Developmental Appropriateness

Another issue that needs to be addressed when implementing self-control treatment packages to preschoolers is to consider the age appropriateness of the to-be-learned behaviors. Naturally, kids age 2-5 years old are impulsive, inattentive, and active (Forehand & Weirson, 1993; Kirby & Grimley, 1986). After only 2 years of preschool, 1 out of 20 maintain hyperactive behavior (Kirby & Grimley, 1986). Furthermore, there also is a natural improvement of behavior with age, such that Schwarz (1983) found that during preschool years children's ability on waiting tasks improved, but not on choice tasks. By the age of about 3 years, many children begin to develop self-control and are able to implement self-control in the absence of external monitors (Forehand and Wierson, 1993). Another issue is that, it is not clear at what age impulsive behavior becomes pathological or diagnosable (Forehand & Wierson, 1993) yet, disruptive behavior problems are the most frequent childhood problems (Wells & Forehand, 1985).

Self-control is developed through two processes: 1) the child must learn to internally value the importance of self-control and 2) the child must learn the skills

necessary to perform the appropriate behaviors (Barclay & Houts, 1995). According to Barclay and Houts (1995), there are several aspects of the child's environment that should be considered when addressing the child's acceptance and ability to internalize the value of self-control including: reward, punishment, modeling, the use if inductive reasoning, a warm, nurturing relationship with the parents, and appropriate use of psychological rewards (e.g. approval and praise).

In order for a child to learn the necessary skills of self-control, one must develop through a series of antecedent phases that provide the developmental foundation for self-control (Kopp, 1982). The first phase, neurophysiological modulation, focuses on the maturity of the physiological mechanisms, which protect the infant from too much stimulation. The second phase, sensorimotor modulation, infants are able to discriminate themselves from others as well as their actions. During this phase they are able to voluntarily control their motor behavior and can therefore modify their behavior to adjust to their environment. The third phase, external control, begins around age one. External control is developed as the child is able to comply with the requests of others. Behavior becomes motivated by goals and increasingly self-aware. Lastly, the phase of self-control consists of compliance, delaying a task on request, and acting appropriately without external monitoring (Kopp, 1982).

Forehand and Wierson (1993) suggest that by the time children become preschoolers they are more capable of complex causal behavior chains and are able to link actions with their consequences. The primary developmental challenge into early to middle childhood is the ability to generalize self-control learned at home to the school environment. Once in preschool they are introduced, for the first time, to cooperating

with rules and others, paying attention, staying in one's seat, academic rules and skills (Garber, 1984).

Forehand and Wierson (1993) suggest that the interventions that are developmentally appropriate for preschoolers include parent and teacher education, home-based report card, psychoeducational intervention, social skills training, and peer therapy. They also suggest that a reinforcement program for behavioral and academic improvement could be implemented at school and that the child's involvement in the reinforcement program is useful. By doing so the child learns a feeling of control over his or her own behavioral change.

Rationale for Current Study

The present study evaluated the effectiveness of a school-based behavioral intervention with preschoolers at a local children's day center. Children with self-control behavioral problems were identified and recruited for this study and participated in a 12 week treatment program that consisted of self-control skills training for children and teachers. The program began with identification of behaviors that are impulsive or lacking in self-control. Teachers were trained to use instruction, modeling, rehearsal, and role-playing to increase the children's self-control. Children were taught self-monitoring, self-verbalization, and the use of production cues in individual training sessions. The treatment program aimed to improve the child's self-control skills and to decrease impulsive behaviors and to build up the teacher's repertoire of behavioral training techniques. The self-control skills training utilized teachers to assist in improving the effectiveness of the skills training and to increase the generalization of these self-control behaviors to other settings. Therefore, it was intended to teach self-control skills to

children so that they could internalize these skills to modify their behavior at school and in other settings. By including teacher and classroom training, behavioral effects are expected to maintain and generalize.

In summary, after an extensive review of the literature, this study was conducted for several reasons. Most importantly, as previously mentioned, children's lack of self-control is a problem that can develop early in life and continue to be a problem for the individual into adulthood. Therefore, it is important to apply interventions as early as possible, before it develops into an impairing aspect of their daily functioning. The current study implemented a combination of several important treatment components that have been lacking in the past literature in order to enhance, maintain, and generalize self-control skills taught to children of this age. These skills include: self-verbalization, cueing, self-monitoring, and teacher training. If this behavioral intervention is shown to be effective there is the possibility that there will be less need for future parent involvement in training the child, increases in academic success, improvement in social adjustment, behavioral improvement at home and other situations in the child's environment that were not assessed in the current study, as well as a decrease in behaviors that lack self-control outside of the classroom.

CHAPTER II

METHOD

Participants

Five child subjects between the ages of 4 to 5 were selected to participate from a local children's day care center. They were introduced to the selection process by their teachers, based on their behavior in the classroom. The teachers were asked to refer children that were experiencing behavioral problems that resemble lack of self-control and impulsivity, such as talking out of turn, getting out of seat, etc. They were specifically asked to refer children whose behaviors were displayed at least 3-4 times per day. Based on the teachers' referrals, the children were selected based on the results of 1) the teachers' behavioral ratings, 2) the parents' consent to participate, 3) the parents' behavioral ratings, and 4) behavioral observations in the classroom. (The consent form can be found in Appendix A). A functional analysis and interview were administered to help identify which children were to be excluded from the study due to interfering diagnoses and disorders. No children were excluded because of mental retardation or developmental delay. One child was excluded from the study due to withdrawal from the preschool facility due to medical reasons. The data that were collected from the participant were not analyzed due to inconsistent participation and early withdrawal from the study. Pseudonym names were used for each child to protect the subject's privacy.

All children were prescreened for their verbal skills prior to their inclusion in the study using the Wechsler Preschool and Primary Scale of Intelligence-III (WPPSI-III). Results indicate that all participants fell within average range for their age, with a mean average scaled score of 11.27. Therefore, no one was excluded from the study based on the verbal skills requirement. The mean scaled scores for all participants fell within the range of 9-13.

The participants that completed the intervention were 5 children, 3 boys and 2 girls that ranged from 4 to 5 years of age. Two children per classroom across the three classrooms at the center provided an acceptable number of participants to utilize a multiple-baseline across subjects design. The children's names were changed in order to protect their identities.

Grace

Grace was a 4 year old, Hispanic, female. She was bilingual in English and Spanish. Her parents were married and she was the eldest of two children in the family. Her father had a PhD and her mother had completed 4 years of college. Grace did not receive any special educational services and did not have any illness or disability (either physical or mental) and did not take any medication. Her target behaviors were: 1) hitting or pushing others and 2) pinching others. The both behaviors were a focus of the individual intervention. Her cue words were hands and feet. She attended the center 3 days a week in the afternoon.

Riley

Riley was a 4 year old, Caucasian, male. He was bilingual in English and Russian. His parents were married and he was the younger of the two children in the

family. His mother had a master's degree and father completed 3 years of college. Riley did not receive any special educational services, but he took Albuterol for asthma as needed. His target behaviors were 1) getting out of his seat at inappropriate times and 2) using a loud voice, which were addressed during both the classroom and individual interventions. His cue words were seat and voice. Riley attended the center 3 days a week for the entire day.

Alex

Alex was a 4 year old, Hispanic, male. His parents were married and he had one sibling. His father had a master's degree and his mother had a PhD. He was bilingual in English and Spanish. He received no special educational services and did not have any illness or disability (either physical or mental) and did not take any medications. Alex's target behaviors were: 1) getting out of seat at inappropriate times, 2) talking out of turn, and 3) hitting or grabbing or wrestling others, which were all addressed during the classroom intervention. Getting out of seat and hitting, grabbing, or wrestling others were the focus of the individual intervention. His cue words were seat and hands. Alex attended the center all day, 5 days a week.

Nora

Nora was a 4 year old, Caucasian, female. Her parents were married and she had one sibling. Her father had a PhD and her mother had a master's degree. She received special services for speech, specifically for pronunciation. She took allergy medication as needed. Nora's target behaviors were: 1) putting items in her mouth (i.e. fingers and hair), 2) talking out of turn, and 3) getting out of seat at inappropriate times. The last two behaviors were addressed during the classroom intervention. Putting items in her mouth

and getting out of her seat were the focus of the individual intervention. Her cue words were mouth and seat. Nora attended the center all day, 5 days a week.

Willy

Willy was a 5 year old, Caucasian, male. His parents were married and he had one younger sibling. His father had a master's degree and his mother had a PhD. He was not taking any medications. He was being assessed for sensory integration problems at the time of the study, but did not receive any special educational services at that time. Willy's target behaviors were licking his lips and getting out of his seat at inappropriate times. Getting out of his seat was addressed in both the classroom intervention and individual interventions. Licking his lips was a focus of the individual intervention only. His cue words were lips, seat, and square. Willy attended the center all day, 5 days a week.

Measures

Demographic Questionnaire

Demographic information was collected from the Children's center that was completed by the parents prior to school admission. Information consisted of name, gender, age, birth date, and race. Other educational information that was collected in the same manner included: prior attendance at preschool, reaction to preschool, primary language, any special developmental needs, psychological diagnoses, and special problems or fears. Additional information gathered was: parents' marital status, education, gender, and age, as well as any diagnoses or disabilities of the child (See appendix B).

Child Behavioral Checklist

The Child Behavioral Checklist (CBCL; Achenbach & Edelbrock, 1983), version designed for 1 ½ to 5 year olds was administered at pretest and posttest. The CBCL is a 100 item parent and teacher behavioral rating form. The behavioral items are rated from 0-2; 0 indicates not true, 1 indicates somewhat or sometimes true, and 2 indicates very true or often true. This measure provides insight into the child's problem behaviors as well as an idea of their verbal ability. Previous research has shown that the CBCL has high reliability and validity (71-100), including test-retest reliability of .93.

Wechsler Preschool and Primary Scale of Intelligence-III

The Wechsler Preschool and Primary Scale of Intelligence Third Edition's (WPPSI-III) vocabulary subtest, which consists of 25 vocabulary words, was administered to gain knowledge of the child's verbal ability. The WPPSI-II assesses a child's current cognitive abilities in both verbal and nonverbal areas. The current study only utilized the Vocabulary, Receptive Vocabulary, and Picture Naming subtests in order to assess the child's ability to use language to express ideas. This screening tool was administered to confirm that the child was at the appropriate verbal level in order to comprehend and verbalize the cueing technique. This measure was administered once prior to the intervention. The reliability of the WPPSI-III overall is very high for the age range of 3 to 6 ½ year-olds, with a reliability range of .90-.97 (Sattler, 2002). Specifically, the vocabulary subtest has a reliability of .84 and a test-retest reliability of .75.

Self-Control Rating Scale

The Self-Control Rating Scale (SCRS; Kendall & Wilcox, 1979) is a measure of self-control within elementary school children as rated by parents and teachers. The

SCRS was administered at pretest and posttest in order to provide comparison ratings from both the teachers and parents of the child's self-control behavior. It consists of 33 items of which 10 are specifically designed to measure self-control, 13 assess impulsivity, and the other 10 measure both attributes together. The rater completes the scale by rating the items on a 7-point scale. For each question a score of 1 indicates maximum self-control and a score of 7 indicates maximum impulsivity. Once completed all item ratings are summed to obtain a total score. A high total score indicates lack of self-control whereas a low number indicates self-control. The mean score is approximately 100. The SCRS has been previously shown to have high reliability and validity (71-100), with internal consistency of .98, and test-retest reliability of .84.

SNAP

The SNAP Scale (The Swanson, Nolan and Pelham DSM-III version) was developed directly from the DSM-III criteria of characteristics of attention, activity, and impulsivity (Pelham, Atkins, & Murphy, 1981). The SNAP was administered at pretest and posttest in order to provide comparison ratings from both the teachers and parents of the child's self-control behavior. It consists of 25 items that are rated by the child's teacher on a 3-point scale and is rated against mental age comparisons in order to judge if the child's behavior is significantly within or outside the normal range of behavior.

Parent's Behavioral Observational Diary

Parents of the child subjects were asked to collect additional baseline information on the child's behavior at home. They were provided with a sample of the parent's behavioral observational diary (see Appendix C). They were asked to monitor their child's behavior and were told that the experimenter would be calling them once a week

to gather the frequency data. They were asked to keep track of the number of times their child displayed the identified target behavior for each day of the week. Several attempts were made during the intervention in order to reinforce that the parents were reliably monitoring and recording their child's identified behaviors as requested and not just relying on memory recall at the end of the week.

Observer Behavioral Rating Sheet

The trained oberservers were provided with a behavioral rating sheet to aid in the recording of the observed behaviors (see Appendix D). This form was utilized to record the frequency of the participant's behavior during each observation period.

Debriefing Questionnaire

After follow-up, both the teachers and parents received a short answer/rating scale questionnaire to fill out (see Appendix E). The questionnaire addressed their perception and feedback on how effective the intervention was for the classroom as a whole and for the individual participants. They were asked to rate the intervention across several aspects of the procedure including: how disruptive it was, how time consuming, if it was age appropriate, and their feedback on the results within their classroom or home (if parents). The questionnaire consisted of 18 questions for the teachers and 6 questions for the parents.

Procedure

Experimental Design and Hypotheses

The current study utilized a multiple-baseline across subjects design to monitor self-control behavior changes across baseline, treatment, and post treatment. The length of the intervention was constrained by the length of the semester. Therefore, the length of

the different intervention components and timing of their introduction were predetermined. The total amount of time [baseline data (2-4 weeks), classroom intervention (4 weeks), individual intervention (4 weeks beginning at week 2 of the classroom intervention), and follow-up (2-4 weeks)] that the intervention required amounted to 12 weeks. The baseline varied by classroom to fulfill the multiple baseline design and increased in length by 1 week across each of the three classrooms. This is the most effective research design for the current study due to the fact that the intervention can not be reversed or withdrawn (Barlow & Hersen, 1984) and because interventions are tailored to individual subjects. This design also allows for the comparison of treatment effectiveness for each individual at the introduction of the different intervention components. This method allows for a firm establishment at what point in time at which the change (if any) occurs and if it coincides with the introduction of a treatment component. This is due to the requirement that the behavior of different subjects be placed side-by-side allowing behavior comparisons at specific transition points such as the introduction or removal of a treatment component.

With the multiple baseline design, the experimenter can be certain that the intervention is having an effect when there is an observed change in behavior rate or frequency after the intervention has been introduced. (Barlow & Hersen, 1984). The treatment effectiveness can be visually inspected for each individual, which is the most common way of analyzing data from single-subject designs (Barlow & Hersen, 1984). A single-subject design was utilized during this intervention because it allowed each child to serve as their own control. Serving as their own control was essential since the individual interventions were tailored for each child based on the results of their

functional analysis, such that the individual intervention varied depending on the identified behavior and reinforcing and maintaining contingencies. Through the use of graphical data display, the experimenter is able to observe the behavior change from baseline, to intervention phase, to intervention removal or follow-up.

The present study evaluated the effectiveness of a school-based behavioral intervention with preschoolers at a local children's day center. Children with self-control behavioral problems that were identified and recruited for the study and participated in a 12 week treatment program that consisted of self-control skills training for children and teachers, was implemented in a school setting. The program began with a functional analysis, which consisted of behavioral observation, information gathering from their teacher, and analysis of the child's behavior in order to identify the child's behaviors that were impulsive or lacking in self-control. The functional analysis results were utilized in order to identify the reinforcing factors maintaining these behaviors as wells as to identify what function the behavior served for each individual child. Teacher training involved training teachers to use techniques such as instruction, modeling, rehearsal, positive praise and role-playing (described below) with children in the classroom setting. Participating subjects also received individual self-control skills training, including self-monitoring, self-verbalization, and the use of production cues. The treatment program aimed to improve the child's self-control skills and to decrease impulse behaviors and to build up the teacher's repertoire of behavioral training techniques. Teachers assisted in improving the effectiveness of the individual skills training and to increase the generalization of these self-control behaviors to other settings. Therefore, this study was intended to provide self-control skills training to children with the aid of classroom

teachers so that they could internalize these skills to modify their behavior within the school setting, as well as, other settings. By including teacher training, behavioral effects were expected to maintain and generalize.

