Self-Control Training in Young Children

Laura Kay Murray

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SELF-CONTROL TRAINING IN YOUNG CHILDREN

by

Laura Kay Murray

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
June 2002
The incidence of conduct and behavioral disorders is steadily on the rise. Externalizing problems in the preschool years are considerable predictors of problems in later childhood, and even adulthood. There is a growing need for effective prevention programs for young children that can be implemented in school environments. Prevention efforts with young children often focus on self-control training for the reduction of impulsive behaviors. Impulsivity is an early presenting behavior pattern that can lead to a variety of disorders. The present study had two goals: (1) to measure the effects of a package intervention containing cognitive and behavioral treatment techniques on self-control in preschoolers, and (2) to use both cognitive and behavioral outcome measures to demonstrate where the changes, if any, would be most clearly seen.

Thirty-one 4-year-old children in a preschool program for “at-risk” children were randomly assigned to a treatment or control group. The treatment group received a five-week self-control training program that incorporated cognitive and behavioral techniques. Dependent measures were assessed before and after intervention, and included Conners’ Rating Scales (CPRS, CTRS), Self-Control Rating Scale (SCRS), Matching Familiar Figures Test, classroom behavior observations, and a waiting task.
The treatment group showed improvement on the CPRS and the SCRS-teacher report. Many outcome measures showed significant changes from pre- to post-intervention that did not differ across groups.

This cognitive-behavioral package intervention had a positive impact on widely used and well validated rating scale measures of impulsive behavior in preschool children. Cognitive-behavioral interventions such as this may be an effective prevention strategy to avert future maladaptive behaviors.
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16

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>METHODS</td>
<td>8</td>
</tr>
<tr>
<td>Participants</td>
<td>8</td>
</tr>
<tr>
<td>Setting</td>
<td>9</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>9</td>
</tr>
<tr>
<td>Procedure</td>
<td>13</td>
</tr>
<tr>
<td>RESULTS</td>
<td>17</td>
</tr>
<tr>
<td>Preliminary Analyses</td>
<td>17</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>30</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>A. Literature Review</td>
<td>39</td>
</tr>
<tr>
<td>B. HSIRB Approval</td>
<td>76</td>
</tr>
<tr>
<td>C. Consent Forms</td>
<td>78</td>
</tr>
<tr>
<td>D. Michigan At-Risk Criteria</td>
<td>82</td>
</tr>
<tr>
<td>E. Master Data Sheet</td>
<td>84</td>
</tr>
<tr>
<td>F. MFFT Data Form</td>
<td>86</td>
</tr>
</tbody>
</table>
Table of Contents—Continued

G. Baseline Individual Session #1 ................................................................. 89
H. Baseline Individual Session # 2 ............................................................ 92
I. Behavioral Coding Form ................................................................. 95
J. Objective Data Sheet ........................................................................... 97
K. Review Session Sheet ................................................................. 99

REFERENCES .......................................................................................... 101
LIST OF TABLES

1. Mean, Standard Deviations, Kurtosis and Skewness for Dependent Measures at Pre-Intervention ................................................................. 18

2. Demographic Characteristics of the Full Sample (N=31) ................................................. 19

3. Group Means, Standard Deviations, and F Values for Treatment and Non-Treatment Groups on Outcome Measures .................................................. 21
LIST OF FIGURES

1. Conners' Parent Rating Scale ................................................................. 23
2. Self-Control Rating Scale - Parent .......................................................... 23
3. Conners' Teacher Rating Scale ............................................................... 24
4. Self-Control Rating Scale-Teacher ......................................................... 25
5. Matching Familial Figures Test-Errors ................................................... 26
6. Matching Familial Figures Test-Latency ................................................ 26
7. Aggressive Behavior .............................................................................. 27
8. Off-Task Behavior ................................................................................ 27
9. Talking Out of Turn .............................................................................. 28
10. Waiting Task ...................................................................................... 29
INTRODUCTION

The incidence of conduct and behavioral disorders among children and adolescents is steadily on the rise, approximating 1.3 to 3.8 million cases (Kazdin et al., 1993). A growing body of research suggests that internalizing and externalizing problems in the preschool years are considerable predictors of problems in later childhood, and even adulthood (e.g., Campbell & Ewing, 1990; Egeland, Pianta, & Ogawa, 1996; Fischer, Rolf, Hasazi, & Cummings, 1984; Kazdin, Mazurick, & Bass, 1993; Lavigne, Arend, Rosenbaum, Binns, Kaufer-Cristoffel, Gibbons, 1998; Rose, Rose, & Feldman, 1989; Walker, Colvin, & Ramsey, 1995). Due to many economic and social factors, there has been little development of effective, long-term prevention programs (Kamps & Tankersley, 1996). However, without prevention programs, early problems can lead to serious behavioral disorders with treatment costs averaging $50,000 per year for out-of-home placement (Epstein et al., 1993). Mesman & Koot (2001) suggest that early detection and prevention efforts for child psychopathology may be most cost effective if they are primarily aimed at detection and treatment of early indicators of child psychopathology.

Mental health professionals have identified some key features in effective prevention programs. According to Kamps and Tankersley (1996), prevention is most effective when early intervention is applied to young children, before maladaptive behavior patterns have become firmly entrenched. Prevention programs
must also include involvement of the parents and modification of other family variables. Another step is to build self-management skills to support maintenance and generalization of appropriate behavior (Kamps & Tankersley, 1996). In addition, as children receive care and education outside the home environment, school interventions are a critical component of effective prevention programs (Boyle & Offord, 1990).

Prevention efforts with young children often focus on reduction of impulsive behaviors. Impulsivity is a multi-dimensional construct generally understood as a deficiency in inhibiting behavior in response to situational demands (Barkley, 1998). Some researchers define impulsivity as a choice or enduring preference for a less valuable, but more immediate reward over a more preferred, but delayed reward (Ainslie, 1975; Logue, 1995; Mischel, Shoda, & Rodriquez, 1989; Rachlin & Green, 1972). These qualities of impulsivity are exemplified by an individual’s tendency to respond quickly to situations without waiting for instructions or considering any potentially negative or dangerous consequences. Impulsive behaviors tend to be frequent and long standing (American Psychological Association, 1994), and impair social functioning, school performance, and interpersonal relations (Barkley, 1998). Although impulsivity is a core feature of attention deficit hyperactivity disorder (ADHD), it is also a precursor for other disorders, including eating disorders, antisocial personality disorder, and borderline personality disorder (American Psychological Association, 1994; Brownell & O’Neil, 1993; Farrington, Loeber, & Van Kammen, 1990; Satterfield, 1978). Maladaptive aggressive behavior and related
disorders such as oppositional defiant disorder and conduct disorder are also associated with deficits in impulse control (Coccaro, Siever, Klar, Maurer, Cochrane, Cooper, Hohs, & Davis, 1989). Violent, aggressive behaviors also denote a deficiency in self-control and anger control skills (Whitfield, 1999). Impulsivity, therefore, can be seen as an early behavioral pattern that can lead to numerous and varied problems and disorders.

Due to the well-established connection between impulsivity and a range of clinical behavior problems, a number of researchers have devised and evaluated interventions to alter impulsivity (Barkley, 1998; Kendall & Braswell, 1985; Mischel, Ebbesen, & Zeiss, 1972; Schweitzer & Sultzer-Azaroff, 1988). Clinical interventions for impulsive behaviors often focus on self-control or self-management skills. Self-control is typically operationalized as a response pattern that produces larger, delayed reinforcers as opposed to alternative responding that produces relatively small, but immediate reinforcers (e.g., Logue, 1995). Thus self-control is conceptualized as a polar opposite of impulsivity and researchers have studied the determinants of self control and developed interventions to promote self control. In general, research has shown that (a) as the delay to the larger reward increases, self-control decreases (e.g., Mischel & Metzner, 1962; Schwarz, Schrager, & Lyons, 1983), and (b) subjects are more likely to wait for a larger, rather than a smaller, reward (e.g., Herzberger & Dweck, 1978). Research also shows that very young children are more apt to choose the smaller, more immediate reinforcers than older children (Miller, Weinstein, & Karniol, 1978; Mischel & Mischel, 1983; Sarafino, Russo, Barker, Consentino, &
Titus, 1982). Self-control is especially relevant in applied settings and particularly important in young children (e.g., Mischel et al., 1989). Furthermore, a child's ability to delay gratification is a significant predictor of adolescent and adult outcomes with regard to educational performance, social competence, risk behaviors, and coping with stress and frustration (Mischel et al., 1989; Shoda, Mischel, & Peake, 1990).