The hypothesis of this study is that the individual's identified impulsive behavior would decrease in frequency after he or she had been trained both in group and one on one format on the identified self-control behavior and how to properly utilize the behavioral cues as indicated by behavioral observations (classroom, lunchroom, and recess), teacher ratings (classroom), and parent ratings (home environment).

Observers

Observers consisted of one graduate level and six undergraduate level psychology students. The observers were trained in a group session, in which they learned the observation techniques to be used and the specific target behaviors to be monitored. The observers recorded the frequency of the target behaviors for each child on a rating form (see Appendix D). Interrater reliability was checked and monitored every 4 weeks using percent agreement.

Interrater Reliability

Interrater reliability checks were initially conducted by the two graduate level experimenters every 4 weeks. If an undergraduate observer's behavioral observation data fell below a 75% agreement with the experimenter, their observations for that behavior were removed from analysis. According to Bordens and Abbott (1999) a 70% agreement or better is acceptable. A more stringent cut off of a 75% agreement was enforced for the current study in order to ensure a reliable observational rating. Therefore, the observations made by one observer for Willy's licking behavior (17 out of 25

observations) were removed. Two observers achieved a 75% rate of agreement Riley's getting out of seat behavior (3 out of 4 observations) and Grace's hitting and pushing behavior (3 out of 4 observations), and their observations were retained. Due to the low frequency of the two behaviors, one missed occurrence dropped the percent agreement to 75%. One observer's checks were dropped due to inconsistency in observations and unfamiliarity with behaviors due to limited exposure to all the children. This observer mostly observed the behavior of only one of the children. In addition, there was difficulty reaching acceptable agreement reliability for Riley's yelling behavior, which received a 50% agreement. Again due to the low frequency of the behavior (0 out of 1 observation) one missed occurrence dropped the percent agreement to 50%.

Trainers/Experimenters

The experimenters consisted of two graduate level psychology students. The two experimenters conducted the teacher and child training. One implemented the interrater-reliability checks during the intervention and contacted the parents via telephone once or twice a week to gather data.

Recruitment

The child participants were selected based on referrals from teachers at a local day care center who indicated that the child has demonstrated impulsivity and a lack of self-control. Once referred, parents were contacted, parental consent was obtained, the children were then observed in the classroom, and finally, parents and teachers were interviewed. Both the teachers and the parents were administered a Child Behavioral Checklist and the Self-Control Rating Scale to clarify that a self-control skills deficit was present. Further, a functional analysis was conducted on the children's behavior in order

to identify which target behaviors were of direct interest, as well as, their frequency and severity. Children's verbal ability was also assessed by administration of The WPPSI vocabulary subtest and Child Behavioral Checklist.

Training

Teacher Training

All classroom teachers were trained in the area of general behavioral self-control procedures prior to implementation of treatment. They were then further trained on how the procedures could be applied within the classroom with preschoolers, specifically the children who displayed lack of self-control and impulsivity. They were given intensive training on how to use behavioral cueing. The individual teacher training provided the teachers with the specific techniques on how to reward and encourage the child's self-monitoring, self-verbalization, and following a production cue, as well as how to implement the production cue.

The teachers were taught a specific cue for the child subject which they were to verbalize when the child was producing the target problem behaviors. For example, if Johnny's target behavior was getting out of his chair at inappropriate times, the teacher was trained to state a predetermined cue word for the child, such as balloon or chair. The teacher was also trained on the appropriate use of positive reinforcement via verbal praise as well as the steps necessary to correct inappropriate responses to the cue. For example, if Johnny ignored the cue the teacher was to then restate the cue word. If at that point the child did not initiate the appropriate behavior, the teacher was then to initiate one of the following: 1) ignore the inappropriate behavior in order to avoid reinforcing the behavior, 2) pause current classroom activities until the appropriate behavior is displayed, or 3)

verbalize the self-statements the child was trained to self-initiate covertly. Which option the teacher utilized was predetermined for each child based on the results of the functional analysis and varied per child based on the function of their behavior.

The teacher training was presented in a group format consisting of two 45 minute sessions, in which they were presented with information packets, demonstrations, and psychoeducational lectures. Training materials were constructed by this author and reviewed by Dr. Bradley before use in the training session.

There was a pre-established agreement with the center to train all teachers on general behavioral self-control procedures and to further train the teachers of the children identified to participate in the study on the specific self-control cueing. Ongoing monitoring of teacher's use of cueing was done while observers monitored the child's behavior. If a teacher did not use cueing correctly, further training was provided.

Class Educational Session

After baseline had been completed, a classroom educational session was conducted by the two experimenters for the entire class. The children were educated on the proper classroom behaviors that are indicative of good self-control. The specific rules that were addressed were: stay in your seat, listen, use your inside voice, use your walking feet, keep your hands to yourself, share with others, help clean up, and do as your teacher asks. This educational session might have been review for some, but not for others. Also the educational session might have been a review of some of the pre-established rules of the classroom that the teacher had previously introduced. The sessions included: group discussion on right versus wrong behavior, role-playing, modeling, verbal praise for appropriate response, and corrective behavior for incorrect

responses. A poster was provided to the classroom that consisted of the rules in written and picture format. This poster was left in the classroom and placed in clear view at all times. The poster was used as a visual aid throughout the educational sessions. Teachers also referred to the poster throughout the day when needed, as well as, during review of the rules. Classroom education was provided by this author and the other experimenter.

Observer Training

The individuals selected to observe the presence of the target behaviors of each child received similar training as the teachers, such that they became acquainted with the three settings they observed the child in and became familiar with the expectations placed on the child in each situation. The observers also observed the teachers to ensure that the teachers implemented training as needed. They were also trained on the recording procedure that was used. Several steps were taken in order to gain observer reliability, which will be described in more detail below.

Once the target behaviors had been identified specifically for each child, they were operationally defined. During the observers' training session and also intermittently throughout the intervention, interobserver agreement was assessed in order to confirm that all observers were following the observation technique consistently and that all observers had a similar and clear conceptualization of the target behaviors they were to observe.

The target behavior was rated for frequency for each child 2 to 4 times per day that they attended the center for 30 minute periods. Observers were counterbalanced over time, settings, and participant.

The observers' participation began during the initial selection process in order to gain the children's familiarity of their presence. All observers participated in each observational setting (classroom, lunch room, and recess), in which they were randomly assigned to a child per classroom.

Child Training: Pretreatment Assessment

Once the children had been recommended by the teachers, their problem behaviors were clearly identified by observing them in their natural classroom environment by trained observers and from information provided by their parents and teacher. Both the parents and teachers were asked to complete the following measures: SNAP checklist, CBCL, and SCRS. Once the child had been identified as behaving with a lack of self-control they were administered the WPPSI in order to measure their verbal ability.

A functional analysis was performed. Again, the purpose of the functional analysis was to gain a clear understanding of the target problem behavior for each child, which enabled the experimenter to tailor the behavioral self-control training to each individual. Another important aspect of the functional analysis was to determine if the child was performing the problem behavior because a) the behavior was reinforcing in some way or b) if the appropriate behavior was not in their repertoire. If the child did not know the appropriate behavior or how to perform the behavior appropriately, additional educational training was implemented with that child if needed.

At the initial intake session, parents of referred children were told that the intervention was intended to teach the children appropriate self-control skills to help them participate in the classroom. If the parents were interested in their child participating in

the self-control skills training program, consent to participate in research form from the parents of the children, assent to participate in research forms from the teachers, consent to release information from their referring child's school teacher, demographic information forms, the Child Behavioral Checklist, WPPSI, Self-Control Rating Scale, and Snap Checklist were administered and obtained during the intake session.

Child Training: Baseline

Once each individual's target problem behaviors had been identified, the child's baseline behavior rate was established. The baseline phase was conducted within the classroom environment by trained observers. Baseline lasted between 2 to 4 weeks depending on which classroom the child was in, due to the utilization of a multiple baseline design. The baseline lengths were staggered across the classrooms. The first classroom's baseline was 2 weeks in length, the second was 3 weeks in length, and the third classroom's baseline was 4 weeks in length. The multiple baseline design was used to control for outside influences that could explain changes in behavior rather than the intervention.

Child Training: Intervention

Previous behavioral self-control skills programs have been determined to be effective with school aged children, however, there has been limited training with preschool-aged children. Similarly, there has been limited success for maintenance and generalization of results past intervention termination. Therefore, the current study had the potential to be more efficient due to the inclusion of teacher training and individual and classroom training with the child, which should increase self-directed modification of behavior, as well as increase self-control across school settings. Through the use of a

multiple-baseline design, the data can be evaluated in a visual observation manner as is customary to these designs (Bornstein & Quevillion, 1976).

The different phases of the interventions were introduced one at a time starting with baseline, then the classroom intervention for 2 weeks which overlapped with the individual intervention for 2 weeks, followed by 2 weeks of only individual training, and ending with 2-4 weeks of follow-up consisting of only behavioral observations. The baseline varied by individual to fulfill the multiple baseline design. During baseline all the teachers at the center received two sessions of training on behavioral techniques. The observers were trained prior to baseline.

The settings, in which the observations throughout the intervention took place at the center, consisted of the child's classroom, lunch room, and while at recess. Parents were also asked to collect additional baseline information on the child's behavior at home. The parents were provided with a sample of the parent's behavioral observational diary. The parents were asked to monitor their child's behavior and were told that the experimenter would be calling them once a week to gather the frequency data. Some parents preferred to be emailed instead, which was followed at their request instead of calling them. The classroom intervention was conducted by the two lead experimenters.

The lead experimenters conducted training individually with the children in a room at the center separated from the classroom. During the individual intervention the participants were trained one-on-one how to self-monitor their behavior, self-verbalize, and how to utilize a production cue provided by the experimenters. The training was conducted through the use of instruction, modeling, rehearsal, role-play, practice, and imagery, which will be described in more detail below. Through the use of these

techniques the children were trained that once a 1-word, individualized, production cue was presented by the teacher or experimenter they would self-monitor their current behavior, stop what they are doing and self-verbalize "what am I doing right now?" and "What should I be doing right now?' This is similar to the technique used by Bornstein and Quevillon, (1976).

Then they were trained to adjust their behavior accordingly. These production cues were to be implemented throughout the day as needed in all the preschool settings, including: classroom, lunchroom, and recess and observed closely for the frequency of the child's behavior.

The exact training procedure and techniques were specially tailored for each individual child, such that any of the previously mentioned techniques might have been used and used for varying times depending on the specific child's needs, ability, and time needed to grasp the techniques. For example, Johnny's target problem behavior is getting out of his seat at inappropriate times and it is determined via functional analysis that this behavior is maintained via attention. In this case the teacher would have been taught to cue the individual when needed, but to ignore the inappropriate behavior, which would have been later addressed one-on-one with the experimenter during the individual training in order to avoid reinforcing the behavior in the situation. Johnny's ability to adjust appropriately to these behavioral standards would vary as compared to others based on his individual verbal ability, the length of time needed to extinguish the reinforcement of attention for the out of seat behavior, and his capability of understanding the procedures. In contrast, there might have been an individual whose target behavior is off task behavior. If the case was that the behavior was being

maintained by inattention or boredom, the teacher would have been instructed to present the verbal cue to the child when needed. If the child does not immediately respond, in this case the teacher might be instructed to repeat to the child the verbal cues for the child. At the end of the intervention, the pretreatment measures were again re-administered in order to evaluate the intervention's effectiveness in addition to the observers' and parents' ratings of behaviors.

Child Training: Self-Monitoring

The next phase of treatment involved training the individual subjects to self-monitor their own behavior. The children were trained to monitor their external physical behavior when asked to do so. They were trained to monitor what behavior they were currently performing and also what behavior would be more appropriate. This was conducted by asking the child "What are you doing right now?" and "What should you be doing?" These questions were introduced while modeling and role-playing with the child by the experimenter. For example, Johnny is cued in class. This signals to Johnny to stop what he is doing and observe his current behavior. When appropriately cued Johnny should learn to observe that he is currently out of his seat during class ("What am I doing right now?") and then modify his behavior to "what I should be doing?" and return to his seat. The experimenter provided positive reinforcement for appropriately self-monitoring, by correctly identifying their behavior on cue and modifying their behavior. Reinforcement while in the classroom setting was determined individually for each child during the functional analysis, which may include: a smile from the teacher, a head nod, a tap on the shoulder, an assortment of verbal praise, or any other appropriate form of positive attention.

Child Training: Self-Verbalization Training

Once the child had successfully learned to self-monitor his or her own behavior, self-verbalization training began. The children were trained to covertly remind themselves of the previously overtly learned self-statements. They followed the same training components as previously mentioned: modeling, role-playing, and positive reinforcement. The experimenter may have modeled the appropriate behavior for them while: asking themselves the questions out loud, then by whispering the questions, then by silently moving their lips to the questions, and lastly by just performing the behavior, which varied across participant. Within each of the steps the child was asked to perform the previous step for the experimenter. This is similar to technique used by Reid and Borkowski (1987).

Child Training: Production Cue

Once the child had learned to self-monitor, self-verbalize the questions about their own behavior, stop their current behavior, and perform the appropriate behavior, the child was trained to do the prior steps at the introduction of a production cue. The production cue consisted of one word that was individualized for the child. This production cue, balloon, for example, was introduced to the child by the experimenter in an individual training session. Again this procedure was trained through the use of modeling, role-playing, and positive reinforcement. Once the child had learned the cue, they were told that their teacher was the one asking them to learn how to use the cue, so that their teacher was able to use it within the classroom. At the end of the session the child was told that they should use the skills they learned in the classroom with the teacher. Again this was also part of the role playing component.

Child Training: Generalization

Throughout the self-monitoring, self-verbalization, and production cue training the child was monitored throughout the week by the observers while in the classroom. The amount of time spent each week on training for each individual varied due to individual differences, developmental level, and verbal ability. Some of the children needed to be reminded of prior skills while learning a new phase of skills. Once all the skills had been established in the child, these skills were monitored in different settings within the preschool in order to monitor for skill maintenance and generalization. When the target behavior appeared the child was verbally cued by .the teacher when needed; the observers remained silent in the background and monitored and recorded the behavior.

When needed, the experimenter encouraged the appropriate behavior or ignored the inappropriate behavior based on the results of the child's functional analysis.

Parent Monitoring

Throughout the training phases the parents were asked to monitor the target behavior at home. While doing so, the experimenter made weekly phone calls or emails to the parents at home to collect the data. The parents were provided with a log diary in order to aid them in recording the behavior daily.

Debriefing

Once the intervention was completed, both the parents and the teachers received the post-intervention measures: CBCL, SNAP, and SCRS. They both were also provided with a short answer/rating scale questionnaire (see Appendix E) that focused on their perception of how effective the intervention was: 1) in the classroom with all the children and 2) individually with the specific children in the study. This questionnaire allowed for feedback on the effectiveness in the classroom, their feelings on the amount of effort they had to contribute, what they planned to continue to use, and the pro's and con's of the study. Also at this time, if there were any questions in general they were addressed at that time.