Some therapeutic interventions for helping children who evince poor self-control have incorporated elements of both cognitive therapy (e.g., self-instructional training, thinking aloud) and behavioral therapy (e.g., modeling, feedback, reinforcement) (Kendall & Braswell, 1985; Meichenbaum, 1975). From a cognitive perspective, children and adolescents with impulsivity problems show signs of maladjustment associated with the processing of information (Kazdin, 1988; Ronen, 1992). For example, many researchers have suggested that ADHD is mediated by a cognitive deficiency, causing failures in tasks that demand a "stop and think" response (Douglas, 1988; Kendall & Braswell, 1985; Meichenbaum, 1977). Meichenbaum & Goodman (1969) found that impulsive children exercise less verbal control over their motor behaviors and use covert speech in a less instrumental fashion than reflective children. Self-instruction training focuses on these deficits and has been shown to be effective in a number of reports (Douglas, Parry, Marton, & Garson, 1976; Kendall & Braswell, 1985; Meichenbaum, 1977; Meichenbaum & Goodman, 1971; Palkes, Stewart, & Freedman, 1972). Problem solving and self-directive cues to cognitively "slow down" or in some way increase the response latency have proved effective in treating impulsive children (see Hughes, 1988 for a
review). In contrast, other researchers have found limited success with self-instruction training in preschool populations (Billings & Wasik, 1985; Bornstein & Quevillon, 1976; Bryant & Budd, 1982).

In addition to cognitive training to treat impulsive behavior patterns, research also supports the use of behavioral interventions. Research demonstrates the effectiveness of response-cost contingencies, along with praise, for impulsive children in the classroom (e.g., DuPaul, Guevremont, & Barkley, 1992; Nelson, Finch, & Hooke, 1975; Rapport, Murphy, & Bailey, 1982). Praise is generally incorporated to reinforce appropriate behavior, but the use of response-cost contingencies has been more effective by comparison (McGoey & DuPaul, 2000; Pfiffner & O’Leary, 1987; Sullivan & O’Leary, 1990). The response-cost component prevents children from being rewarded for fast guesses. In addition to these behavioral contingencies, another method to reduce impulsive behavior is to gradually increase the delay interval to a larger reinforcer (e.g., Dixon et al., 1998; Ferster, 1953; Schweitzer & Sultzer-Azaroff, 1988). Studies show that children can learn to choose a larger, delayed reinforcer when the delay interval to the larger reinforcer starts at or near the same value as the delay to the smaller reinforcer and is gradually increased over successive trials (e.g., Walls & Smith, 1970; Schweitzer & Sultzer-Azaroff, 1988). The effectiveness of the incremental delay technique can be enhanced by requiring the participant to perform distracting activities such as talking or singing during the delay period (Grosch & Neuringer, 1981; Mischel et al., 1972). For example, Mischel et al., (1972) found that children were more likely to select the
self-control option when they were allowed to play with a slinky during the delay interval.

A number of literature reviews have examined the effectiveness of various cognitive and behavioral techniques in increasing self-control. Cognitive behavioral therapy (CBT) for children consists of a variety of techniques in which children are taught to use cognitive mediational strategies to guide and improve their behavior (e.g., Durlak, Fuhrman, & Lampman, 1991; Kendall, 1991). CBT combines elements of behavior therapy (e.g., modeling, feedback, reinforcement) with cognitive approaches (e.g., thinking aloud, problem solving) to modify underlying cognitions and thought processes, which in turn are thought to influence overt behavior (Mahoney, 1974; Meichenbaum, 1977). Several early reviews of CBT (Whalen, Henker, & Hinshaw, 1985; Abikoff, 1991) reported very limited empirically validated benefits of CBT. In contrast, more recent meta-analysis (Robinson, Smith, Miller, & Brownell, 1999) reported strong evidence for the efficacy of CBT in reducing hyperactivity, impulsivity, and aggression of children and adolescents in school settings.

Although most researchers agree that CBT is a promising intervention strategy for children (Dush, Hirt, & Schroeder, 1989; Gresham, 1985; Pearl, 1985; Urbain & Kendall, 1980; Whalen et al., 1985), there is also acknowledgement of mixed results across individual studies. Reviewers have emphasized the lack of agreement regarding subject, treatment, or methodological factors that mediate intervention effectiveness (Durlak et al., 1991). For example, CBT may be less effective for
children with clinical problems than for children with fewer difficulties (e.g., Kendall, 1985). Durlak et al. (1991) found that children’s cognitive developmental level moderates intervention effectiveness, showing an effect size two times as large for children at the formal operational level (ages 11–13) when compared with children at earlier developmental stages. These problems indicate the need for further empirical-clinical evaluation of self-control training (Karoly, 1977). Furthermore, literature reviews suggest that CBT may not be as effective with younger populations (Durlak et al., 1991). Thus, the study reported herein had two goals. One goal was to measure the effectiveness of a treatment package of cognitive and behavioral treatment techniques to train self-control skills in preschoolers. The second goal was to use both cognitive and behavioral outcome measures to demonstrate where the changes, if any, would be most clearly seen in a preschool population.
METHODS

Participants

Thirty-one 4-year-old children in a preschool program were studied. All children were considered “at-risk” by meeting at least two of the 24 risk factors developed by the State of Michigan (see Appendix E). These children had no prior formal education and were not enrolled in any other programs. The children were recruited using a survey through the local school system to determine if there were any 4-year-olds in the family. There was also an announcement in the local newsletter explaining the program and listing a contact telephone number.

Children were quasi-randomly assigned to morning or afternoon. Random assignment was utilized unless a parent had a conflict with school times or if bus pick-up was not possible. A total of four participants were excluded from the analyses because they moved prior to completion of the study. One male and one female from the morning class, as well as two females from the afternoon class were excluded. The final sample included a morning class consisting of 16 students (9 females, 7 males), and an afternoon class containing 15 students (6 females, 9 males). The Human Subjects Institutional Review Board approved this study, and parents signed a consent to participate in this program.
Setting

All procedures, observations, and data collection were performed in the preschool classroom of a program funded by a grant from the Michigan State Readiness Program. Two 2.5-hour classes met Monday through Thursday for 30 weeks from September 2000 to May 2001. The preschool educational program was based on the guidelines for developmentally appropriate practices for 4-year-olds that have been set up by the National Association for the Education of Young Children. It featured a curriculum based on real life experiences including monthly field trips and daily play.

Dependent Measures

Rating Scales

The effects of the intervention were assessed through two rating scales: (1) the Self-Control Rating Scale (SCRS) (Kendall & Wilcox, 1979), and (2) the hyperactivity items from the Connors’ Teacher Rating Scale-Revised Short Version (CTRS-RS) and Conners’ Parent Rating Scale-Revised Short Version (CPRS-RS) (Conners, Sitarenios, Parker, & Epstein, 1998).

The SCRS was designed to quantify parent and teacher perceptions of self-control in elementary school children and consists of 33 items: 10 pertaining to issues of self-control, 13 pertaining to impulsive characteristics, and 10 dealing with both of these areas. Each response is indicated on a 7-point continuum and summed, with

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higher total scores indicating increased self-control deficiencies. The mean score on the SCRS is approximately 100 (Kendall & Braswell, 1985). Research shows a test-retest reliability of 0.84 and an internal consistency of 0.98 for the SCRS (Kendall and Wilcox, 1979). SCRS scores have been demonstrated to be sensitive to the effects of cognitive-behavioral interventions (Kendall & Wilcox, 1980; Kendall, Pellegrini, & Urbain, 1981; Kendall & Braswell, 1982), and have been validated with performance measures of self-control (e.g., Matching Familiar Figures Test) and behavioral observations. In addition, Kendall & Zupan (1981) showed that SCRS scores correlate with observed classroom and testing session behavior, and distinguish normal children from those with poor self-control.

The hyperactivity scale of the Conners’ Scales (CPRS-RS and CTRS-RS) was used to measure the degree to which a child is restless, noisy, or tends to interrupt and disturb other children in the classroom. The CPRS-RS contains 27 items and the CTRS-RS contains 28 items comprising four factor scales including Oppositional, Cognitive/Inattentive, Hyperactivity, and ADHD. Each item is answered on a 0–3 scale with a mean score of 1.5 or higher accepted as indicative of hyperactivity (Barkley, 1981). This scale has been used in conjunction with other self-control measures in many research studies (e.g., Bloomquist, August, & Ostrander, 1991; Kendall & Wilcox, 1980), and research attests to the adequacy of these Conners’ scales in test-retest reliability (Barkley, 1981; Rutter, 1983). In addition, a recent study supported the validity of the CTRS-RS for use with urban preschool children (Fantuzzo, Grim, Mordell, McDermott, Miller, & Coolahan, 2001).
Task Performance Measures

The Matching Familiar Figures Test (MFFT) (Kagan, 1966) was used as a performance index of the extent to which an individual is reflective (i.e., slow and accurate) or impulsive (i.e., fast and inaccurate) in responding to test stimuli. The MFFT consists of 12 match-to-sample items in which the child is shown a picture of a familiar object and is asked to identify the identical picture from among six variants, shown simultaneously. Average latency to first response and total response errors were recorded. Studies using the MFFT have found that as normal children grow older, they develop longer response latencies and greater accuracy (Salkind & Wright, 1977). Conversely, children with clinical disorders characterized by impulsivity tend to respond more quickly and make more errors (Campbell, Douglas, & Morganstern, 1971). The MFFT has been useful in assessing impulsivity and evaluating cognitive-behavioral interventions (e.g., Bender, 1976; Kendall & Braswell, 1982; Meichenbaum & Goodman, 1971). In addition, research has demonstrated that the MFFT has successfully differentiated hyperactive from non-hyperactive subjects (Homatidis & Konstantareas, 1981; Kuehne, Kehle, & McMahon, 1987).