CHAPTER III

RESULTS

Observer Reliabilities

Three sets of reliability checks were conducted by one experimenter (after the removal of 1 of the 2 checkers), which resulted in an overall average agreement of 97% (range was 75-100%). The average percent of agreement for each behavior was as follows: hitting, grabbing, or wrestling others (Alex), 100%; out of seat behavior (Alex, Riley, Nora, and Willy), 94%; talking out of turn (Alex and Nora), 100%; yelling (Riley), 50%; hitting or pushing others (Grace), 91%; pinching (Grace), 100%; putting items in mouth (Nora), not collected; and licking lips (Willy), 88%.

Primary Analyses

The observational data that were collected several times per day for each child's target behavior are presented below in graphs. The graphs display the average frequency per week for each behavior separately for each child. The data were graphically presented as an average for each week rather than for each observation period. This averaging was done in order to account for the variation in observation frequency across individuals because the frequency of days per week observed and the number of observation periods per day varied by child. This averaging was also conducted in order to account for the environmental variations of the sampling intervals across time of day and settings. In addition, this averaging allowed for easier visual comparison across the

graphs across the children. Lastly, the averaging of observation data is a common form of data presentation either graphically, as an average rating of behavior, or as a percentage for multiple observations as shown in previous literature (Bornstein & Quevillon, 1976; Carlson & Moses, 2001; Kochanska, Coy, & Murray, 2001; Kochanska, Murray, Jacques, Koenig, & Vandergeest, 1996; Madsen, C., Becker, W. & Thomas, D, 1968).

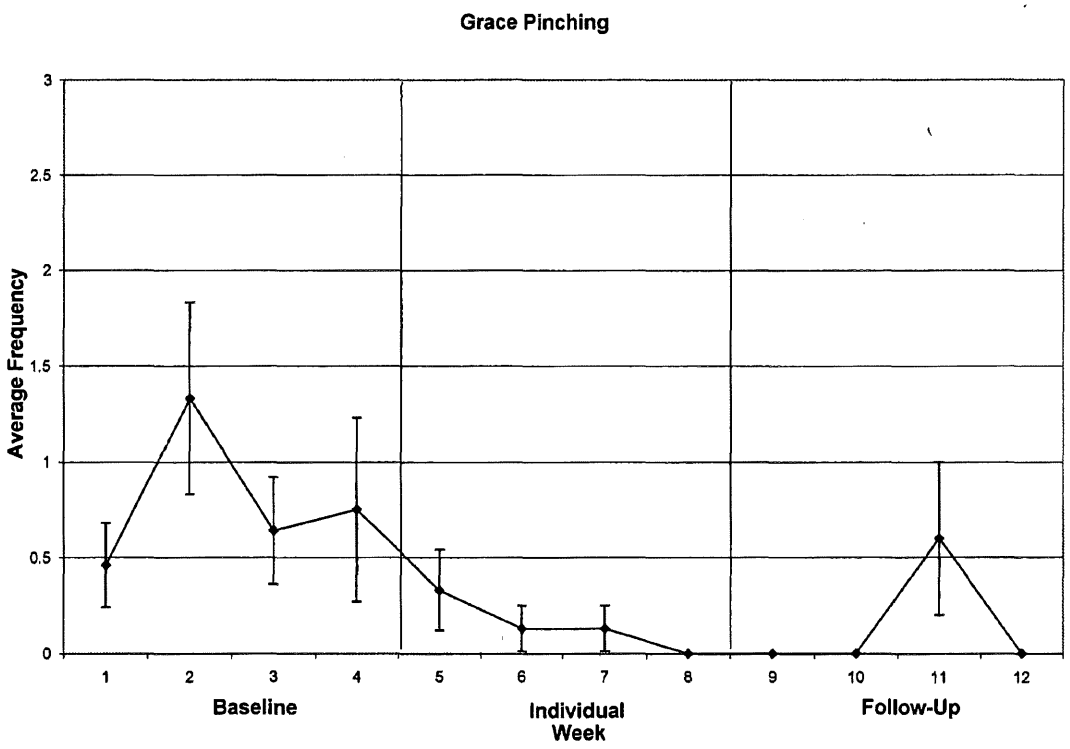
Grace

Grace's target behaviors were: 1) hitting or pushing others and 2) pinching others. Her cue words were "hands and feet" for both target behaviors. The functional analysis determined that she was lacking in social skills and therefore acted out towards others to elicit the reinforcing attention of peers, via the target behaviors. There were specific children, typically smaller and younger than Grace, who acted as discriminative stimuli who provoked these behaviors. At times she would actively seek out a child hit them, wait for their reaction, and then either run away or hug them.

The classroom intervention for Grace's class was not analyzed along with her individual behavioral data due to the lack of the teacher's participation in the classroom intervention. Therefore, behaviors that would have been the focus of the classroom intervention were not included in the data analysis (i.e. chasing others).

The behavioral observation data for Grace's behavior of pinching others is represented as a graph in Figure 1 as the average frequency per week across the observation sessions (mean of 8 times per week). The graph displays the behavior decreasing at the introduction of the individual intervention until it reaches an average frequency of zero. The behavior appears to have then displayed a slight increase during

follow-up and then returned to zero. This data suggest that the individual intervention was effective in decreasing her pinching behavior, such that the decrease in behavior was displayed across the intervention until the behavior disappeared. This effect maintained into follow-up after the interventions ended.

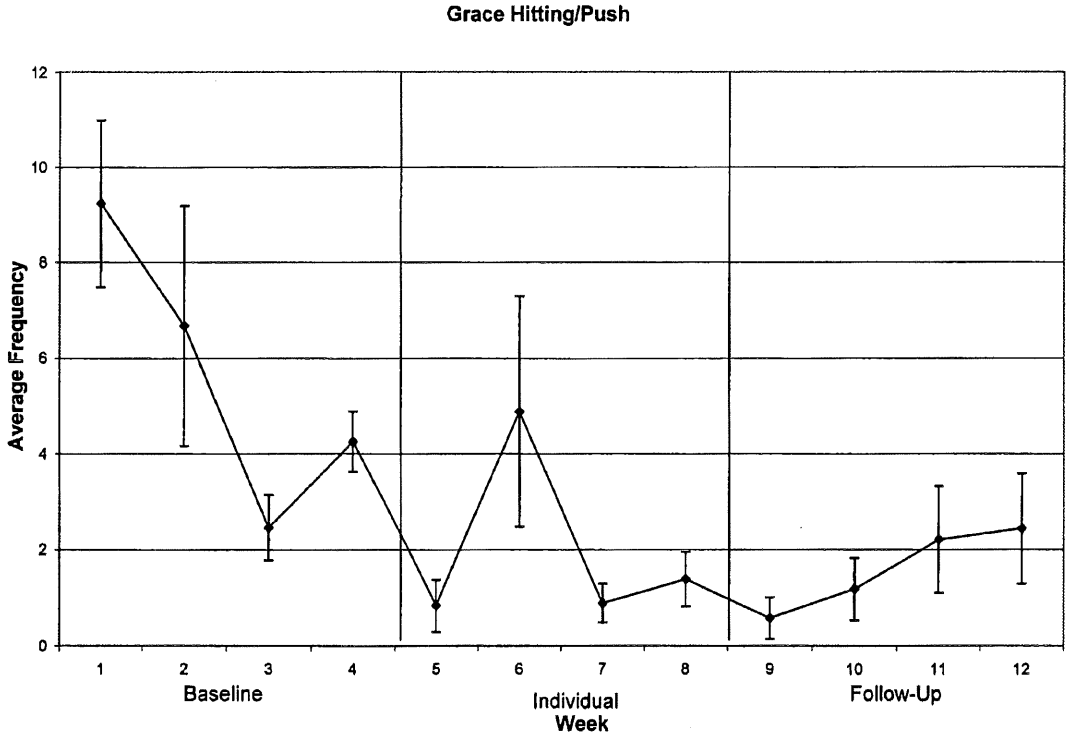


Note: Vertical lines indicate standard error

Figure 1. Grace's average frequency per week for pinching

The behavioral observations data for Grace's behavior of hitting or pushing others is represented as a graph in Figure 2. The graph displays that the behavior during baseline displayed a downward trend, but increased again in frequency at the end of the condition. The behavior then decreased below baseline levels at the introduction of the individual intervention, but displayed a spike in behavior and returned to the reduced

frequency and maintained into follow-up. This data suggests that the intervention was effective, but one should consider the downward trend during baseline since this signifies that her behavior was decreasing prior to the introduction of the individual intervention. It is unclear if this decrease in behavior was due to the attempted introduction of the classroom intervention during week 2.



Note: Vertical lines indicate standard error

Figure 2. Grace's average frequency per week for hitting and pushing others

Overall the observational data suggests that the individual interventions were effective in decreasing Grace's pinching, hitting and pushing behaviors. These results also maintained into the 4 week of follow-up. No results were provided or analyzed based on the classroom intervention due the lack of teacher participation.

Grace's SCRS score was rated by her teacher and parent on a scale of 1 to 7 (with a score of 1indicating self-control and 7 as a lack of self-control) for 33 items and is presented as a total and average score. Her total score for the teacher report was 120 at pretest with a mean score of 4.61 and at posttest it was 105 with a mean score of 3.89. The parent report at pretest was 128 with a mean score of 3.88 and at posttest it was 124 with a mean score 3.76. Overall her scores show little change from the parents' report, but do change in the direction of increased self-control as expected. According to the teacher's report Grace showed clinically significant improvement from pretest to posttest resulting in increased self-control.

Grace's results on the SNAP questionnaire as rated by her teacher and parent on a scale of 1 to 3 (1=considerably less than, 2= about the same, and 3= considerably more than) for 25 questions was averaged to provide an overall comparison of the child's self-control in comparison to other children his or her age. Her average parent report was 1.84 and teacher report was 2.20 at pretest. Her parent report was 2.00 and teacher report was 2.18 at posttest indicating little change. Since she started at a 2, which is the average range, no change was expected.

Grace's results on the CBCL (See Table 1 below) at pretest all fell within the normal range for her age, except she scored in the clinical range for the teacher's report of her Externalizing Problems subscale (92%) and in the borderline clinical range on the Pervasive Developmental Problems subscale (95%). Grace's results on the CBCL at posttest all fell within normal range for her age, except she remained in the clinical range on the teacher's report of Externalizing Problems (95%) and in the borderline clinical range on the teacher's report of Oppositional Defiant Problems subscale (95%). Overall

there was little change across the subscales from pretest to posttest for either the teacher or parent report, except for falling out of the borderline clinical range of the teacher reported Pervasive Developmental Problems subscale, but into the borderline clinical range of the teacher reported Oppositional/Defiant Problems subscale. This change in rating for the worse at posttest as rated by the teacher was an overall increase in 3 T scores, which is the opposite of what was reported by her parent, who reported a decrease on this subscale by 7 T scores. It is unclear why this occurred. She remained in the clinical range at posttest for the teacher reported Externalizing Problems subscale. Furthermore, her changes in parent report from pretest to posttest indicated a significant increase at posttest on the Pervasive Developmental subscale, which increased by 7 T scores. On the other hand there was a significant decrease on her parent reported posttest for the Oppositional Defiant subscale, which decreased 7 T scores. Regardless of the direction of the changes in scores, the differences were minor and reflect clinically insignificant changes in behavior.

Table 1. CBCL Results

		Grace		Riley		Alex
Problems Subscales		Teacher T Score (%)	Parent T Score (%)	Teacher T Score (%)	Parent T Score (%)	Teacher T Score (%)
Externalizing	Pre	64C (92)	51 (54)	55 (69)	40 (16)	58 (79)
	Post	66C (95)	52 (58)	50 (50)	40 (16)	51 (54)
Affective	Pre	54 (65)	51 (54)	50 (≤ 50)	52 (58)	50 (≤ 50)
	Post	58 (79)	51 (54)	50 (≤ 50)	52 (58)	50 (≤ 50)
Anxiety	Pre	57 (76)	54 (65)	54 (65)	50 (≤ 50)	58 (79)
	Post	57 (76)	54 (65)	54 (65)	50 (≤ 50)	50 (≤ 50)
Pervasive Developmental	Pre	66B (95)	56 (73)	51 (54)	51 (54)	50 (≤ 50)
	Post	64 (92)	63 (90)	50 (≤ 50)	50 (≤ 50)	50 (≤ 50)
Attention Deficit/ Hyperactivity	Pre	59 (81)	50 (≤50)	55 (69)	50 (≤ 50)	57 (76)
	Post	59 (81)	51 (54)	52 (58)	50 (≤ 50)	50 (≤ 50)
Oppositional Defiant	Pre	63 (90)	59 (81)	56 (73)	50 (≤ 50)	60 (84)
	Post	66B (95)	52 (58)	50 (≤ 50)	50 (≤ 50)	51 (54)

Note: C= Clinical range; B= Borderline Clinical Range

Table 1. Continued

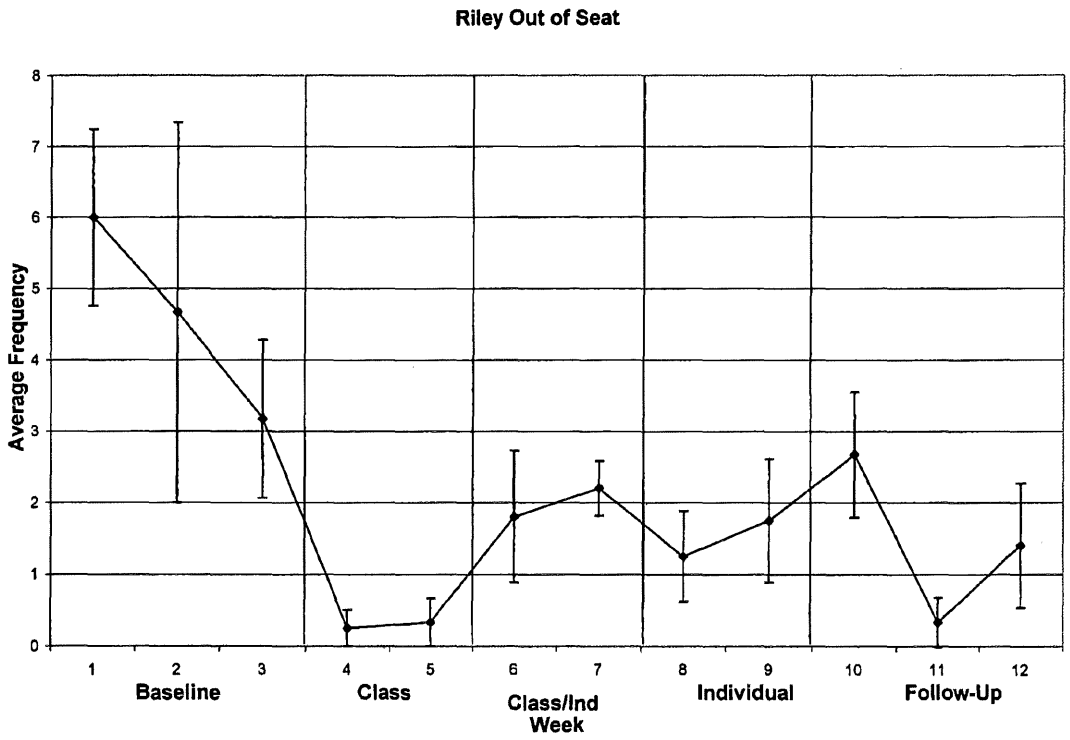
		Alex	Nora		Willy	
Problem Subscales		Parent T Score (%)	Teacher T Score (%)	Parent T Score (%)	Teacher T Score (%)	Parent T Score (%)
Externalizing	Pre	63B (90)	55 (69)	54 (65)	60B (84)	63B (90)
	Post	51 (54)	50 (50)	43 (24)	56 (73)	55 (69)
Affective	Pre	56 (73)	50 (≤ 50)	60 (84)	50 (≤ 50)	52 (58)
	Post	52 (58)	50 (≤ 50)	52 (58)	54 (65)	50 (≤ 50)
Anxiety	Pre	70C (>97)	50 (≤ 50)	50 (≤ 50)	61 (87)	50 (≤ 50)
	Post	60 (84)	50 (≤ 50)	50 (≤ 50)	58 (79)	50 (≤ 50)
Pervasive Developmental	Pre	63 (90)	64 (92)	70C (> 97)	67B (96)	56 (73)
	Post	50 (≤ 50)	64 (92)	63 (90)	57 (76)	63 (90)
Attention Deficit/ Hyperactivity	Pre	60 (84)	54 (65)	53 (58)	50 (≤ 50)	51 (54)
	Post	51 (54)	53 (62)	52 (58)	52 (58)	54 (65)
Oppositional Defiant	Pre	67B (96)	60 (84)	55 (69)	64 (92)	70C (>97)
	Post	55 (69)	51 (54)	50 (≤ 50)	56 (73)	55 (69)

Note: C= Clinical range; B= Borderline Clinical Range

Riley

Riley's target behaviors were: 1) getting out of his seat at inappropriate times and 2) talking too loud. His cue words were seat and voice, respectively. The functional analysis results indicated that his behaviors occurred mainly at meal times. A discriminative stimulus for his behaviors was non preferred foods, such that when his preferred food (chicken) was served, his behaviors did not occur as frequently. Another discriminative stimulus was his friends' presence at his table and boredom, in which the behaviors occurred more frequently. Specifically, when Riley was at an internal state of boredom, his behaviors functioned as negative reinforcement due to the reduction of the aversive internal state of boredom. The behaviors also elicited the attention from his teacher and peers, which also reinforced the behavior.

The behavioral observations data for Riley's out of seat behavior is represented as a graph in Figure 3 as the average frequency per week across the observation sessions (mean of 4 times per week). The graph displays that his out of seat behavior drastically decreased from baseline to the classroom intervention. There was a slight increase in the behavior when the classroom and individual intervention conditions overlapped, then decreased during the individual intervention only condition. The behavior then showed a slight increase at follow-up, but not to previous baseline levels followed by another decrease in behavior. The drastic decrease in Riley's out of seat behavior at the introduction of the interventions indicates that the classroom and individual interventions were effective in reducing his behavior. This effect maintained during the 3 week follow-up.

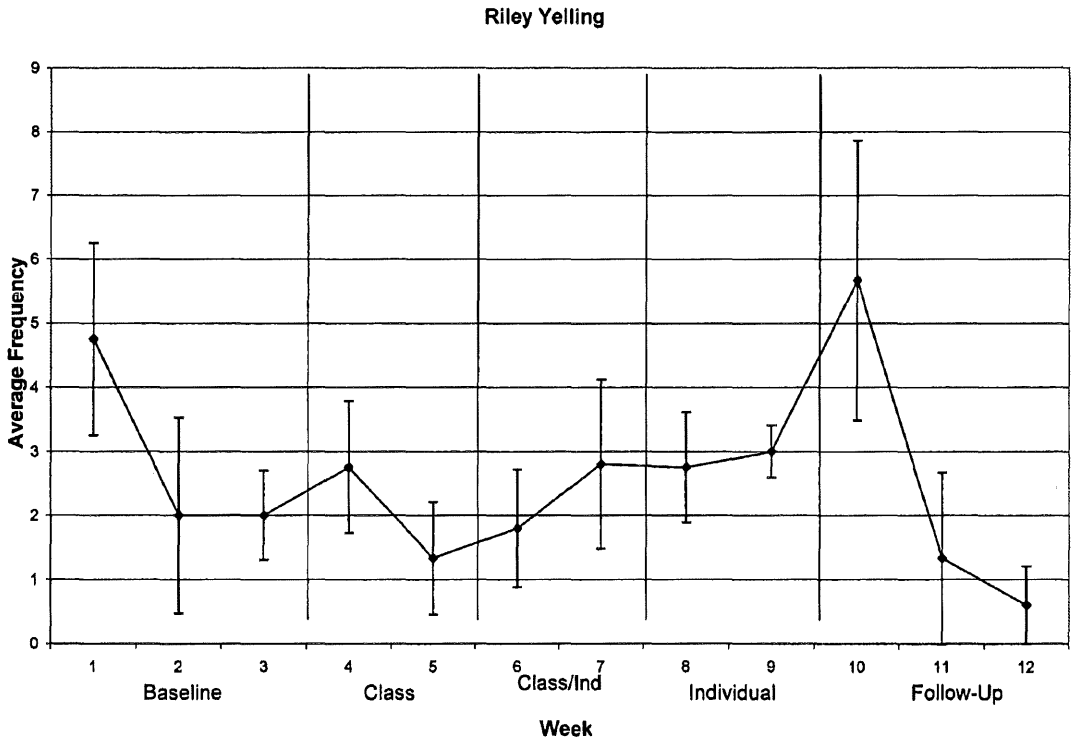


Note: Vertical lines indicate standard error

Figure 3. Riley's average frequency per week for getting out of his seat

The behavioral observations data for Riley's yelling behavior is represented as a graph in Figure 4. The graph displays that his yelling decreased then increased in frequency across baseline. The behavior then displayed a decrease from initial baseline rates during the classroom intervention condition, but continued to increase across the overlap of the classroom and individual intervention into follow-up. The initial level at the beginning of follow-up which might have been an extinction burst was the highest frequency for the behavior. The data show erratic frequency levels and the effect of the interventions is not clear, other than there was a decrease in frequency from baseline level to follow-up.

Since the behavior was decreasing during baseline, it cannot be determined if the interventions had any impact on the behavior. Another factor that may have affected these results was the low levels of interrater reliability (50%). This behavior was difficult to rate objectively across raters since there were no specific means to measure a cut off level at which his voice would be considered too loud. Therefore, the behavior was rated based on each rater's subjective opinion of appropriate volume level.



Note: Vertical lines indicate standard error

Figure 4. Riley's average frequency per week for yelling

Overall the observational data suggests that the interventions were effective in decreasing Riley's out of seat behavior. This effect maintained into the 3 week follow-up. The intervention was not shown to be effective for reducing his yelling behavior.

Riley's SCRS total score at pretest for the teacher report was 137 with a mean score of 4.15 and at posttest it was a total score of 138 with a mean score of 4.18. The parent report at pretest was 107 with a mean score of 3.24 and at posttest it was 130 with a mean score of 3.94. Overall there was little change in scores from pretest to posttest for the teacher report. Parent report indicated a decrease in self-control in the home environment.

Riley's results on the SNAP questionnaire indicated that his average parent report was 2.00 and teacher report was 2.24 at pretest. His parent report was 2.04 and teacher report was 2.04 at posttest indicating little change. Since he started at a 2, no change was expected.

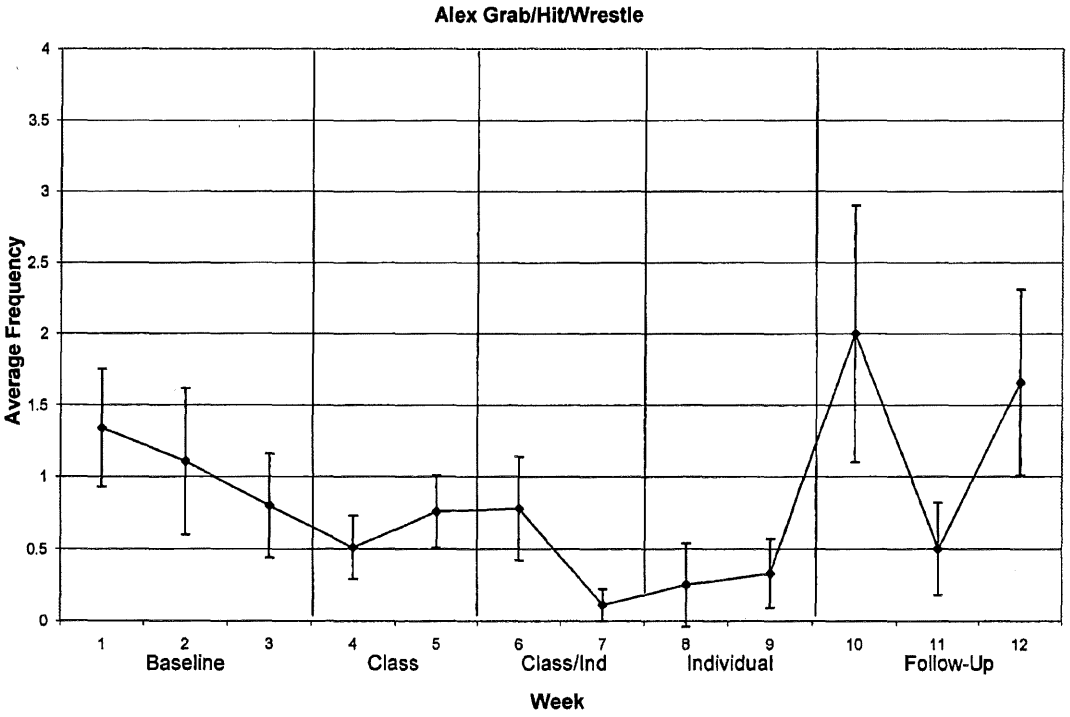
Riley's CBCL (See Table 1) scores all fell within normal range for his age at pretest and posttest for both the teacher and parent reports. Overall, there was little change from pretest to posttest for both the teacher and parent reports and change was not expected because his scores were within normal range from the beginning. There was a significant improvement from pretest to posttest on one subscale as reported by his teacher, such that his score on the Oppositional Defiant subscale decreased by 6 T scores.

Alex

Alex's target behaviors were: 1) getting out of seat at inappropriate times, 2) talking out of turn, and 3) hitting, grabbing, or wrestling others. Talking out of turn was not a behavior of focus during the individual intervention and therefore there was no cue word for this behavior, but all three behaviors were addressed during the classroom intervention. His cue words were: seat for behavior one and hands for behavior three. The functional analysis results determined that the target behaviors of getting out of seat

and talking out of turn functioned to gain the reinforcing attention of others and to direct his own attention. Classroom activity, specifically structured group time, and boredom were discriminative stimuli for these two behaviors. The target behavior of hitting or grabbing others was not aggressive in nature. Rather, when Alex was at an internal state of boredom, his behaviors functioned as negative reinforcement due to the reduction of the aversive internal state of boredom.

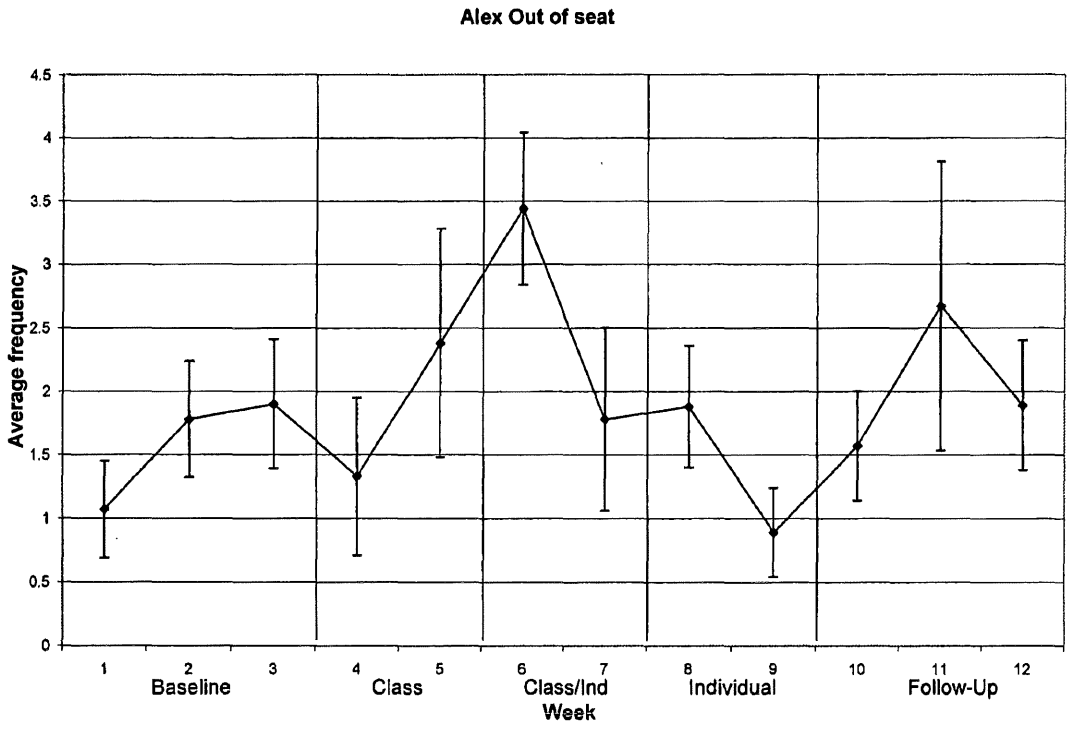
The behavioral observations data for Alex's behavior of hitting, grabbing, or wrestling with others is represented as a graph in Figure 5 as the average frequency per week across the observation sessions (mean of 9 times per week). The graph displays that the behavior was gradually decreasing during baseline and continued to decrease across the classroom and individual intervention conditions. There was a moderate increase at follow-up. These data suggest that although the behavior decreased from baseline levels, it is unclear if the intervention caused the decrease due to the downward trend in baseline. The fact that the behavior moderately increased at the removal of the interventions suggest that the interventions might have been the cause of impact, especially the individual intervention, at which time the behavior was at its lowest frequency.



Note: Vertical lines indicate standard error

Figure 5. Alex's average frequency per week for grabbing, hitting, or wrestling

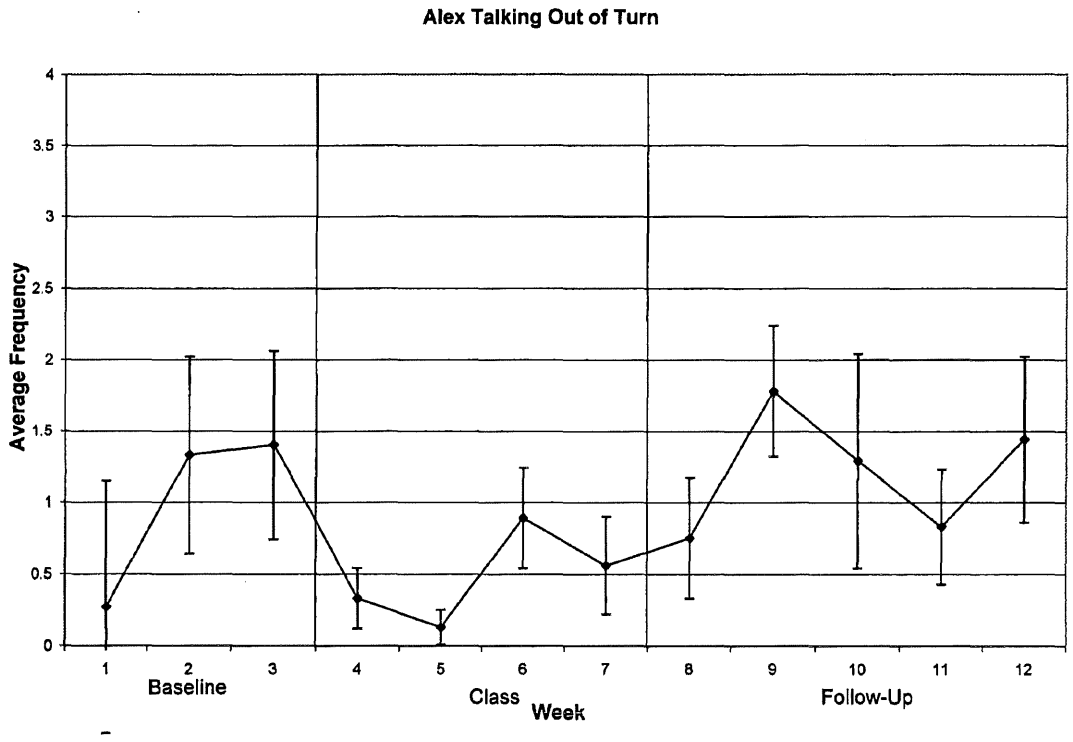
The behavioral observations data for Alex's out of seat behavior is represented as a graph in Figure 6. The general trend in the behavioral frequencies suggest that the interventions had no impact on his behavior.