Waiting Task

Each child was individually presented with a choice of a smaller, immediate reward or a larger, more delayed reward (e.g., 5 M&M candies now, or a 20 M&M candies now).
candies in 5 minutes). Rewards were based on verbal reports from the child of their preference from among a range of potential rewards. The following statement was read to each child to explain the task, “I’m going to give you a choice. You said that you liked ___ (their preferred treat), so you can have 5 of those at any time you want, or you can wait 5 minutes, when we are done with our activity, and you will get this bag of 20. If you would rather have the 5 ___ sooner, just let me know by raising your hand like this (give an example) when you would like them. If you don’t say that you want them, I will give you the bigger reward of 20 ___ after 5 minutes when we are done. Do you understand?” The children were asked to participate in a brief activity about anger during the waiting period. The first activity showed a picture of an angry man and the question was asked, “What makes you mad?” The second activity included a picture of an angry man with steam coming from his head with the question, “What do you do when you are mad?” The child’s responses were recorded during both these activities.

Objective Classroom Data

The total number of “time-outs” given, the loss of privileges on a daily basis, and total number of trips to the principal’s office were recorded for the two weeks prior to the start of the self-control training, throughout the training, and for two weeks following the training. Together, a trained researcher and the teacher would record the number of events (i.e., time outs, loss of privileges, trips to the principal’s office) that took place during each morning and afternoon.
Behavioral Observations

Structured behavioral observations were used to provide a direct sample of the child's behavior at school. Trained graduate and undergraduate researchers performed behavioral observations for each individual child for one 6-minute time period per week during "carpet time" when the children were sitting and listening to a story. Observations were performed using 30-second partial interval recording based on three different behaviors commonly described as impulsive. A second observer was present for at least 20% of the sessions to assess interobserver reliability.

One behavior was "Talking Out of Turn," defined as "any verbalizations that occur without prompting or permission from an adult." The second observation category was "Aggressive Behavior," operationally defined as "attempts or successes in assaulting peers or staff." The third recorded behavior was "Off-Task" behavior, defined as "any action apart from the regular classroom activity."

Procedure

Baseline

All subjects were administered the pre-intervention measures, and the parent and teacher forms (i.e., Conners and SCRS) were completed. A trained member of the research team administered the MFFT on an individual basis to each student. Upon completion of the test, each child was offered a choice between five different food reinforcers (M&Ms, Skittles, Doritos, Goldfish, or raisins). The child was
allowed to select and consume one of the above items. For the duration of the experiment the selected item was considered to be that child’s preferred food choice. Objective data on the number of privileges lost, time-outs, or trips to the office were collected from both classrooms for two weeks prior to the intervention phase. Observational data were recorded for each child once a week, for a total of two baseline observations for each participant. The “waiting task” was administered during one individual session per week for a total of two baseline measures. The parents and teacher completed the SCRS and the Conners’ Rating Scale.

**Intervention**

On Mondays of five consecutive weeks, the primary investigator spent approximately 20 minutes with the morning class to present one of the five new skills that were conceptually related to self-control. Four lessons were taken from a clinician’s book entitled, “Ready-to-Use Social Skills Lessons and Activities: for Grades PreK-K” (Begun, 1995). The four lessons from this book were entitled, “Ability to sit and listen quietly,” “Learning to take turns,” “Remembering to walk—not run—in the classroom,” and “Fully understanding the situation before taking action.” An additional lesson on “Waiting” was designed by the primary investigator based on the behavioral definition of impulsivity and self-control and related research (e.g., Mischel, et al., 1972). Each lesson included an introduction, description of skill components, modeling of the skill, rehearsal, practice, independent use, and a suggestion for continuing use in the classroom.
During the following three days of each week, each child in the treatment group had a brief individual session with a trained researcher wherein the lesson for the week was reviewed. In addition, a role-play was performed to ensure that the child understood the lesson and could respond appropriately with an example. Each child’s skill level was rated “poor” if they could state and demonstrate in the role-play only 2 of 5 skill components, “good” if they could state 3–4/5 skill components, or “exceptional” if they could state 5/5 skill components. Any child found to have poor skill level was given another review session on that lesson. During each individual session, the child participated in the waiting task. Researchers were also present in the afternoon class (the control group) in order to increase the similarity between the classrooms.

**Post-Intervention Measures**

After the last intervention week, the post-intervention measures were collected, including the SCRS, CPRS-RS, CTRS-RS, and MFFT. Behavioral observations were also collected and the waiting task was performed again. After completion of post-intervention measures, the afternoon class received all five intervention lessons for ethical reasons.

**Data Analysis Strategy**

The sample size for this experiment was calculated by determining the effect size from similar experiments. In a study by Kendall and Wilcox (1980), the effect
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16

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RESULTS

Preliminary Analyses

Variable Distribution, Missing Data, and Assumptions

Before proceeding to ANOVAs, I assessed kurtosis and skewness to ensure that variable distribution approached normality. Means, standard deviations, kurtosis, skewness, and F-values for each outcome variable are presented in Table 1. Overall, skewness and kurtosis were minimal, thus allowing us to proceed with further analyses. In addition, we also assessed the homogeneity of variance assumption. In order to proceed with ANOVA, it is expected that the variability in the dependent variable is the same at all levels of the independent variable. The Levene Test was performed to check the assumption that the variances of the treatment and control groups on each of our dependent variables were not significant. Results showed two outcome measures that did not meet the assumption. However, neither of these tests showed significance.

Chi-square analyses were performed comparing the treatment and control groups with regard to race and gender, to assess the comparability of the groups before intervention. There were no significant differences between the groups with regard to race or gender (see Table 2). ANOVAs were used to compare the treatment and control groups on pre-intervention dependent measures including CPRS-RS.
# Table 1

Mean, Standard Deviations, Kurtosis and Skewness for Dependent Measures at Pre-Intervention

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<td></td>
<td>M</td>
<td>SD</td>
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<tr>
<td>Conners' Parent Rating Scale</td>
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<tr>
<td>Hyperactivity</td>
<td>8.25</td>
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<tr>
<td>Conners' Teacher Rating Scale</td>
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<tr>
<td>Hyperactivity</td>
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<td>Self-Control Rating Scale</td>
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<td>Teacher</td>
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<td>Matching Familiar Figures Test</td>
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<tr>
<td>Errors</td>
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<td>4.48</td>
<td>6.36</td>
<td>12.03</td>
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<tr>
<td>Waiting Task</td>
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<tr>
<td>Task #1</td>
<td>3:56.67</td>
<td>1:55.31</td>
<td>1.00</td>
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<tr>
<td>Task #2</td>
<td>3:24.52</td>
<td>1:53.03</td>
<td>-0.827</td>
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<tr>
<td>Talking</td>
<td>13.10</td>
<td>11.38</td>
<td>-0.616</td>
</tr>
<tr>
<td>Aggressive</td>
<td>2.77</td>
<td>5.04</td>
<td>8.37</td>
</tr>
<tr>
<td>Off-task</td>
<td>58.76</td>
<td>16.52</td>
<td>-0.501</td>
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K = Kurtosis; S = Skewness; Behavior Observations are percentages; *p<0.05
Table 2
Demographic Characteristics of the Full Sample (N=31)

<table>
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<tr>
<th></th>
<th>Treatment Group (n=16)</th>
<th>No Treatment Group (n=15)</th>
<th>Test Statistic (Chi Square)</th>
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</thead>
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<td><strong>Ethnicity</strong></td>
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<tr>
<td>Caucasian</td>
<td>9 (29.03%)</td>
<td>11 (35.48%)</td>
<td>$\chi^2(1, 31) = 0.98$</td>
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<tr>
<td>Non-Caucasian</td>
<td>7 (22.58%)</td>
<td>4 (12.90%)</td>
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</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>7 (22.58%)</td>
<td>9 (29.03%)</td>
<td>$\chi^2(1, 31) = 0.81$</td>
</tr>
<tr>
<td>Female</td>
<td>9 (29.03%)</td>
<td>6 (19.35%)</td>
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</tbody>
</table>

*p<0.05

(hyperactivity scale), CTRS-RS (hyperactivity scale), SCRS (teacher and parent), MFFT (mean latency and errors), each occurrence of the waiting task, and the three behavioral observation categories. There were no significant differences on any of the above dependent measures when comparing the treatment and control group at pre-intervention. In addition, the number of “trips to the office,” “time-outs,” and “loss of privileges” were similar across groups at baseline.

Interobserver Reliability

Interobserver agreement on the structured behavioral observations was calculated separately for each behavior by dividing the number of agreements by the number of agreements plus disagreements of both observers and multiplying by 100. An agreement was scored if both observers scored the occurrence of a specified
behavior in the same interval and also if both observers scored the nonoccurrence of a
specified behavior in the same interval. Disagreements were scored if an observer
scored an occurrence and the other observer scored a non-occurrence of a behavior.
The agreement for the observation of Aggressive Behavior was 100% for both
morning and afternoon classes. For the Talking out of Turn behavior data,
interobserver agreement percentages ranged from 83% to 100% (mean for morning =
97%; mean for afternoon = 96%). The agreement for the observation of Off-task
Behavior ranged from 75% to 100% (mean for AM = 91%; mean for PM = 93%).