Note: Vertical lines indicate standard error

Figure 6. Alex's average frequency per week for getting out of seat

The behavioral observations data for Alex's behavior of talking out of turn is represented as a graph in Figure 7. The graph displays that the behavior was increasing across the baseline condition and decreased at the introduction of the classroom intervention. The behavior gradually increased slightly again across the classroom intervention condition, but not to baseline levels. At the removal of the intervention there was a spike in behavior and the behavior returned to baseline levels. These data indicate that the intervention was effective at decreasing Alex's behavior, but the effect did not maintain into or across the 5 week follow-up.



Note: Vertical lines indicate standard error

Figure 7. Alex's average frequency per week for talking out of turn

In summary, the observational data indicate that the interventions were not effective for reducing Alex's out of seat behavior. It is uncertain if the decreases in behavior and maintenance of this effect for his hitting, grabbing, and wrestling others behavior was caused by the intervention due to the decline during baseline. There is evidence that the interventions were effective at reducing his talking out of turn behavior, but not at maintaining this effect into follow-up.

Alex's SCRS total score at pretest for the teacher report was 112 with a mean score of 3.39 and at posttest it was 106 with a mean score of 3.21. The parent report at pretest was 115 with a mean score of 3.48 and at posttest it was 114 with a mean score of

3.45. Overall the scores indicate little clinical significant change from pretest to posttest, but what change there was in the direction of increased self-control as expected.

Alex's results on the SNAP questionnaire were an average parent report of 1.86 and a teacher report of 1.84 at pretest. The average parent report at posttest was 1.84 and teacher report was 2.04 indicating little change. Since he started at about a 2, which was within the average range, no change was expected.

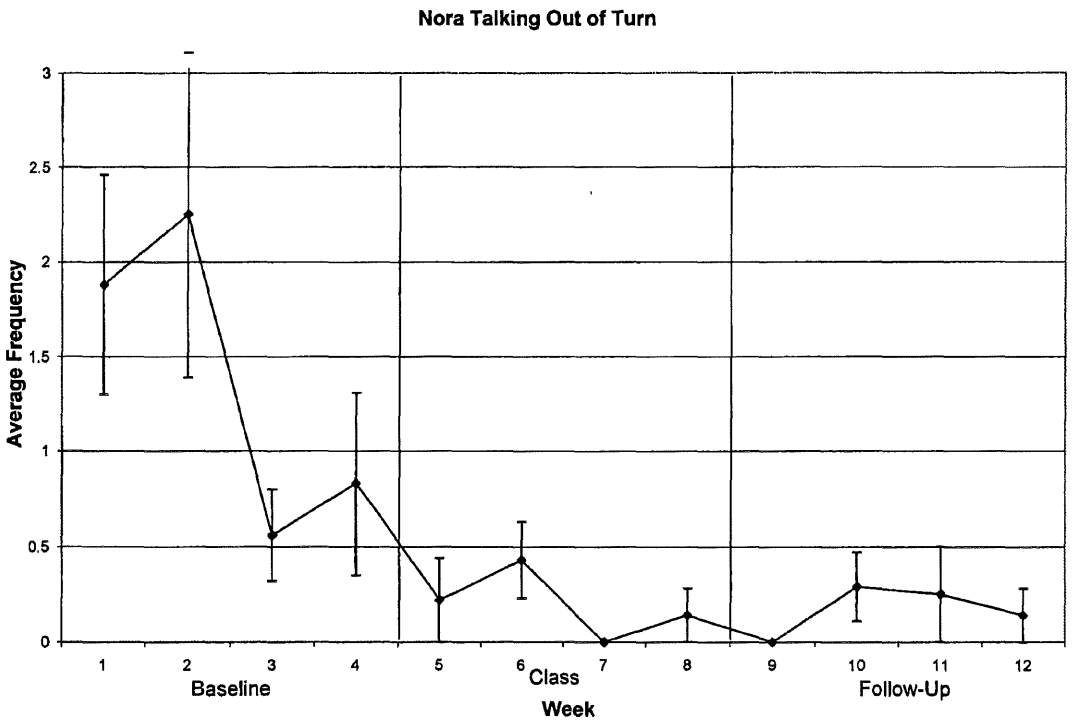
Alex's results on the CBCL (See Table 1) at pretest all fell within normal range for his age, except he scored in the borderline clinical range on the parent report of Externalizing Problems (90%) and Oppositional Defiant Problems (96%) subscales and in the clinical range on the parent reported Anxiety Problems (>97%) subscale. At posttest all his scores returned to normal levels for his age and out of borderline clinical and clinical range. Overall, Alex's scores from pretest to posttest showed improvement with a mean change in teacher report of 5 T scores and 8 T scores for parent. Specifically the only subscales that did not display significant change for the better, but rather stayed about the same, was the teacher and parent reported Affective subscale and the teacher reported Pervasive Developmental subscales.

Nora

Nora's target behaviors were 1) putting items in her mouth (i.e. fingers and hair), 2) talking out of turn, and 3) getting out of seat at inappropriate times. Her cue words were mouth for behavior one and seat for behavior three. Talking out of turn was not a behavior of focus during the individual intervention and therefore there was no cue word for this behavior. Talking out of turn and getting out of seat were addressed during the classroom intervention, but putting things in her mouth was not. The teacher interview

suggested that she had difficulties with transitions and preferred one-on-one time as opposed to group activities. She tended to find comfort in her routine and would become very upset when that routine was interrupted. Transitions and boredom served as discriminative stimuli for her behavior. The functional analysis indicated that when Nora was at an internal state of boredom, her behaviors functioned as negative reinforcement due to the reduction of the aversive internal state of boredom. The teacher and parent interview also revealed that her older sister also had the habit of putting her hair in her mouth. The behaviors of talking out turn and getting out of seat functioned to gain the reinforcing attention of others and to enable her to attend to preferred stimuli.

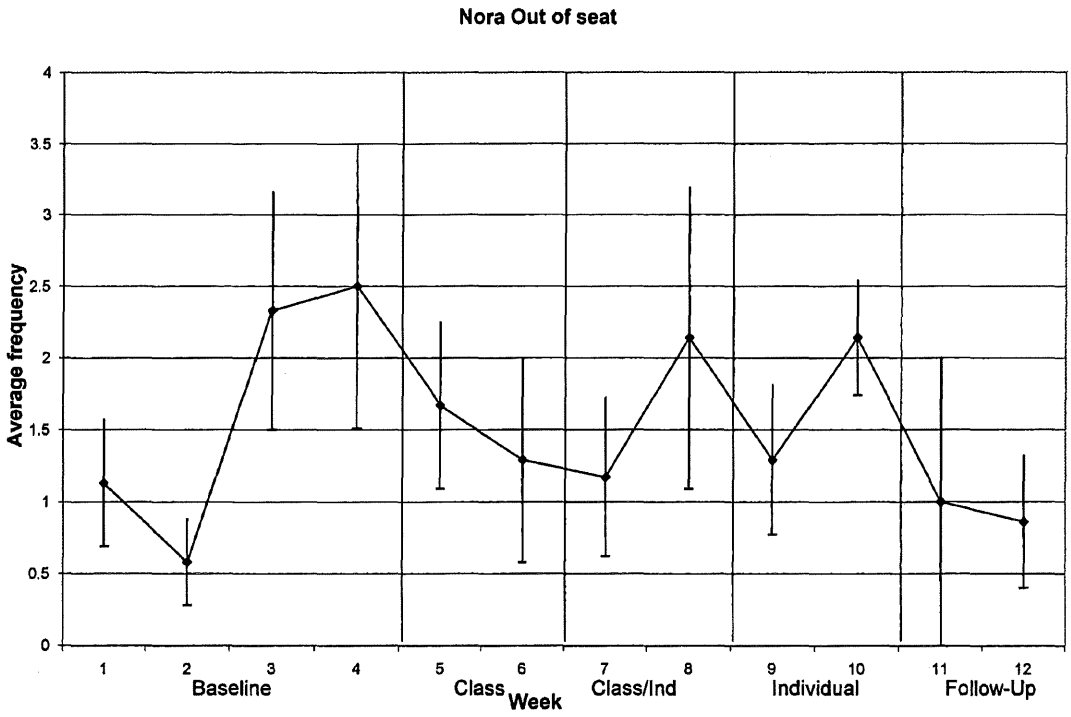
The observational data for Nora's talking out of turn behavior are presented in a graph in figure 8 as the average frequency per week across the observation sessions (mean of 8 times per week). The graph displays that the behavior decreased during baseline and decreased even more at the introduction of the classroom intervention and maintained across follow-up. Since there was a downward trend during baseline, the impact of the intervention on the decrease in frequency is not clear. The reduction in behavioral frequency maintained into the 4 week follow-up.



Note: Vertical lines indicate standard error

Figure 8. Nora's average frequency per week for talking out of turn

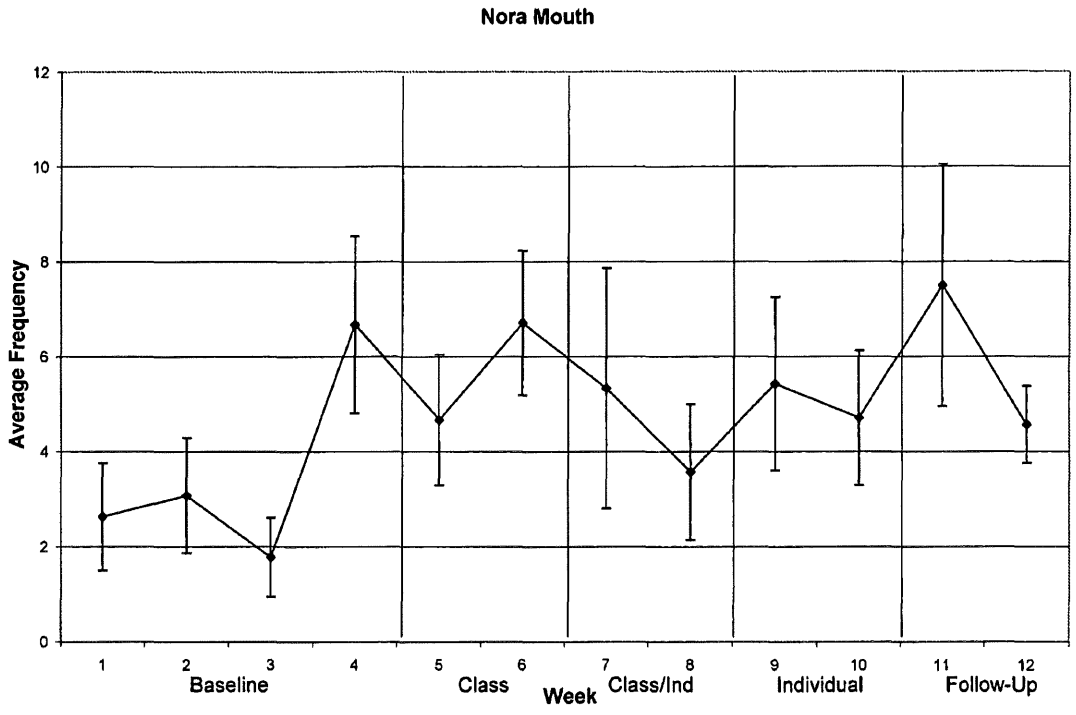
The behavioral observations data for Nora's out of seat behavior is presented as a graph in figure 9. The graph displays that the behavior initially began to decrease during baseline, but then moderately began to increase across baseline. The behavior then decreased across the classroom intervention, but spiked twice during the individual intervention condition and then decreased during follow-up. These data indicate that the frequency level during the intervention was not better than baseline, but there was a downward trend that continued into the 2 week follow-up.



Note: Vertical lines indicate standard error

Figure 9. Nora's average frequency per week for getting out of seat

The behavioral observations data for Nora's behavior of putting things in her mouth are presented in figure 10. The graph shows a drastic increase in the behavior during baseline, a slight decrease at the introduction of the classroom intervention followed by relatively stable levels into follow-up. These data indicate that the interventions had little impact on her behavior.



Note: Vertical lines indicate standard error

Figure 10. Nora's average frequency per week for putting objects in mouth

In summary, the behavioral observations indicate that the classroom intervention was effective in reducing Nora's talking out of turn behavior and also maintained this effect into follow-up. The intervention was somewhat effective in reducing her out of seat behavior across the interventions, but not consistently, and this effect maintained. Lastly, the interventions were not very effective at decreasing her behavior of putting items in her mouth.

Nora's SCRS total score at pretest for the teacher report was 141 with a mean of 4.27 and at posttest it was 96 with a mean of 2.91. The parent report at pretest was 130 with a mean of 3.94 and at posttest it was 115 with a mean score of 3.48. Overall her

scores showed significant change from pretest to posttest indicating increased self-control.

Nora's results on the SNAP questionnaire were an average parent report of 1.64 and teacher report of 1.96 at pretest. At posttest her parent report was 1.76 and teacher report was 1.66 indicating little change.

Nora's results on the CBCL (See Table 1) at pretest all fell within normal range for her age, except for the parent's report of her Pervasive Developmental Problems of which she received a T score of 70 (>97th percentile), which returned to normal range for her age at posttest. Overall, Nora's scores from pretest to posttest showed improvement with a mean change in teacher report by 2.5 T scores and 3.7 T scores for parent report. Specifically, she showed significant improvement on three subscales as reported by her parent: Externalizing Problems (9 T scores), Affective Problems (8 T scores), and Pervasive Developmental Problems (7 T scores). She also showed significant improvement as reported by her teacher on the Oppositional Defiant subscale (9 T scores).

Willy

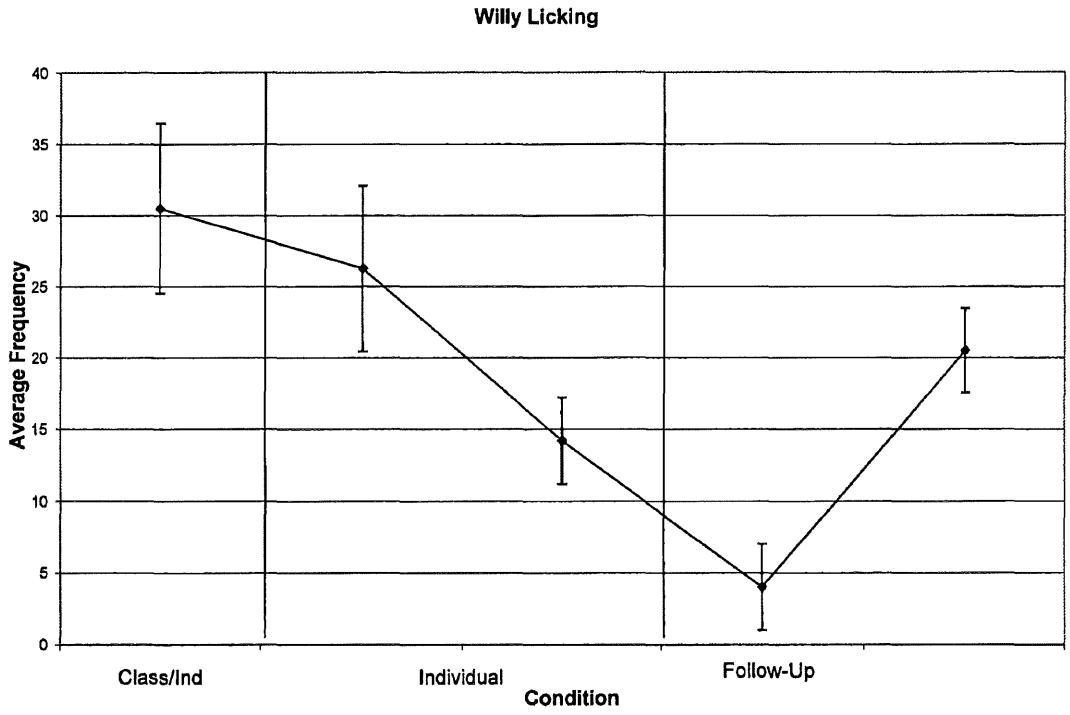
Willy's target behaviors were 1) licking his lips and 2) getting out of his seat at inappropriate times. His cue words were lips, seat, and square, respectively. He had two cue words for getting out of seat which allowed the teacher to decide which was more appropriate depending on the area of the classroom they were at. She used square when they activity involved sitting on the floor where every child had their own "square" marked on the floor. Seat was used during activities that took place at the table. The teacher and parent interview and functional analysis indicated that Willy's behavior of

licking his lips was intrinsically reinforcing. He licked his lips frequently throughout the day during all settings. Other behaviors that were not specifically addressed during the study that occurred for the same function (e.g. head rubbing). However, when the target behavior decreased it was observed that these other non-target behaviors would increase. Similarly, he liked a lot of physical contact from the teachers. When he received more physical contact from others in the form of a hug or rubbing his back, the target behavior of licking his lips decreased.

Willy had a very significant routine and life style change at the very beginning of the study when his family moved into a new house. He was originally suggested for the study due to his severe tantrums and outbursts at home and at school, specifically at times of transition, but these behaviors quickly diminished prior to recording baseline data. Therefore, initially he was not observed daily like the other participants due to the low frequency of major tantrums, rather his teacher recorded and documented the occurrences for each week. When the behaviors failed to occur during baseline the behaviors were no longer observed. During the 8th week of the study his teacher referred Willy to the study again for his 1) licking behavior and 2) getting out of seat, at which time these target behaviors were observed.

The behavioral observations data for Willy's licking behavior is represented as a graph in Figure 11 as the average frequency per week across the observation sessions (mean of 9 times per week). The graph indicates that the behavior decreased from the overlap of the classroom and individual interventions. This decrease in behavior continued across the individual intervention and into follow-up, but increased at the end of follow-up. Due to the lack of baseline, it can not be determined for certain if the

interventions caused the decrease in the behavior. This decrease in behavior continued into follow-up but increased again, although not to baseline levels. Therefore the effect did maintain to some extent.



Note: Vertical lines indicate standard error

Figure 11. Willy's average frequency per week for licking his lips

Willy's licking behavior was further analyzed by setting in which the behavior was observed, which is represented in Figure 12. The settings are separated as either: free time or all the other settings combined (structured, meal, and transition). The graph displays that the average frequency for the behavior was similar for all settings during the combination of classroom and individual interventions, but the behavior increased moderately for the free time and decreased for other settings. Both settings showed a

decrease in behavior at the completion of the individual intervention and displayed a similar low frequency across follow-up. This data indicates that the intervention was more effective for reducing the behavior during all settings. This analysis was conducted for Willy because there was a systematic difference in frequency across settings.

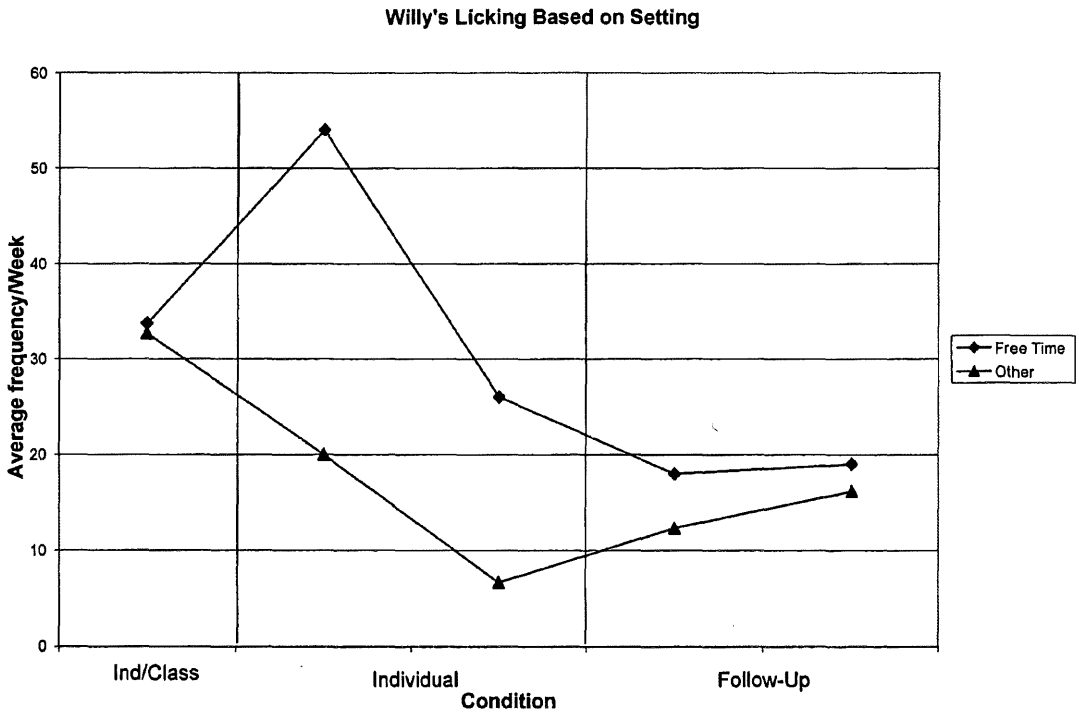


Figure 12. Willy's average frequency for licking for different settings

The behavioral observations data for Willy's out of seat behavior are presented in Figure 13. The graph displays no out of seat behavior during the combination of the classroom and individual intervention conditions. There is a very slight increase during the individual intervention alone condition, but returned to a zero average frequency. There was a very slight increase again during follow-up. Due to the lack of baseline data it is not possible to determine if the behavior had decreased to zero frequency during the

intervention or if the behavior had decreased during baseline. Therefore the effectiveness of the intervention for this behavior is uncertain.

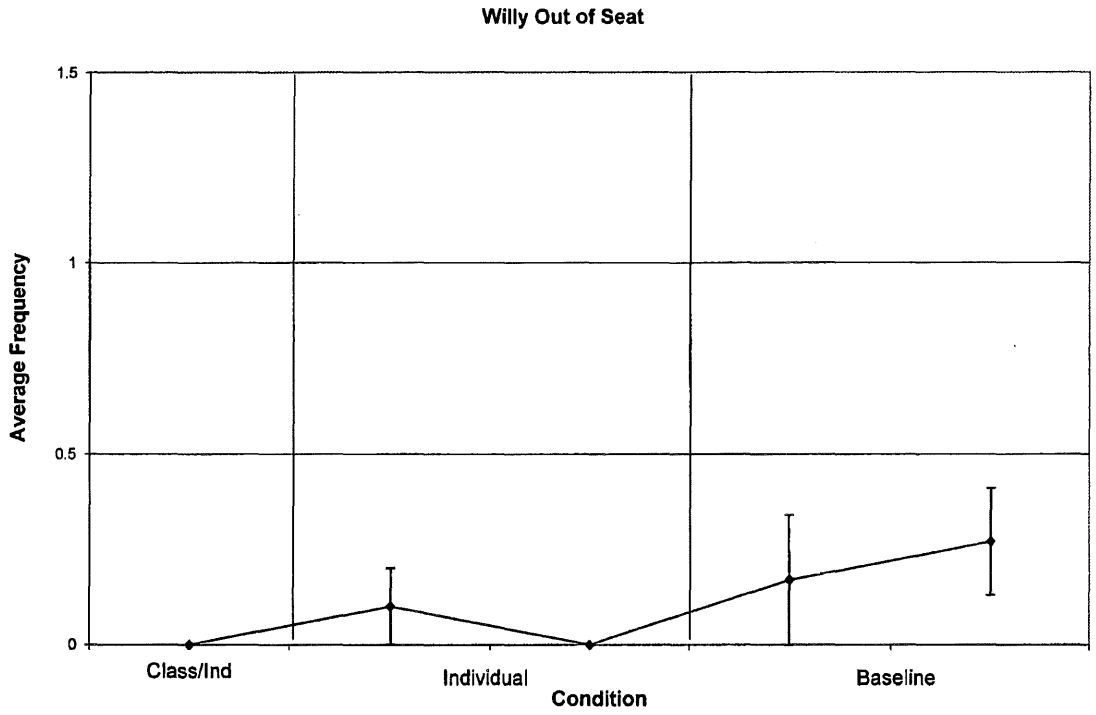


Figure 13. Willy's average frequency per week for getting out of seat

In summary, due to the lack of baseline data for Willy the effect of the intervention on his behaviors in unclear. It does appear that there was a decrease in his licking behavior that maintained into the 2 week follow-up. Yet, the frequency at the end of follow-up was still a moderate difference from baseline levels. Further analysis of his licking behavior indicated that his licking behavior occurred most frequently during the free time setting. The low frequency of his out of seat behavior during the interventions and into follow-up could not be determined to be caused by the interventions.

Willy's SCRS total score at pretest for the teacher report was 121 with a mean score of 3.67 and at posttest it was 116 with a mean score of 3.51. The parent report was 161 with a mean score of 4.88 and at posttest it was 142 with a mean score of 4.30. Overall his scores indicate that there was little change in scores from pretest to posttest, but the change that did occur was in the direction of increased self-control.

Willy's results on the SNAP questionnaire indicate an average parent report of 2.2 and a teacher report of 1.6 at pretest. The parent report was 2 and teacher report was 1.7 at posttest indicating little change. Since he was about a 2 at the start, no change was expected.

Willy's results on the CBCL (See Table 1) at pretest all fell within normal range for his age, except he scored in the borderline clinical range on the teacher report for Externalizing Problems (84%) and Pervasive Developmental Problems (96%) subscales and the parent reported Externalizing Problems (90%). He scored in the clinical range on the parent reported Oppositional Defiant Problems subscale (>97%) at pretest. At posttest all his scores fell out of the borderline clinical and clinical range and into normal range for his age. Overall, Willy's scores from pretest to posttest showed improvement in behavior with mean changes for teacher report of 3.1 T scores and 2.5 T scores for parent report. Specifically he showed significant improvement as reported by both his teacher and parent on the Oppositional Defiant subscales (8 and 15 T scores). His parent also reported significant improvement on the Externalizing Problems subscale (8 T scores), but a significant increase on the Pervasive Developmental Problems subscale (7 T scores). Conversely, his teacher reported significant improvement on the Pervasive Developmental Problems subscale (10 T scores).

Sub-Analyses

Parent Feedback

The results from the feedback at debriefing provided by the parents of the participants indicated an overall mean of 4.92 based on a scale of 1-7 with seven indicative of positive results. The overall mean for "Did you notice a change in your child's overall behavior at home?" was 5.00 (4 = no change), indicating some improvement. The parent's score for each child were as follows: Nora (5), Alex (4), Riley (4), Grace (6), and Willy (6). The overall mean for "Did you see a change in your child's behavior that we had you monitor?" was 5.17 (4 = no change) indicating some change for the better. The parent's score for each child's behavior were as follows: Nora's chewing was 4 and staying in her seat was 6, Alex (4), Riley (5), Grace (6), and Willy (6). The overall mean for "How was your overall experience of participating in this study?" was 4.67 (4 = indifferent) indicating a slight positive experience. The parent's score for each child were as follows: Nora (6), Alex (3), Riley (4), Grace (5), and Willy (4). The overall mean for "Do you believe that your child benefited from participating in the study?" was 4.83 (4 = somewhat) indicating a slight benefit for the child. The parent's score for each child were as follows: Nora (5.5), Alex (3), Riley (4), Grace (5), and Willy (6). In summary the overall the parents' report of the interventions effectiveness at home was not significant but was in a positive direction. This result might be due to the fact that the children were not a clinical sample, and therefore the experimenters did not expect big changes in behavior at home. On the other hand, the child who's parents consistently and more accurately monitored and reported their child's behavior at home as requested was

Grace. Her parent's overall average feedback rating was 5.5 suggesting a more positive effect than the overall average ratings provided by all the parents.

Teacher Feedback

The results from the feedback at debriefing provided by the teachers on the individual intervention indicated an overall mean of 5.51 based on a scale of 1-7 with seven indicative of positive results. The following results were based on the teacher's feedback about the interventions impact on the child's identified behaviors. The overall mean for "Have you noticed a decrease in the child's target behavior as compared to before the study began?" was 5.8 (4= no change) indicating change for the better. The teacher's score for each child were as follows: Nora (5), Alex (6), Riley (6), Grace (5) and Willy (7).The overall mean for "If so would you say that the change in behavior was significant?" was 5.00 (4 = somewhat). The teacher's score for each child were as follows: Nora (5), Alex (4), Riley (6), Grace (3), and Willy (7). The overall mean for "If there has been positive change in the child's behavior, would you say that it has had a positive impact on the child's functioning at school?" was 5.00 (4 = no change) indicating some change for the better. The teacher's score for each child were as follows: Nora (6), Alex (5), Riley (5), Grace (5), and Willy (4). The overall mean for "If there has been positive change in the child's behavior, would you say that it has had a positive impact on child's social interactions with the other children?" was 4.8 (4 = no change) indicating some change for the better. The teacher's score for each child were as follows: Nora (4), Alex (5), Riley (5), Grace (5), and Willy (5).The overall mean for "If there has been positive change in the child's behavior, would you say that it has had a positive impact on your interactions with the child?" was 4.75 (4 = no change) indicating some

change for the better. The teacher's score for each child were as follows: Nora (no response), Alex (4), Riley (6), Grace (5), and Willy (4). The overall mean for "How effective would you rate the one-on-one training was with the child?" was 5.8 (4 = no change) indicating it to be somewhat effective. The teacher's score for each child were as follows: Nora (7), Alex (7), Riley (6), Grace (2), and Willy (7).The overall mean for "How effective were the cues for modifying and controlling the child's behavior?" was 5.75 (4 = no change) indicating it to be somewhat effective. The teacher's score for each child were as follows: Nora (5), Alex (5), Riley (6), Grace (teacher did not use the cues), and Willy (7). The overall mean for "In your opinion was using the cues disruptive for the other children in the class?" was 7.00 indicating that it was not disruptive. The teacher's score for each child were as follows: Nora (7), Alex (7), Riley (7), Grace (7), and Willy (7).The overall mean for "Were the cues an inconvenience or a distraction from your teaching routine?" was 6.00 (4 = somewhat) indicating that it was not an inconvenience. The teacher's score for each child were as follows: Nora (6), Alex (6), Riley (5), Grace (7), and Willy (7).In summary, overall the teacher feedback data indicate that they perceived individual intervention to be somewhat positive.