Intervention Impact

The effects of intervention were evaluated by repeated measures 2 (Treatment:
treatment vs. control) x 2 (Periods: pre vs. post) ANOVAs, for each outcome
measure. Table 3 presents the means and standard deviations for the outcome
measures at pre-test and post-test for the treatment group (morning class) and control
group (afternoon class).

Parent ratings (CPRS-RS, SCRS)

Analyses of the Hyperactivity Scale of the Conners’ Parent Rating Scale
showed a significant Periods effect, F(1,29) = 8.25, p < 0.01 and a significant Periods
X Treatment interaction, F(1,29), = 4.02, p= 0.05 (See Figure 1). This suggests that
both groups’ hyperactivity scores decreased from pre- to post-intervention, yet only
the treatment group showed statistically significant improvement. Analyses of the

20
<table>
<thead>
<tr>
<th></th>
<th>Treatment Group (n=16)</th>
<th>Non-Treatment Group (n=15)</th>
<th>Repeated ANOVAs F</th>
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<tr>
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<td>Pre-</td>
<td>Post-</td>
<td>Pre-</td>
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<td><strong>Conners’ Parent Rating Scale</strong></td>
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<tr>
<td>Hyperactivity Scale</td>
<td>M</td>
<td>8.25</td>
<td>5.25</td>
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<tr>
<td></td>
<td>SD</td>
<td>4.35</td>
<td>4.17</td>
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<td><strong>Conners’ Teacher Rating Scale</strong></td>
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<tr>
<td>Hyperactivity Scale</td>
<td>M</td>
<td>3.87</td>
<td>1.62</td>
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<tr>
<td></td>
<td>SD</td>
<td>5.76</td>
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<tr>
<td><strong>Self-Control Rating Scale</strong></td>
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<td>Parents</td>
<td>M</td>
<td>113.62</td>
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<td>Teachers</td>
<td>M</td>
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<td></td>
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<td>51.73</td>
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<tr>
<td><strong>Matching Familiar Figures Test</strong></td>
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<td>Errors</td>
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<td></td>
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Table 3 (Continued)

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<th>Repeated ANOVAs F</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Pre-</td>
<td>Post-</td>
</tr>
<tr>
<td>Waiting Task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trial #1</td>
<td></td>
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</tr>
<tr>
<td>M</td>
<td>3:56.67</td>
<td>5:00.00</td>
</tr>
<tr>
<td>SD</td>
<td>1:55.31</td>
<td>0:00.00</td>
</tr>
<tr>
<td>Trial #2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>3:24.52</td>
<td>5:00.00</td>
</tr>
<tr>
<td>SD</td>
<td>1:53.03</td>
<td>0:00.00</td>
</tr>
<tr>
<td>Behavior Observations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talking Out of Turn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>13.10</td>
<td>9.63</td>
</tr>
<tr>
<td>SD</td>
<td>11.38</td>
<td>7.15</td>
</tr>
<tr>
<td>Aggressive Behavior</td>
<td></td>
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</tr>
<tr>
<td>M</td>
<td>2.77</td>
<td>.616</td>
</tr>
<tr>
<td>SD</td>
<td>5.04</td>
<td>1.43</td>
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<tr>
<td>Off-Task Behavior</td>
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<tr>
<td>M</td>
<td>58.76</td>
<td>35.59</td>
</tr>
<tr>
<td>SD</td>
<td>16.52</td>
<td>15.13</td>
</tr>
</tbody>
</table>

Note: Latency data is (m:s.s.s), * p < 0.05, ** p < 0.01, *** p < 0.001.
SCRS yielded a significant Periods effect, $F(1,29) = 14.39, p<0.01$ and a significant Treatment effect, $F(1,29) = 5.10, p=0.03$ (See Figure 2). From pre- to post-intervention, both groups improved, but the control group showed statistically higher scores than the treatment group at both pre- and post measures.
**Teacher ratings (CTRS-RS, SCRS)**

Analyses of the Hyperactivity Scale of the Conners' Teacher Rating Scale resulted in a significant Periods effect, $F(1,29) = 9.95$, $p<0.01$, indicating that both groups showed a decrease in symptoms from pre- to post-intervention (See Figure 3).

Figure 3. Conners' Teacher Rating Scale.

Analyses of the SCRS yielded a significant Periods effect, $F(1,29) = 17.01$, $p<0.01$ and a significant Periods X Treatment interaction, $F(1,29)$, $p<0.01$ (See Figure 4). From pre- to post-intervention, both groups showed greater self control, yet only the treatment group showed significant improvement at post-intervention measures.
Subject performance (MFFT, Behavior Observations, Waiting Task)

Analyses of the MFFT error scores showed no significant effects (See Figure 5). Both groups showed almost no change in the number of errors made from pre- to post-intervention. MFFT latency scores showed a significant Periods effect, $F(1,29) = 4.55, p=0.04$, indicating that both groups increased their latency-to-response from pre- to post-intervention (See Figure 6). Analyses of the behavioral observations yielded a significant Periods effect for Aggressive and Off-task Behavior, $F(1,29) = 3.89, p=0.05$ (See Figure 7), $F(1,29) = 45.74, p<0.001$ (See Figure 8), respectively. This indicates that both groups showed a decrease in Aggressive and Off-task Behavior from pre- to post-intervention. No significant effects were found for
Figure 5. Matching Familial Figures Test-Errors.

Figure 6. Matching Familial Figures Test-Latency.
Figure 7. Aggressive Behavior.

Figure 8. Off-Task Behavior.
Talking out of Turn (See Figure 9). The treatment and control group demonstrated similar behavior patterns for Talking out of Turn at pre- and post-intervention.

Analyses of the Waiting Tasks indicated a significant Periods effect, $F(3,29) = 14.45$, $p<0.01$ and a significant Treatment effect, $F(1,29) = 10.58$, $p<0.01$ (See Figure 10). These results indicate that both groups showed increased waiting time from pre- to post-intervention, and that the treatment group was able to wait for a longer period than the control at both pre- and post-intervention.

Figure 9. Talking Out of Turn.
Figure 10. Waiting Task.
DISCUSSION

The present study examined the effectiveness of self-control training for preschool children. One goal was to measure the effectiveness of a combination of both cognitive and behavioral treatment techniques to train self-control in preschoolers. This study also sought to use both cognitive and behavioral outcome measures to examine both overt and covert changes in impulsive behavior patterns. It was hypothesized that (a) the children exposed to the self-control training would demonstrate significant improvements on the dependent measures compared to the performance of the control group, and (b) preschool children would demonstrate more changes in behavioral measures as opposed to cognitive measures due to their developmental level. Overall, the results showed significant improvement in the treatment group as measured by the CPRS-RS and the SCRS-teacher report, but no statistically significant effects on any of the other dependent variables as a function of the package intervention.

The Conners' Rating Scales hyperactivity scale and the SCRS yielded different results when comparing the parent report and teacher report. Statistically significant results were found for the CPRS-RS and the SCRS-teacher. These scales each showed virtually identical pre-intervention ratings for the treatment and control groups, little change in the control group at post-intervention, and a large improvement in the treatment group. In contrast, the CTRS-RS and the SCRS-parent
showed results with differences between groups at pre-intervention measures and an improvement in both groups at post-intervention. One explanation for these observations could be the difference in the Conners' scales versus the SCRS. In particular, the parents might observe more general changes in the child's hyperactive behavior, as opposed to the teachers who might observe specific changes that are directly related to the skills used in training. Different informants observing children under varying conditions and settings often disagree on the presence and severity of problem behavior (e.g., Achenbach, McConaughy, & Howell, 1987). This suggests that children's behavior is sensitive to the environmental context. They behave differently at school than at home, possibly as a result of differing establishing operations, antecedent variables, and response contingencies that characterize each environment. It is also interesting to note that the mean ratings by the teacher indicated less hyperactive behavior than the ratings by the parents. Preschool teachers are educated in child development and may have more realistic expectations of children. The teacher in this study had years of experience with at-risk children and may have been desensitized to the amount of impulsive behavior a child displays. It is also important to note how parental functioning and family stress contribute to ratings of child deviance (e.g., Forehand, Lautenschlager, Faust & Graziano, 1986; Mash & Johnson, 1983). In view of the fact that these were at-risk children, it is likely that the parents were under a great deal of stress. Research shows that parents under stress may report more child problems because of reduced tolerance for child
misbehavior and because of increased irritation by the adverse family conditions (e.g., Jensen, Xenakis, Davis, & Degroot, 1988; Kolko & Kazdin, 1993).

Lack of agreement between assessment sources (parent and teacher) in this study was not unexpected. Although the diagnosis and assessment of clinical dysfunction in children requires the use of multiple adult sources, previous reports often reveal little correspondence or agreement between informants (Kolko & Kazdin, 1993). For example, when emotional or behavioral problems of children are rated using identical or similar measures, the mean correlation between pairs of informants (parents, teachers, and children) is quite low (0.2 to 0.3) (Achenbach, McConaughby & Howell, 1987). Research shows that childhood symptomatology can be very different in various settings such as home and school, and not all adults accurately report (e.g., Hutchinson et al., 2001). In the present study, the parents were blind to treatment conditions while the teacher was not. This may have resulted in a bias in reporting, such that the teacher may have been differentially sensitive to any improvements in self-control skills for the experimental group. Although it may also be possible for the teacher to interact differently with the control group, the researchers feel this did not occur in the present study. Numerous trained researchers observed both classrooms and noted that the treatment group received frequent references to the self-control lessons while the afternoon received none.