The teacher feedback also provided information on the teachers' perceptions of the effectiveness of the use of the cues specifically within the classroom. Alex's teacher reported that "He responded to the cue words almost immediately." She also reported that "He only responded to cue words when told them (he didn't internalized them and use them on his own.)" Another problem with the cue words that Alex's teacher reported was that she had difficulty remembering to use them and at times would not use the cues alone, but rather use them in a sentence. Nora's teacher reported that "During the study

she was very receptive to her cue words. When cued, she would go 20-30 minutes before chewing again. [Now that the intervention has ended] it is almost constant". She also reported that "before she was unwilling to stop chewing, after participation she will at least take her hair out." According to the teacher feedback this information suggests that the cues and individual intervention for these students may have been even more effective than the observational data suggests.

The teacher feedback at debriefing about the effectiveness of the classroom intervention was provided by teacher report based on a 1-7 scale with seven indicating effectiveness. The overall mean was 6.75 (4 = no change) indicating overall perceived effectiveness. The mean for "Did you find the classroom intervention to be effective?" was 6.75, indicating that the teachers felt that it was effective. The mean for "If so was it age appropriate for all the children?" was 7.00. The mean for "Did you see an improvement in the behavior of the classroom as a whole?" was 6.75. The mean for "Do you plan to continue to use these classroom rules?" was 7.00. The mean for "Do you plan to use these techniques again next year?" was 6.25. The data provided by one teacher was dropped since the intervention was not properly implemented by the teacher within the classroom and the class did not sufficiently attend to the classroom rules education sessions.

The comments that were provided by the teachers included positive feedback on the review of the classroom rules, the positive effects of the modeling and the children's response to the rules. Much feedback was provided on the visual rules chart, such that it was said to be a useful and easy reference, a good visual reminder, and that they plan to continue to use it. In addition it was stated that the rules were "easily taught and

reinforced", "having them posted and having class meetings about them made everyone accountable and it definitely made things run more smoothly," and "The children understood the expectations because they were short, to the point, easy to understand, and they were written in a positive manner. They also were very effective because they were written out and labeled with simple pictures." This feedback suggests that the teachers were in favor of the classroom intervention and plan to continue to use it in the future.

The behavioral observation data collected from the parents' at home were not analyzed due to their inconsistent follow-through by the parents. Only one set of parents out of the five follow the behavioral monitoring at home.

CHAPTER IV

DISCUSSION

In summary, the interventions were effective in reducing some behaviors, but not all, for each participant. Many of these effects maintained during follow-up. Since the individual training was tailored for each child, the intervention affected each child differently. The classroom intervention was effective in reducing many behaviors in combination with the individual intervention, as well as, on its own. Overall, when the individual intervention (e.g. for Grace's pinching and hitting and pushing behaviors) was administered alone the results that were produced indicated that the training was effective and the results maintained. When the classroom intervention (e.g. Nora's talking out of turn) was administered alone the results that were produced indicated that the training was effective and maintained. When both the classroom and individual interventions were administered, the combination was shown to be effective 4 out of the 9 applications and three maintained. Overall 100% of the children displayed a decrease in frequency for at least one target behavior and 4 out of the 5 children's decreases in target behavior also maintained into follow-up. Furthermore, the teachers reported that the classroom intervention not only positively affected the participants' behavior; they saw a positive effect on the classroom as a whole and thought it was a very useful strategy.

Some behaviors were addressed solely in the classroom training within the classroom rules, others were addressed solely in individual training since the behaviors

were not addressed within the classroom rules specifically, and others were addressed during both interventions. However, there was some difficulty in implementing the classroom intervention, specifically with 1 of the 3 classrooms. For example, Grace's classroom did not receive what the experimenters considered to be the classroom intervention due to the chaotic classroom environment during the presentation of the intervention, the lack of attention that the experimenters and teacher were able to obtain during that time, and the teacher's lack of follow through with the use of the classroom rules, rule chart, or cues. In addition it was observed that this teacher also did not correctly utilize the behavioral techniques taught during the teacher training.

The individual intervention was effective in decreasing Grace's pinching behavior and hitting and pushing others behavior, which maintained at follow up. Her pinching behavior was reduced to zero and her hitting and pushing behavior was significantly reduced from an average of about 9 times per 30 minutes to about 1-2 times. The reductions in her behaviors were reduced even though her teacher did not use Grace's cue words with her within the classroom due to her lack of follow through. This indicates that she was able to internalize these cues and did not need the external reminders of the teacher.

The interventions were effective in decreasing Riley's out of seat behavior and at maintaining the effect. The behavior began at an average frequency of 6 occurrences per 30 minutes and ended at an average of 1.5. The effectiveness of the interventions for his behavior of talking too loud was unclear. This behavior was very difficult to measure and was very subjective in coding, resulting in unreliable data on the frequency of this

behavior. Therefore, it is unclear whether or not the intervention resulted in a reduction of the target behavior.

The classroom intervention was effective in reducing Alex's talking out of turn behavior, but this effect did not maintain in follow-up. This behavior was not directly addressed during the individual training and no cues were provided for this behavior. Since his getting out of seat behavior did not decrease substantially, there was no support for the effectiveness of the interventions on this specific behavior. His behavior of hitting, grabbing, or wrestling others decreased, but since this decrease began during baseline, it could not be determined with certainty that the intervention was the cause. Therefore the cause of this decrease during baseline is unclear and could have been caused my many different situational factors, i.e. presence of certain peers. Overall there was a clear indication that once the intervention was withdrawn his behavior returned suggesting that he did not internalize the cues. They were effective, but he needed an external cue to remind him. In Alex's case, Alex may have needed more time individually with the therapist or teacher in order for him to internalize his behavioral control.

The intervention was effective in reducing and maintaining Nora's talking out of turn behavior and out of seat behavior. It was also effective at reducing her behavior of putting items in her mouth, but the effect did not maintain. Her behavior of putting items in her mouth was reduced from an average of 8 times per 30 minutes to about 4 ½ times. This reduction is clinically significant due to the severity of the behavior. Although most of the time she simply placed her hair in her mouth, there had been multiple occurrences when she had put dangerous items in her mouth, such as dirt, toys, and old food off the

ground. There had been other occurrences in which she had to go to the doctor to have items removed from her nose and ear. Therefore, the reduction of the behavior for Nora has great impact on her health. One might speculate that one reason that her reduction of placing objects in her mouth may not have maintained may have been due to her limited awareness that she was performing this behavior. She may have needed extra individual time with the therapist in order to further enhance her self-awareness training as well as extra close effort of her teacher to consistently monitor this subtly behavior and provide the cue.

It was uncertain if the reduction of Willy's licking behavior was caused by the intervention due to lack of baseline data, but there still was a major reduction from a starting average frequency of 30 licks per minute to as low as less than 5 times during follow-up. The interventions were not effective for reducing his getting out of seat behavior. The low frequency of this behavior during the intervention may have attributed to the difficulty of determining the effect of the intervention accurately.

The pretest and posttest measures completed by the participants' teachers and parents indicated little change overall. Since all the participants were close to average range on all measures at pretest, little change was expected at posttest on these measures. However, the change that was produced at posttest for the SCRS was in the direction of increased self-control. The CBCL results indicated that all children showed little change, but the change that did occur was towards improvement and for some significant improvement. If the child was in the borderline clinical or clinical range at pretest, they dropped into average range by posttest, except for Grace who remained in the clinical range on one subscale. Nora's reported scores on the posttest measures indicated that her

teacher and parent noticed an improvement in her behavior from pretest, which is not consistent with the behavioral observation results. This inconsistency emphasizes the importance of always incorporating self-report measures at pretest and posttest in order to gain additional useful data for comparison to behavioral observations.

The feedback provided by the teachers indicated that they believed the individual intervention and use of the cue words was effective. They suggested that even if the behaviors did not decrease in frequency, the verbalization of the cues was a useful technique to quickly remind the child that the behavior was inappropriate and many adjusted their behavior accordingly. The cue words allowed the teacher to provide a quick reminder to the child to adjust their behavior without disrupting the ongoing classroom activity.

The teacher feed back on the classroom intervention was very positive. The teachers reported that the use of the classroom rules and the poster for presenting them was very useful. The teachers were able to easily reference the poster when needed, which provided the children with not only a verbal cue but also a visual cue. The rule poster was located on the wall at the front of the area in which the class frequently sat facing, which provided several opportunities each day for the poster to be viewed by the children. Furthermore, not only did the classroom intervention positively affect the behavior of the participants, but the class as a whole. The teachers reported that they planned to continue to use this technique in the future. This is very important considering that the teacher acceptability of the intervention is a key component to initially getting the intervention implemented within school systems. In addition, this acceptability by teachers is a key component to ensuring that the teachers will use the techniques and

consistently implement the intervention within their classroom. Without their cooperation and willingness of the teachers to follow through and implement the strategy appropriately the intervention becomes ineffective.

Although both interventions were shown to be effective, there are pros and cons associated with each. First, some behaviors were more appropriate for training through the individual intervention while other behaviors were more appropriate for the classroom intervention. For example, some behaviors (i.e. licking or putting items in one's mouth) are very specific behaviors that do not need to be addressed by the entire class. On the other hand, some behaviors were more appropriate to address in the classroom, such as talking out of turn while in a group setting. Secondly, some teachers believed that it would be best not to remove the child from the classroom, which was how the individual training was conducted. Removing the child allowed the experimenter to provide individualized and focused attention on the self-control training that might not have been possible within the busy classroom. Lastly, individualized one-on-one training might not be feasible for most school settings due to lack of resources. The classroom intervention was easy to administer and not time consuming and was applied to the entire classroom as a whole. Furthermore, there was no strong indication of further reduction in behavior at the addition of the individual intervention or that the individual intervention had a strong additive impact on the behavior reduction. Rather it could be just maintaining the effects from the classroom intervention. There was evidence that the individual intervention provided an additive effect to the effect of the classroom intervention for Alex's hitting, grabbing, or wrestling behavior due to the further decrease in the behavior at the introduction of the individual intervention. Conversely, there was

an increase in frequency of both of Riley's target behaviors at the introduction of the individual intervention. In the future the classroom intervention could be conducted by the teachers themselves instead of having someone from outside the classroom.

The parent involvement during the study was very difficult to maintain, as was suggested as a problem in previous studies by Webster-Stratton and Hammond (1997). The parents were to record the occurrences of their child's target behaviors at home and report the data to the experimenter weekly. They were to do so while blind to the exact intervention techniques or cues. Only one set of parents out of the five participants did so consistently and accurately. Yet the parents that did reliably report their home behavioral observations, indicated improvement in their child's, Grace, behavior. Therefore it is uncertain whether or not the effects of the intervention generalized to the home setting. Steps need to be taken in order to increase parents' involvement in training their children's self-control skills as stressed by Zentall (1989) and Kamps and Tankersley (1996). Since parent participation has been reported to be a problem in previous research, the lead experimenter in the current study made several attempts each week to contact the parents to collect their behavioral observations via emails, telephone calls, letters in their child's mailboxes at the center, and reminders from the center's secretary, yet there remained a lack of cooperation. Furthermore, even though the parents were provided with parent diaries to help to keep track of the behavioral occurrences each week, the parents did not use them. When contacted and asked for the frequency of their child's behavior, all but one parent who recorded the data as requested, would attempt to recall from memory and could only provide a rough estimate.

There were some other limitations to the current study in addition to the lack of parent involvement. One might argue that the behaviors that were chosen to be observed for the current study might not have been classified as impulsive, but rather behaviors of habit; a behavior that is frequently performed or repeated unconsciously and is more likely to be driven by internal or intrinsic reinforcement. Yet the fine line between what behavior is considered impulsive versus habitual is difficult to determine. For example, some of the behaviors were determined to occur mainly when the child was bored. When this is the case it is difficult to predict that, if an intervention is able to diminish one inappropriate behavior that serves to entertain the child while bored, that a new behavior would not develop to take its place. This was the case with Willy, such that when his lip licking reduced other behaviors increased (i.e. rubbing his head). Furthermore, some of the behaviors were not necessarily problems for the child, classroom, or teacher; rather they were easy to observe, occurred frequently enough, and could be considered impulsive in nature.

Another methodological aspect worth considering was the fact that there were differences amongst the classrooms on the teachers' follow through of the classroom intervention and the use of cues. It was noticed that two of the three classrooms practiced, reviewed, and referred to the rules more often than the other room. Although the teachers were all trained together on the application of behavioral techniques within their classrooms, they all appeared to apply them differently, such that some teachers more consistently referred to the class rules when attempting to redirect the child's behavior. More specifically, the cues were similarly applied at different rates, which varied by teacher. This was the case for Grace, who still showed improvement within the

classroom even though she was not cued by her teacher, which suggests that she learned to internalize the cues and apply what she learned in the individual training on her own. The differences in the teachers' application to the classroom suggests that future application to classrooms in schools might incur some problems with lack of cooperation. Yet, the differences in the classrooms make the results more generalizable to other classes, teachers, and schools.

The teacher training was conducted during baseline, which might be the reason there was some reduction in behaviors prior to the implementation of the interventions. If the teachers applied what they learned within the training immediately, this might have been the cause of the decline in behaviors during baseline prior to implementation of the interventions. This possibility should be considered in future research designs.

Another limitation to the study was the difficulty with interrater reliability. One of the believed attributing factors for this is the fact that if the occurrence of just one behavior was missed the reliability level dropped drastically due to the low frequency of the behavior occurrences. One way to correct this would be to video tape observation sessions. The current study had six different undergraduate observers observing several different children and behaviors and some of the observed behaviors were difficult to code. The difficulties might have been due to the children's quickness and ability to perform the behavior very nonchalantly. For example, Willy's lip licking was performed up to 45 times per 30 minute observation and he would do so very quickly. Another specific example of the study's problem with interrater reliability was the difficulty of reliably rating Riley's yelling behavior objectively across raters. There were no specific means to measure a cut off level at which his voice would be considered too loud.

Therefore, the behavior was rated based on each rater's subjective opinion of appropriate volume level. It is recommended that future studies utilize a more accurate means of measuring yelling via coding, such as Kochanska, Murray, Jacques, Koenig, and Vandegeest (1996) did. Kochanska (1996) coded children's voices on a scale from 0 to 3 (0 = shouting, 1= normal tone, 2= no response, 3= whispering).

Future research should take appropriate steps to attempt to increase parent involvement within the training, increase interrater reliability, and carefully choose which behaviors to address within either the classroom or individual intervention. One possibility for future research should be to incorporate a portion of the individual intervention to occur within the classroom, which might help generalize the results. However, this might not be feasible because the classroom might be too distracting, as might the training be to the other children.

Limitations aside, the current study was able to build on previous studies by incorporating several important aspects into the methodology that were either lacking in previous studies or considered limitations within the literature. The aspects of the current study's methodology and results that provide an important contribution to the current literature on self-control training with children consist of: 1) the effective application of training within the preschool setting, 2) the application of individual functional analyses, 3) individualized training, 4) assessment of pretreatment behavioral levels, 5) multiple treatment components, 6) teacher referred participants, 7) a narrow focus of two to three behaviors per child, 8) effective implementation of self-control training with 4-5 year olds, 9) multiple forms of measurement, and 10) indications of generalizability of results.

The current study is one of the few studies that have implemented an effective behavioral intervention with preschoolers to increase their self-control skills. The previous studies that were successful at implementing self-control interventions with children most often were conducted with children within a clinical sample (Pulkkinen, 1996; Miranda, Precentacion, & Soriano, 2002; Reid and Borkowski, 1987) or older children at an elementary school level (Miranda et al, 2002; Kendall & Zupan, 1981). Furthermore, most studies were able to apply training techniques that were of higher cognitive functioning level, such as response cost contingency management techniques (Kendall & Zupan, 1981) and utilized more generalizable, yet complicated self-statements or cues (Miranda et al, 2002). Yet the current study was able to adjust previous methods of self-control training to effectively accommodate the cognitive functioning level of 4-5 year olds. A study by Bornstein and Quevillon (1976) that implemented a self-instructional training intervention with preschoolers and was found to effectively increase on-task behavior and maintained the results for 22 weeks, but utilized material rewards and training sessions that lasted for 2 hours at a time. The current study was able to effectively implement self-control training without the use of material rewards which can be distracting to implement in a classroom setting and only removed the children from the classroom for the individual training for about one fourth of the amount of time.