The MFFT results yielded only minor improvement in errors and latency time for both groups. The treatment group improved slightly with a reduction of errors and a very small increase in latency. The control group actually increased in errors
and also increased in latency time. This test appeared to be a difficult task for this group of young children as exemplified by generally low accuracy scores for most of the participants. Examiners had the impression that many children were randomly pointing to pictures. Overall, recorded latency times were short, and many children seemed to be distracted during the latency period rather than thoughtfully looking at their picture choices. The MFFT has been used primarily to assess self control (or impulsivity) in school-age children (e.g., Kendall & Wilcox, 1980) and may be less useful as an outcome measure for preschoolers. Other reports suggest that CBT may be most effective for preadolescents and somewhat effective for children aged 5 to 11 (e.g., Durlak et al., 1991). These studies suggest that covert cognitive skill advancement in young children may be difficult to assess as an outcome measure in young children.

The Waiting Task showed an improvement over time in both the treatment and control group, but the treatment group demonstrated consistently longer waiting times. All the children in the treatment group were waiting the full five minutes by Review Session Three of the Intervention Phase, showing stable performance through post-intervention measures. These results are consistent with previous reports that demonstrate that young children can learn to wait for a more preferred, but delayed reward (e.g., Dixon et al., 1998; Schweitzer & Sulzer-Azaroff, 1988). The results of the present study as well as those of previous reports support the use of contingency shaping with young children as a method to increase self-control (e.g., Ferster, 1953; Mazur & Logue, 1978; Schweitzer & Sulzer-Azaroff, 1988). The present study also
required engagement in an activity during the wait period, which may have prevented impulsive behavior (e.g., Grosch & Neuringer, 1981; Mischel et al., 1972).

Although there are some measures with significant improvement in the treatment group versus the control group, a number of the dependent measures showed significant changes from baseline levels that did not differ across groups. For example, as discussed, the CTRS-RS, the SCRS-parent, and the three behavioral observations showed improvements for both the treatment and control group from pre- to post-intervention. One reason that both groups showed improvement when comparing pre-intervention to post-intervention measures is that the skills learned in preschool might increase all of the students’ ability to perform the study tasks. Quality preschool programs have long been shown to promote school readiness and other favorable outcomes in at-risk children (Barnett, 1992; Guralnick, 1998; Karoly, Greenwood, Everingham, Hoube, Kilburn, Rydell, Sanders, & Chiesa, 1998; Zigler, Taussig, & Black, 1992). For example, children are likely to learn the rules of the classroom and some self-management through the everyday structure and discipline of a preschool setting.

The current study has a number of limitations. First, the reliability of informants was difficult to assess because only one teacher completed all forms. In addition, significant differences were observed between parent and teacher report. This leads to concerns as to whether child behaviors differed across school and home environments or whether differing rating criteria for parents and teachers was the primary determinant of the discrepant ratings. Secondly, multiple outcome measures
were used. Due to the use of multiple outcome measures and small sample size, it is expected that the change in some of the outcome measures would not achieve statistical significance. The outcome measures that were selected in this study covered a variety of domains in hopes of capturing a range of possible outcomes produced by this intervention. In particular, this study sought to assess both cognitive and behavioral variables. Multiple outcome measures also allowed us to examine the specific areas of improvement and how different informants would gauge these changes. Research suggests disadvantages to using multiple outcome measures, however, such as low statistical power and difficulty interpreting the results in these studies (e.g., Cisler & Zweben, 1999; Conners et al., 2001). A single, key outcome measure produces greater statistical power that is necessary to detect multiple effects. One outcome measure also creates ease in interpreting the results. In addition, one composite score may be more meaningful when interventions have multiple effects, when the presentation fluctuates from day to day, or when the reports vary between observers (Hallstrom, Litwin, & Weaver, 1992; Liu, Li Wan Po, Blumhardt, 1998; Turner, Beidel, Wolff, 1994). Thus, the use of multiple measures, especially with a small sample size, may have contributed to some outcomes not reaching statistical significance.

Thirdly, this study was conducted in a preschool classroom setting, and like most preschools, the class size was relatively small. A larger sample size might reveal other statistically significant effects of intervention. Moreover, potentially significant intervention effects may have been masked due to the limited power in the
statistical analyses resulting from small sample size. Another approach to achieve statistically significant effects of intervention might be to screen for children with high levels of impulsive behavior. Finally, this study incorporated only pre- and post-intervention measures. In children, ongoing treatment over longer periods may be necessary to ensure more durable effects and greater improvements. It is possible that self control skills require significant training to reach a mastery level of performance and, like any behavior, might also require an environmental context that supports self control skills (e.g., models, instructions, reinforcement contingencies) in order to assure consistent application of those skills. Future research should evaluate longitudinal effects and longer social interventions as might be necessary for prevention of maladaptive behaviors and maintenance of prosocial behaviors (Dodge, 1990; Walker, 1995).

This study also had a number of strengths. First, it was a primary prevention effort. Research repeatedly states the importance of early intervention for children who are at-risk for developing emotional and behavioral disorders (e.g., Kamps & Tankersley, 1996). This report was designed to measure the effects of early intervention in preschool children. As suggested by developmental models of psychopathology, the early signs of emotional and behavioral disorders are more effectively treated in early childhood, rather than waiting until full-blown disorders appear in later years (e.g., Coie et al., 1993; Forness et al., 2000). Second, this study used an efficient five-week intervention that teachers could easily incorporate with daily preschool activities. The teacher in the study stated numerous times that she
thought the intervention was easy and useful, and is reportedly continuing use of it. Third, the present study focused on general self-management skills and not a specific treatment for a specific disorder (Kamps & Tankersley, 1996). This can be described as a “universal intervention” directed at all children (Coie et al., 1993). Self-control skills are useful for all children and have been effective in reducing impulsive behaviors that can lead to various disorders if untreated. Fourth, this study has solid external validity. It was based in a real-world setting with all the unpredictability of an average preschool. A final strength to be noted is the school setting in which this study took place. This study examined the effectiveness of an intervention that could be easily integrated into preschool programs. Research consistently shows that schools are critical to effective treatments (e.g., Coie et al., 1993; Hughes, 1988). Interventions integrated into educational programs are also economical because all children have access to school and teachers. Providing interventions to all children also minimizes labeling effects that often harm children when they are pulled out of the classroom for special help. In addition, although not all children demonstrate impulsive behavior, better skills in areas such as self-control can help reduce risk factors for maladaptive behavior (e.g., Coie et al., 1993).

Given these limitations and strengths, there are many directions in which future research might proceed. A refinement of the definition of impulsivity as well as improved assessment tools may lead to clearer results in future studies. Future studies should continue efforts to develop early interventions for at-risk children, focusing on general skills that can potentially reduce a wide range of future
maladaptive behaviors. There is also a need for social validation by both parents and teachers on the effectiveness of self-control interventions. In addition, future studies should assess intervention integrity and determine if teachers are able to perform these types of interventions without disrupting classroom educational activities. Finally, the present study of preschool children detected greater changes in the behavioral measures, as opposed to the cognitive measures. This finding is consistent with prior research that suggests that children at more advanced levels of cognitive functioning benefit more from CBT (Copeland, 1981; Kendall, 1985; Kendall & Braswell, 1985; Whalen et al., 1985). In the future, it would be useful to measure the cognitive level of the children prior to intervention in order to correlate their cognitive level with the nature of their response (be it behavior or cognitive changes, or both) to intervention.

Given the dearth of empirically-validated treatment interventions for young children that focus on self-control skills, and research suggesting that impulsivity can lead to future psychopathology, it is important to develop effective self-control treatments (DuPaul, McGoy, Eckert, & Vanbrakle, 2001). The present study suggests that a cognitive-behavioral self-control intervention with preschoolers may influence behavior in a positive manner. This finding is important because the intervention was designed as a primary prevention effort with young children, and was performed within an educational setting.
Appendix A

Literature Review
CHAPTER 1: RATIONALE

Primary Prevention

Primary prevention efforts have been encouraged since the beginning of the community mental health movement in the United States. Three decades ago, an explicit set of guidelines for the control of mental disorders was proposed to health and mental health planners (Gruenberg, 1957). These guidelines affirmed that first priority should be given to preventing what is preventable, second priority to terminating what can be terminated, and third priority to reducing the disability from those disorders that have not been prevented. In 1984, the National Mental Health Association established the Commission on the Prevention of Mental-Emotional Disabilities to review the status of prevention within the mental health field. The commission concluded that based on existing knowledge, availability of existing organizational structure, and urgency of need, four areas have immediate potential for preventing mental/emotional disabilities: (1) wanted and healthy babies, (2) prevention of adolescent pregnancy, (3) school-based competency-building programs, and (4) support, information, and training for those in situations of extreme stress. Most of these efforts are focused on primary prevention and the reduction of dysfunction in childhood and adolescence (Lally, Mangione, & Honig, 1988).

Sound primary prevention efforts need to fulfill some basic requirements. Cowen (1982, 1987) suggests that: (a) they deal with well people prior to the onset of maladjustment, (b) they are directed to groups, not individuals, (c) they use educational and skill-building approaches, not healing or repairing modalities, and (d) they represent a planful goal, based on theory or research, of promoting psychological health or preventing maladaptation. An underlying assumption in this, based on a developmental framework of psychopathology, is that early signs or symptoms of psychopathology are detectable and more effectively treated in early childhood rather than waiting until full-blown disorders appear in later years (Coie, et al., 1993). Coie et al. (1993) further suggests that the first stage of primary prevention efforts are low intensity “universal interventions” that can be integrated with day-care, preschool, or other early childhood environments and directed at all children in those settings. These “universal interventions” are described as an economical means to minimize labeling effects and risk factors, while maximizing protective factors (Coie et al., 1993).

A highly encouraged component of primary prevention efforts is involvement of schools. The Commission on the Prevention of Mental-Emotional Disabilities (1987) specifically expressed the critical role of the school in preventing emotional/mental disabilities by stating: “The Commission is especially concerned that the nation’s schools have the mental health resources and expertise they need. Mental health professionals bear a special responsibility to help school administrators and teachers develop competent individuals. Competence and mental health are
inseparable. Children must learn academic skills to succeed and feel confident; they must learn how to get along with others to succeed in school and later in life. The school’s job is enormous and critical. Teaching children interpersonal skills and providing health education, including coping skills and sex education, are as essential as teaching reading, writing, arithmetic, and science” (p. 39). Hughes (1988) goes on further to state that schools offer the best opportunity for population-focused prevention efforts for several reasons. First, programs can be implemented in a cost-effective manner because the organizational structure necessary to support such programs already exists. Second, schools can offer programs that are less intrusive and stigmatizing because they serve a large cross-section of children. Third, schools have the ability to intervene at developmentally critical times such as preschool and kindergarten and transitions to middle school or high school. Fourth and finally, because the staff at schools have such extensive contact with the children, they are a vital component in early detection of children’s problems.

Primary prevention programs appear to be a major challenge in most service delivery systems for children with emotional or behavioral disorders (Beare & Lynch, 1986; Center & Obringer, 1987; Forness et al., 1999). First, recent research suggests that most children are not identified or treated until middle-to-late elementary school years. For example, one study found that diagnosis and appropriate intervention had not occurred until 5th grade, on the average, despite the fact that most caregivers identified serious social or emotional problems by the preschool years (Duncan, Forness, & Hartsough, 1995). Other studies have confirmed a time delay between problem onset and service delivery (Duchnowski et al., 1998). Even effective programs for primary prevention in mental health that do not begin until kindergarten entrance are considered too late in the developmental progression of psychopathology (Conduct Problems Prevention Research Group, 1992, 1996; Walker et al., 1996). Secondly, when service steps are made, they tend to be more focused on learning, rather than emotional or behavioral problems. For example, three studies found that schools placed two to three times more children, previously identified by research teams as having primary emotional or behavioral disorders, in learning disability programs rather than in placements for children with emotional disturbance (Cluett et al., 1999; Forness et al., 1998; Lopez et al., 1996). This misdirected or delay of intervention causes emotional or behavioral problems to become more severe, and increases the likelihood of secondary disorders. A lack of appreciation for the progressive nature of many emotional or behavioral problems, and the absence of genuinely preventive programs remains a serious obstacle.

Although research has demonstrated a need, and given guidelines for prevention programs, there is still a noticeable dearth of research on the specific effective prevention strategies (Bryant et al., 1999; Burchinal, Lee, & Ramey, 1989; Forness & Finn, 1993; Hoagwood & Erwin, 1997; Illback & Nelson, 1997; Knitzer, 1996; Yoshikawa & Knitzer, 1997). Kamps and Tankersly (1996) have reviewed the problems of determining effective mental health interventions for children in early
childhood programs and concluded that little research is available on effective programs that can be delivered by preschool teachers. For example, a recent meta-analysis of primary prevention in mental health found only a small handful of effect sizes on strategies for children from 2 to 7 years of age out of 177 studies (Durlak & Wells, 1997).

One example of success in primary prevention comes from researchers at Hahnemann University (Spivack, Platt, & Shure, 1976). They showed that clinical and maladjusted individuals, across age levels, sociodemographic strata, and settings, were deficient in an interrelated cluster of interpersonal cognitive problem-solving (ICPS) skills such as the ability to recognize feelings, to generate alternative solutions to interpersonal problems, to take the role of the other, to identify alternative consequences of behavior, and to specify means-end relationships. These findings suggested that teaching these skills to young children might enhance their adjustment. Subsequently, relevant curricula were developed and taught to inner-city preschoolers (Spivack & Shure, 1974). Findings indicated that (a) trained children significantly exceeded controls in acquiring the program’s targeted skills; (b) the children’s adjustment, especially among those with initial problems of inhibition and maladjustment, also improved significantly; and (c) direct associations were shown between the cognitive and adjustive gains (Shure & Spivack, 1982). From a primary prevention perspective, the importance of this research is that young children’s psychological problems were reduced and their adjustment advanced, not by engaging problems after they occurred in individuals, but by implementing a proactive training program for all children.

Current needs for primary prevention intervention

The current status of our youth is daunting. In schools, teachers face an ever-increasing challenge in educating our youth. Many concerns focus on the fact that classrooms are filled with students who exhibit behavioral deviancy including aggression, hyperactivity, impulsivity, lack of self-control, inattention, and disrespect toward authority. Research repeatedly demonstrates that behavioral problems such as these detract from learning opportunities and preclude positive peer relationships (e.g., Barkley, 1998). More and more, classroom teachers need behavioral change strategies that can be incorporated efficiently into daily instructional routines to mitigate the negative effects of aberrant classroom behavior. Moreover, as disruptive behavior (e.g., student violence, aggression, hyperactivity-impulsivity) becomes more prevalent in public schools, intervention programs will become crucial to ensure school safety and to increase appropriate student social interactions.

Examining society as a whole also indicates increasing problems. Research continually suggests that the number of children and adolescents who engage in maladaptive behaviors (e.g., delinquency, unprotected sex, substance use and abuse, abnormal eating patterns) and are exposed to environmental factors (e.g., abuse,
violence, homelessness) that place them at risk for adverse mental and physical health consequences is increasing at alarming rates (Kazdin, 1993). For example, the number of youth dropping out of school each year has drastically increased, AIDS has become one of the leading causes of death among the 15 to 24 age group, adolescent suicide ranks 2nd or 3rd in most reports of the leading causes of death in the 11 to 24 age group, almost 18.5 million Americans abuse alcohol, and over 100,000 alcohol-related deaths occur annually (Conyne, 1994). These impairments that youth experience can persist and increase in severity across the life-span, making early prevention and intervention efforts crucial in our education system (e.g., Coie et al., 1993).

CHAPTER 2: IMPULSiVITY

Description

One behavioral construct believed to be at the core of numerous childhood, adolescent, and adult disorders is impulsivity. Definitions of impulsivity are numerous but closely related. Some forms of impulsivity include under-control of behavior, inability to delay a response, or difficulty with inhibiting dominant or prepotent responses (Barkley, 1997a). Impulsivity may also refer to poor sustained inhibition of responding (Barkley, 1997a; Gordon, 1979), poor delay of gratification (Campbell, 1987; Rapport et al., 1986; Schachar, Tannock, & Logan, 1993), a pattern of rapid, inaccurate responding to tasks (Brown & Quay, 1977), or impaired adherence to commands to regulate or inhibit behavior in social contexts (Barkley, 1985; Kendall & Wilcox, 1979; Kindlon, Mezzacappa, & Earls, 1995). Still others describe impulsivity as a tendency to act hastily without reflection (Barratt & Patton, 1983; Murray, 1938) or a tendency for risk-taking (Barratt & Patton, 1983; Plutchik & Van Praag, 1995). These characteristics are exemplified with an individual’s tendency to respond quickly to situations without waiting for instructions or considering any potentially negative or dangerous consequences. Some argue that the difficulties in defining impulsivity can be solved by describing it as a choice or preference for a less valuable but more immediately available reward over a more valuable but delayed reward (Ainslie, 1975; Mischel, Shoda, & Rodriguez, 1989; Logue, 1995; Rachlin & Green, 1972). For example, a chronic drug user who repeatedly spends their money on drugs instead of saving the money for necessary items such as food or rent.

Clinically significant impulsivity is a growing problem, described as frequent and long standing (APA, 1994). The frequency of impulsivity in children and adolescents was recently demonstrated by the DSM-IV field trials for disruptive behavior disorders (Frick et al., 1994). The sample consisted of 440 clinic-referred youths aged 4–17 years, who were consecutive referrals to a heterogeneous group of mental health clinics. Although there were many different reasons for referral,
Impulsive behaviors were among the most frequent as assessed by Version 2.3 of the Diagnostic Interview Schedule for Children (DISC 2.3; Shaffer et al., 1992). Findings demonstrated that 67% of the sample often blurted out answers to questions before the questions were completed; 51% had difficulty waiting in lines or waiting their turn in games and group situations; and 44% frequently interrupted others.