The current study further contributes to the literature due to the fact that the intervention surpassed problems with implementing self-control training with preschoolers that other studies have found to be problems, such as not effectively maintaining decreases in behavior (Kazdin, 1993; Schweitzer and Sulzer-Azaroff, 1988;

Friedling and O'Leary, 1979) or effects that do not generalize to other situations and settings (Friedling and O'Leary, 1979). In addition, the current study's results found that this form of classroom intervention was acceptable by the teachers, including that is was found to be not time consuming for the teacher or of the classroom time, not disruptive, easy to administer, and applicable to all the children in the classroom.

The current study also contributes to literature by providing evidence of the generalizability of the intervention's results to other settings and classrooms. The study was implemented across three different classrooms with different teachers. Although, as previously mentioned, the behavior techniques, use of cue words, and use of the rule chart were implemented differently by the teachers, all the identified children still showed improvement along with the classrooms as wholes. In addition, the observations were conducted across several different forms of classroom activities, at different times of the day, and at times during transitions, which enhances the generalizability of the results. In addition, the set of parents that did accurately monitor their child's behavior at home indicated that they saw improvement in this setting as well.

In summary, the current study was able to produce reductions in impulsive behaviors that were shown to have been caused by either or the combination of the classroom and individual interventions. Furthermore, for all children but one, maintenance effects were displayed once the interventions were removed. These results indicate that the current study's behavior skills training for self-control improvement are effective and appropriate for preschool children. It also indicated that this form of treatment was effective in training children of this age to internalize what they learned from the training and maintain these changes once the intervention was removed. In

addition, since the training is age appropriate for preschoolers this training could be applied from a preventive approach in order to not only reduce existing behaviors, but to prevent additional behaviors from developing that could become a distraction to the child's education or that could lead to a later diagnosis if not extinguished. By providing children with self-control training early on, they may benefit not only by gaining the specific skills they are taught during the training, but the skills might generalize to increased self-control overall and not just for the specific target behaviors.

The combination of results from all forms of measurement collected during this study provide even further support of the intervention's effectiveness, which include pre and post teacher and parent report, behavioral observations, and follow-up feedback from both the parents and teachers. When these results from the parent and teacher reports and feedback are considered in addition to the behavioral observations, a lot more is learned about the different dynamic's of the intervention's effectiveness. For example, according to Nora's behavioral observations the intervention was not very effective, but according to the parent and teacher pre and post reports they did indicate improvement. This was also the case for Willy's behaviors. Although there was not a clear baseline for the comparison of changes in Willy's behavior and the effectiveness of the treatment could not be definitively determined, the parent and teacher feedback indicated intervention effectiveness based on their observations and report. Furthermore, Grace's parent reported that their behavioral observations at home indicated improvement in yet another setting. The teacher feedback on both the individual and classroom interventions further supported the results of the behavioral observations as well as pointing out areas of improvement that were not able to be measured during the behavioral observations. The

teacher feedback indicated that although the use of cues as trained within the individual intervention may not have decreased the frequency of some behaviors, the cues were still helpful in assisting the children to correct their own behavior, usually immediately, with little direction needed from the teacher and without disrupting the ongoing classroom activity.

Overall, behavioral improvement and intervention effectiveness was indicated by multiple measurement approaches. The results of the behavioral observations indicated that it was effective for all children for at least one of their behaviors and those results maintained for 4 out of 5 of the children. The pre and post teacher and parent reports indicated that what changes in behaviors they observed were in the direction of improvement. In addition, the teacher feedback indicated that all the children's teachers reported improvement in the children's behavior. The teachers that implemented the cue words reported that they thought the individual training was effective. The teachers indicated that the classroom intervention was also effective for improving and managing the identified children's behavior, as well as the classroom's behavior as a whole.

APPENDICES

Appendix A

Parental Consent for Child Participation Form

Study Title: Applied Behavioral Self-Control Intervention for Impulsive Preschoolers

Principal Investigator: Kimberlee Zetocha, M.S., Department of Psychology, University of North Dakota, Box 8380, Grand Forks, ND 58202. Tel. (701) 777-3451.

Student Advisor: April Bradley, Ph.D., Department of Psychology, University of North Dakota, Box 8380, Grand Forks, ND 58202. Tel. (701) 777-3790.

Permission for Your Child to Participate in a Self-Control Training Research Study

YOU ARE BEING ASKED TO READ THE FOLLOWING MATERIAL TO MAKE SURE THAT YOU ARE AWARE OF THE NATURE OF THIS RESEARCH STUDY AND OF HOW YOUR CHILD WILL PARTICIPATE IN IT, IF I GIVE MY CONSENT. SIGNING THIS FORM WILL INDICATE THAT I HAVE BEEN SO INFORMED AND THAT I CONSENT TO MY CHILD'S PARTICIPATION. FEDERAL REGULATIONS REQUIRE WRITTEN INFORMED CONSENT PRIOR TO PARTICIPATION IN THIS RESEARCH STUDY SO THAT I CAN KNOW THE NATURE AND RISKS OF MY CHILD'S PARTICIPATION AND CAN DECIDE WHETHER MY CHILD SHOULD PARTICIPATE OR NOT PARTICIPATE IN A FREE AND INFORMED MANNER.

PURPOSE

Your child has been invited to participate in a self-control training program. You are being asked to review this form to inform you of this research and what your child's participation will involve. The purpose of this research is to check the effectiveness of a school-based behavioral intervention that hopes to increase children's self-control skills.

SELECTION CRITERIA

You are being asked to review this consent form because your child has been asked to participate in our self-control training program at the University Children's Center and your child displays normal cognitive skills; has displayed impulsive behavior(s) and/or a slight lack in self-control; has no diagnoses of mental retardation, oppositional defiant disorder, or conduct disorder; and will be 4 or 5 years old at the time of the study. Approximately 12 children will be enrolled in this study.

PROCEDURE

If you consent for your child to participate, you and your child's teacher will complete questionnaires about your child's behavior. Your child, along with all the other children in his or her class, will receive behavioral skills training in the classroom by his or her teacher. In addition your child will receive one-on-one training by the experimenter on additional behavioral self-control skills. These skills will be taught to your child to improve his or her behavior at school in the classroom, lunchroom, and at recess with hopes that the behavioral improvements will continue in the school and to other areas of the child's life, including the home. During this time your child will be taught skills that will help him/her learn to change their behavior and adjust their behavior appropriately when cued by the teacher. Your child will be observed while at the University Children's Center throughout the day by trained observers. This observation will not single out your child by any means. Observation will appear as though the observers are observing the entire classroom and not just the individual child. You as the parent will also be asked to watch their behavior at home and will be called twice a week at home so that for the experimenters can collect this information from you. These activities will occur over 12 weeks.

RISKS

There are few risks possible to you or your child for participating in this study. The self-control skills that the teacher and your child will be using are common in the field and have been used in previous research with no harm to the participant. A number of steps will be taken to protect the confidentiality of your child's participation and data. If you or your child feels uncomfortable at any time, you should contact the principal investigator, Kimberlee Zetocha, or the student advisor, April Bradley, at any time and they will answer questions and provide other options if you wish to seek additional services.

BENEFITS

One direct benefit relating to this study is that the children will receive self-control skills training for free. Other possible gains include extending the current knowledge base of classroom interventions and knowledge of the field in general. Secondly the children may display behavioral improvements in the classroom setting. Furthermore the teachers will be receiving additional training in behavioral skills for free services.

CONFIDENTIALITY

The participant's confidentiality and privacy will be protected to the fullest. Several steps will be taken to protect each participants' confidentiality. The parents of each child will be required to authorize the release of information for research purposes, and they will be asked to sign the consent form before participating. This consent to participate will be stored separate from the rest of the information collected. Research data will be identified by a participant number, rather than by the child's name. All data will remain confidential during the collection, analysis, or in any written or published report. All research materials will be maintained in a locked filing cabinet in a room at UND for a period of 3 years following the end of your participation in this study. Only the researchers and persons authorized to audit clinical and IRB procedures will have access to the data.

PARTICIPATION AND SUBJECT COMPENSATION

Your child's participation is completely voluntary, and you or your child may stop at any time without penalty by simply asking to do so. This will not affect you or your child's relationship with the Psychology Department or the University of North Dakota or the University Children's Center in any manner. Although your child will not be rewarded financially for being in this study, they will receive verbal praise for performing appropriate behaviors as taught in the classroom and individual training

CONTACTS

If you want additional information, please call the principal investigator, Kimberlee Zetocha, at (701) 777-5431 or the student advisor, April Bradley, at (701-777-3790). If you have questions about your child's rights as a research subject, you should call UND's Office of Research and Program Development at 777-4279.

AUTHORIZATION

BEFORE GIVING MY CONSENT BY SIGNING THIS FORM, THE METHODS, PROBLEMS, RISKS, AND BENEFITS HAVE BEEN EXPLAINED TO ME AND MY QUESTIONS HAVE BEEN ANSWERED. I MAY ASK QUESTIONS AT ANY TIME AND MY CHILD IS FREE TO QUIT THE PROJECT AT ANY TIME WITHOUT PUNISHMENT. MY CHILD'S PARTICIPATION IN THIS PROJECT MAY BE ENDED BY THE INVESTIGATOR FOR REASONS THAT WOULD BE EXPLAINED. NEW INFORMATION DEVELOPED DURING THE COURSE OF THIS STUDY THAT MIGHT CHANGE MY WILLINGNESS TO LET MY CHILD CONSENT TO THE RESEARCH PROJECT WILL BE GIVEN TO ME AS IT BECOMES AVAILABLE. THIS CONSENT FORM WILL BE FILED IN AN AREA ASSIGNED BY THE HUMAN SUBJECTS COMMITTEE WITH ACCESS RESTRICTED TO THE PRINCIPAL INVESTIGATOR, KIMBERLEE ZETOCHA OR AUTHORIZED REPRESENTATIVES OF THE UNIVERSITY OF NORTH DAKOTA. I DO NOT GIVE UP ANY OF MY LEGAL RIGHTS BY SIGNING THIS FORM. A COPY OF THIS SIGNED CONSENT FORM WILL BE GIVEN TO ME.

Print Child's Name _____ Date of Birth

Parent/Guardian Signature _____ Date

Appendix B

Demographic Information

Please provide the following information regarding your child:

Name:_____

Age:_____

Birthdate:_____

Race:_____

Diagnoses or disabilities:_____

Please provide the following information for yourself (and Spouse):

Marital Status:_____

Father's Education Level:_____

Mother's Education Level:_____

Father's Date of Birth:_____

Mother's Date of Birth:_____

Appendix C

Parent's Behavioral Observations

Please keep track of the number of times your child displays (the identified target behavior) for each day of the week. The experimenter will ask for you to read this information when she calls. (One sheet for each target behavior will be provided.) Thank you!

MONDAY: _____

TUESDAY:_____

WEDNESDAY:_____

THURSDAY:_____

FRIDAY:_____

SATURDAY:_____

SUNDAY: _____

Appendix D

Observer's Behavioral Rating Sheet

ID #_____

DATE:_____

TIME:_____

OBERSERVER:_____

SETTING:_____

PEASE RECORD THE FRQUENCY OF THE TARGET BEHAVIOR FOR THE CURRENT CHILD FOR 15 MINUTES:

TARGET BEHAVIOR #1:_____ #_____

TARGET BEHAVIOR #2:_____ #_____

TARGET BEHAVIOR #3:_____ #_____

TARGET BEHAVIOR #4:_____ #_____

TARGET BEHAVIOR #5:_____ #_____

_____

_____

_____

_____

Appendix E

Debriefing Questionnaire

Teacher:_____ Classroom:_____ Child:_____

Teacher Feedback.
Please complete the following questionnaire to the best of your ability. Please answer and rate each question on a scale from 1 to 7. Also there is room provided for any additional comments you have for us.

1. Have you noticed a decrease in the child's target behavior as compared to before the study began?

1	2	3	4	5	6	7
Worse			No change			Better

_____
_____
_____
_____

2. If so would say that the change in behavior was significant?

1	2	3	4	5	6	7
Not Significant			Somewhat			Significant

_____
_____
_____
_____

3. If there has been positive change in the child's behavior, would you say that it has had a positive impact on the child's functioning at school?

1	2	3	4	5	6	7
Worse			No change			Better

_____
_____
_____
_____

4. If there has been positive change in the child's behavior, would you say that it has had a positive impact on child's social interactions with the other children?

1	2	3	4	5	6	7
Worse			No change			Better

_____

5. If there has been positive change in the child's behavior, would you say that it has had a positive impact on your interactions with the child?

1	2	3	4	5	6	7
Worse			No change			Better

6. How effective would you rate the one-on-one training was with the child?

1	2	3	4	5	6	7
Not effective			No change			Effective

7. How effective were the cues for modifying and controlling the child's behavior?

1	2	3	4	5	6	7
Not effective			No change			Effective

8. In your opinion was using the cues disruptive for the other children in the class?

1	2	3	4	5	6	7
Disruptive			Somewhat			Not Disruptive

9. Where the cues an inconvenience or a distraction from your teaching routine?

1 2 3 4 5 6 7

Inconvenient Somewhat Convenient

_____

_____

_____

_____

10. What suggestions do you have that might help us modify the procedures used?

_____

_____

_____

_____

_____

_____

_____

_____

Teacher:_____ Classroom:_____

Classroom intervention

1. Did you find the classroom intervention to be effective?

1	2	3	4	5	6	7
Not effective			No change			Effective

_____
_____
_____
_____

2. If so was it age appropriate for all the children?

1	2	3	4	5	6	7
No			Somewhat			Yes

_____
_____
_____
_____

3. Did you see an improvement in the behavior of the classroom as a whole?

1	2	3	4	5	6	7
No			Somewhat			Yes

_____
_____
_____
_____

4. Do you plan to continue to use these classroom rules?

1	2	3	4	5	6	7
No			Maybe			Yes

_____
_____
_____
_____

5. Do you plan to use these techniques again next year?

1	2	3	4	5	6	7
No			Maybe			Yes

_____
_____
_____
_____

6. Did you find the teacher training to be helpful or increased your knowledge on behavioral techniques?

1	2	3	4	5	6	7
No			Somewhat			Yes

_____
_____
_____
_____

7. What were the pro's of using the classroom intervention/rules within your classroom?

_____
_____
_____
_____
_____

8. What were the con's of using the classroom intervention? What would you suggest to modify

_____
_____
_____
_____
_____

Parent:_____ Child:_____

Parent Feedback
Please complete the following questionnaire to the best of your ability. Please answer and rate each question on a scale from 1 to 7. Also there is room provided for any additional comments you have for us.

1. Did you notice a change in your child's overall behavior at home?

1	2	3	4	5	6	7
Worse			No change			Better

_____
_____
_____
_____

2. Did you see a change in your child's behavior that we had you monitor?

1	2	3	4	5	6	7
Worse			No change			Better

_____
_____
_____
_____

3. How was your overall experience of participating in this study?

1	2	3	4	5	6	7
Negative			Indifferent			Positive

_____
_____
_____
_____

4. Do you believe that your child benefited from participating in the study?

1	2	3	4	5	6	7
No			Somewhat			Yes

_____
_____
_____
_____

5. What were the pro's of using the classroom intervention/rules within your classroom?

6. What were the con's of using the classroom intervention? What would you suggest to modify?

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