Impulsivity, as a core behavioral construct, has been shown to lead to numerous and varied maladaptive behavior patterns and disorders. One of the most common disorders that stem from impulsive behavior patterns is Attention-deficit hyperactivity disorder (ADHD). ADHD is a common childhood diagnosis associated with the symptoms of impulsivity, and thus has produced research directly relating to this construct (e.g., Barkley, 1998). Children with early impulsivity, or those with ADHD, are at a significantly greater risk for numerous psychological and social problems (Barkley et al., 2000). Some of these include developmental delays in self-regulation and academic achievement, school behavior problems, poor academic performance, poor peer social skills, and increased conflict in parent-child and teacher-child interactions (Barkley, 1997c, 1998; Danforth, Barkley, & Stokes, 1991; Fergusson & Horwood, 1995; Hinshaw, 1992; Mariani & Barkley, 1997; Taylor et al., 1991). Research also suggests that children diagnosed with ADHD are at greater risk for developing antisocial behavior in adolescence (Tremblay et al., 1994). Children with ADHD also pose substantially greater stress for their parents, who report feeling less competent in their parental roles and utilizing less positive approaches to child management (Anastopoulos et al., 1992; Fischer, 1990). There is also a large body of research demonstrating the high likelihood of comorbid disorders, such as conduct disordered behavior patterns, or oppositional defiant disorder (ODD) among children with ADHD (Anastopoulos et al., 1992; Farrington, Loeber, & Van Kammen, 1990; Fergusson & Horwood, 1995; Hinshaw, 1987, 1992; Kingston & Prior, 1995; Soussignan et al., 1992; Stormont-Spurgin & Zentall, 1995).

Although impulsivity is known as a core feature of ADHD, it is also considered to be the root of other disorders of childhood or adolescence, such as conduct disorder, antisocial personality disorder, and borderline personality disorder (APA, 1994; Farrington et al., 1990; Satterfield, 1978). For example, maladaptive aggressive behavior and related disorders (i.e., ODD, CD) have been found to be associated with deficits in impulse control (e.g., Coccaro et al., 1989). Taylor (1988) suggested that impulsivity is the common underlying symptom that accounts for the high rate of comorbidity between ADHD and other disruptive behavior disorders. Data indicate that among children with ADHD, those with comorbid CD appear to be at greatest risk for outcomes characterized by adult criminality, aggression, and antisocial behavior (e.g., Loney, Kramer, & Milich, 1981; Weiss et al., 1985). Impulsivity has also been an identified component of eating disorders, specifically bulimia and obesity (e.g., Brownell & O'Neil, 1993). Retrospective data have suggested the importance of child self-regulation to long-term success in weight control (Cohen et al., 1980). More recently, impulsivity is identified as a
characteristic in youth leading to medical conditions such as sexually transmitted diseases and HIV (McCoul & Haslam, 2001; Pack, Crosby, & St. Lawrence, 2001). In addition, milder forms of impulsivity may play a role in DSM-IV V-code conditions, such as academic problems, parent-child relational problems, and sibling (or peer) relational problems. These psychosocial problems also significantly contribute to the developmental progression of psychopathology, and may have more powerful predictive value for long-term adjustment than do diagnostic symptoms (Coie et al., 1993).

One specific behavioral problem that is often examined in relation to impulsivity is aggression (e.g., Lane & Cherek, 2000). Aggression can be considered a type of impulsive behavior, and may include disrespect to teachers, cursing at and threatening staff and students, criminal acts such as theft and vandalism, and/or assaultive behavior toward staff or students. Research suggests that impulsivity in children, as measured by the Continuous Performance Test, is specifically associated with the initiation of fighting (Halperin et al., 1995). Conduct-disordered or aggressive behavior constitutes from one third to one half of all child and adolescent mental health referrals (Whitfield, 1999). Aggressive behavior in childhood that goes untreated or is highly resistive to treatment greatly increases the risk for problems extending into adulthood. Specifically, these problems include further criminal behavior, a diagnosis of antisocial personality disorder and other psychiatric disorders, alcoholism and drug use, poor school adjustment and low educational attainment, marital and family disruptions, poor occupational adjustment, and poor physical health (Farrington, Loeber, & Van Kammen, 1990; Kazdin, 1995).

It is important to recognize that impulsivity can take on numerous other behavioral forms such as theft, arson, risky sexual behavior, drug use, or gambling. Again, these behaviors can lead to any number of debilitating disorders, such as oppositional defiant disorder, conduct disorder, antisocial personality disorder, substance abuse, eating disorders, pathological gambling, or trichotillomania (Swedo, 1993). The impact of impulsivity to future disorders is so great that there is a body of researchers that suggest there should be a broader subgroup entitled disorders of impulse control that would include many of the disorders listed above. Impulse control disorders (ICD) are broadly defined as the inability to resist an impulse, drive, or temptation to perform a harmful act (Hollander & Stein, 1995). Some proponents of this theory have suggested that impulsivity, especially impulsive aggression, represents a psychopathological dimension which is possibly due to abnormal serotonergic neurotransmission and which crosses a variety of psychiatric disorders (Coccaro et al., 1989; Kavoussi & Caccaro, 1993; Stein & Hollander, 1993).

The combined data on impulsivity represents a larger public health and criminal justice problem. Thus, primary prevention efforts directed towards impulsivity seems an appropriate avenue for research. If research indicates the need for primary prevention with young children, it appears that impulsivity is a justifiable
target problem behavior. Moreover, the reduction of impulsive behaviors may
decrease the likelihood of developing a wide variety of psychological disorders.

Assessment

The use of numerous definitions leads to various ways to measure impulsivity
in children and adolescents. Some scales look directly at impulsive behaviors, while
others use an opposite approach by measuring self-control. One general method of
assessment includes observer-rated scales such as the DISC 2.3, the Child Behavior
Checklist (CBCL; Achenbach, 1991), the Conner Rating Scales (CPRS, CTRS;
Conners, Sitarenios, Parker, & Epstein, 1998), the Self-Control Rating Scale (SCRS;
Kendall & Braswell, 1982, 1985), and direct observation or videotaping. Self-report
measures are also used with older children and adolescents such as the Eysenck
Impulsiveness Scale (Eysenck & Eysenck, 1978; 1980; Eysenck & Zuckerman, 1978)
and the Barratt Impulsiveness Scale (BIS; Barratt, 1985). The hyperactivity subscales
of the Conners Teacher and Parent Rating Scales have gained widespread use as an
outcome measure of treatments designed to remediate deficits in self-control (e.g.,
Brown & Wynne, 1982; Douglas et al., 1976; Kendall & Wilcox, 1980; Kendall &
Zupan, 1981). These measures are especially useful in examining teacher and parent
perspectives.

There are also numerous neuropsychological and/or cognitive assessments
used to measure impulsivity. Some of these include the Circle Tracing Task
(Bachorowski & Newman, 1985), the Trail Making Test (Lezak, 1995), the Stroop
Word-Color Test (Golden, 1978; Stroop, 1935), the Continuous-Performance test
(CPT; Rosvold et al., 1956), the Card-Playing Task (Newman, Patterson, & Kosson,
1987, the Delay-of-Gratification Task (Newman, Kosson, & Patterson, 1992),
Differential Reinforcement Responding Task (DRL, Gordon, 1979), the Stop-Signal
Paradigm (Schachar & Logan, 1990), and Time Perception tests (Barratt & Patton,
1983). Historically, the cognitive dimension of impulsivity has been operationalized
and measured with the Matching Familiar Figures Test (MFFT) (Kagan et al., 1964).
During administration of the MFFT, a child is shown a picture below which are six
similar pictures. The child must select among the six the one that is identical to the
sample. Poor performance on the MFFT is considered to represent failure to engage
in the three-stage self-management process (Kanfer & Karoly, 1972), and thus show
deficits in self-control. Although the MFFT has been used in numerous research
studies, it has also generated controversy regarding its psychometric characteristics
(e.g., Ault, Mitchell, & Hartmann, 1976; Brown & Quay, 1977). Overall, the MFFT
is considered to be appropriate when used as one of multiple methods for assessment
of impulsive children as a treatment outcome measure (e.g., Karoly, 1981; Kendall &
Korgeski, 1979).

Behavioral assessment procedures have also been used to measure impulsivity
and/or self-control. This method of assessment is based on research that presented

46

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choices differing in amount and delay of reinforcement (Ainslie, 1974; Fantino, 1966; Mazur & Logue, 1978; Navarick & Fantino, 1976; Rachlin & Green, 1972). For example, Miller, Weinstein, & Karniol (1978) used the amount of time (in seconds) that subjects waited before summoning the experimenter as an outcome measure of impulsivity. More recent studies have also used similar assessment procedures such as measuring the waiting durations to consume the larger reinforcer (Binder, Dixon, & Ghezzi, 2000; Dixon et al., 1998).

A review of self-control outcome measures in children showed high internal consistency and reliability for the SCRS, Conners Rating Scales, and MFFT latency scores (Reynolds & Stark, 1986). Correlations between teacher and parent ratings were low. Results from this review suggested that the MFFT does assess more cognitive than behavioral deficits in self-control, and that the Conners scales and the SCRS measure more overt behavior. Reynolds & Stark (1986) recommended utilization of both assessment modes in treatment outcome research on impulsivity.

Reviewing the literature on the assessment of impulsivity and self-control leaves many questions. The differences in measurement of impulsivity/self-control appear to be due in part to the ill-defined constructs, as well as the instruments’ failure to adequately operationalize the construct they purport to measure. Given that self-control interventions are judged based on change of outcome scores, this problem with assessment is one to keep in mind. In addition, it represents a dire need for additional research in the area of sound assessment of the constructs of impulsivity and self-control.

CHAPTER 3: TREATMENT INTERVENTIONS FOR IMPULSIVITY

In most research, problems with impulsivity are treated by self-control interventions. Moreover, researchers conceptualize impulsivity and self-control as opposites. There are two different perspectives on the definitions of these words, how to assess them, and how to train children in this area. One of these perspectives stems from a purely behavioral view, while the other is a cognitive-behavioral approach. We will briefly review both of these in Chapter 3.

Behavioral Theoretical Background and Definitions of Self-Control

From a behavioral perspective, impulsiveness and self-control are said to involve a choice between a larger, more delayed reinforcer and a smaller, more immediate reinforcer (e.g., Jackson & Hackenberg, 1996). Specifically, impulsive behavior can be defined as responding that produces more immediate, relatively smaller reinforcers at the expense of delayed larger reinforcers. Conversely, self-control is defined as responding that produces larger delayed reinforcers (e.g., Logue, 1995). Historically, many behavioral researchers have analyzed self-control form this
perspective (Ainslie, 1974; Fantino, 1966; Mazur & Logue, 1978; Navarick & Fantino, 1976; Rachlin & Green, 1972). Many of these "choice-based" studies consisted of presenting alternatives differing in amount and delay of reinforcement. Studies examining this distribution of choice (e.g., Ainslie & Herrnstein, 1981; Green et al., 1981) have suggested that an organism's behavior could often be described by the matching law (Herrnstein, 1970), which predicts a match between the proportion of responses and the number of reinforcers for that response. A modification to the matching law was proposed by Baum & Rachlin (1969) that included the delay of reinforcement into the mathematical function.

Another large area of research related to the behavioral definition of impulsivity and self control deals with the delayed-discounting theory. The basic premises is that events that are delayed are not worth as much to an animal as events that are immediate. Researchers have been able to demonstrate that the discounting is not linear (Ainslie & Herrnstein, 1981), but in fact hyperbolic (Logue, 1995; Rachlin & Raineri, 1992). These hyperbolas can be described as a mathematical function, a power function, indicating the relationship between outcome value and outcome delay: \( V = \frac{1}{1 + D^s} \). In this equation, \( V \) is the outcome value, \( D \) is outcome delay, and \( s \) is an exponent that describes how sensitive \( V \) is to the effect of delay. In general, as outcome delay increases, outcome value decreases. However, this also depends on the size of \( s \). If \( s \) is relatively large, small changes in outcome delay result in large changes in outcome value; the subject is very sensitive to the effects of outcome delay and the functions are very steep. If \( s \) is relatively small, large changes in outcome delay result in small changes in outcome value; the subject is not very sensitive to the effects of outcome delay and the functions are very shallow. Long-term outcomes may have greater reward value than short-term ones, but their value is steeply discounted by the length of time involved in the delay to that outcome (Mazur, 1993).

Researchers have demonstrated these behaviorally-based theories with both humans and animals. Specifically, it has been shown that the length of delay between the response and the reinforcer can affect choice, with the effectiveness of the reinforcer declining as the delay increases (Ainslie, 1975; Chung & Herrnstein, 1967; Millar & Navarick, 1984; Navarick, 1982; Solnick et al., 1980). Laboratory investigations show that humans, although impulsive under some conditions, demonstrate significantly more self-control in the laboratory than do rats or pigeons (Logue et al., 1990; Logue et al., 1984; Tobin, Chelonis, & Logue, 1993). Research has shown a shift in preference for longer-term versus short-term outcomes (a decrease in the discounting of the value of delayed rewards) across child development and into adulthood (Green, Fry, & Meyerson, 1994). These researchers tested samples of children, adolescents, young adults, and older adults concerning their choices between having varying amounts of money right now and having a larger amount after some delay. It was concluded that humans are able to delay gratification for longer periods (increase their impulse control) across development until the early 30s. However, research demonstrates that both young children and pigeons tend to
select smaller, less delayed reinforcers, even when offered an alternative of larger reinforcers that are available after a delay (Ainslie, 1974; Ainslie & Herrnstein, 1981; Burns & Powers, 1975; Green et al., 1981; Green & Snyderman, 1980).

Advantages

Certain advantages to the behavioral definitions of self-control and impulsivity include that these words are short, easy to understand and, through their use in our culture, help to suggest ideas for experiments. In addition, these are operational definitions in that they describe what self-control and impulsiveness are in terms of certain observable operations and certain environmental events. Operational definitions enable laboratory investigation of the phenomena they define. Finally, these definitions of self-control and impulsiveness describe these terms as a function of two factors: the size of a specific outcome and the length of delay to that outcome. For example, research has shown that (a) as the delay to the larger reward increases, self-control decreases (e.g., Mischel & Metzner, 1962; Schwarz, Schrager, & Lyons, 1983), and (b) subjects are more likely to wait for a larger, rather than a smaller, reward (e.g., Herzberger & Dweck, 1978). Another advantage is that this definition of self-control does not limit itself to particular situations in which a clear-cut choice is presented.

In each of the following cases, the kind of behavior termed self-control or impulsiveness can be described as choice behavior between larger, more delayed outcomes and smaller, less delayed outcomes. For example, self-control has been used to describe situations in which someone (a) persists with a repetitive task although faced with distraction (Patterson & Mischel, 1975), (b) changes his/her own behavior through changing the influences that regulate that behavior (e.g., through the use of self-reward) (Goldfried & Merbaum, 1973; Skinner, 1953), (c) does not engage in behavior motivated by anger (Kagan, 1984), or (d) tolerates aversive stimuli in return for a large reward (Kanfer & Goldfoot, 1966). Impulsiveness has been used to describe situations in which someone responds quickly, and inaccurately, when several solutions to a problem are available (Kagan & Kogan, 1970; Kagan et al., 1964). It is important to note that the present definitions of self-control and impulsiveness are relative, not absolute, definitions. For example, the context can affect whether or not a response is classified as self-control or impulsiveness by affecting the degree to which an individual values a particular reward.

Use with young children

Some research has used the behavioral definitions of impulsivity and self-control to design studies that examine a child's choice response between a smaller, immediate reward versus a larger, delayed reward. Although data show a general tendency of humans to engage in self-control responses in the laboratory context (e.g., Belke, Pierce, & Powell, 1989; Flora & Pavlik, 1992; Logue et al., 1986), the exception to this seems to occur in young children (e.g., Schweitzer & Sulzer-
Azaroff, 1988). Specifically, very young children, perhaps because they are less likely to verbalize or use other behaviors to help them delay, tend to choose the smaller, less delayed reinforcers (Mischel & Mischel, 1983; Miller et al., 1978; Sarafino et al., 1982). It should be noted that most responses within this literature include lever- or button-pushing in response to concurrent-chain schedules of reinforcement to receive tokens or points. More recent research on impulsivity and self-control in applied settings utilizes significantly different procedures (e.g., Dixon et al., 1998). Target behaviors may be “functionally manipulating the materials of the day’s activity,” “sitting in a seat constantly for five minutes,” or “continually exercising with armbands.”

The behavioral literature consistently suggests that self-control is especially relevant to applied settings and particularly needed in young children. Mischel, Shoda, & Rodriguez (1989) argue that to function effectively, individuals must voluntarily postpone immediate gratification and persist in goal-directed behavior for the sake of later outcomes. Longitudinal research over two decades shows that children’s ability to delay gratification is a significant predictor of adolescent and adult outcomes with regard to educational performance, social competence, and coping with stress and frustration (Mischel et al., 1989; Shoda et al., 1990).

**Behavioral Treatments**

Various interventions have been used to deal with impulsivity within the behavioral literature. One method used to reduce the proneness towards impulsive behavior is to gradually increase the delay to the larger reinforcer (e.g., Ferster, 1953; Schweitzer & Sultzzer-Azaroff, 1988). Ferster (1953) performed one of the first studies with non-humans, exposing pigeons to short delays and gradually increasing them to 60s. Later, Mazur & Logue (1978) worked to increase pigeons’ choice of larger, more delayed reinforcers by delaying access. Pigeons continued to choose the larger reinforcer while the delay to the smaller reinforcer was gradually reduced to zero. Children have also been exposed to modification of choice via contingency shaping. For example, Walls & Smith (1970) imposed a gradually increasing delay procedure to increase children’s choices of larger delayed reinforcers. More recently, a study with young children employing a progressive delay procedure was conducted by Schweitzer & Sulzer-Azaroff (1988). These researchers found that preschoolers consistently chose a single reinforcer (e.g., one sticker) delivered immediately, rather than multiple reinforcers (e.g., three stickers) delivered after a brief delay (e.g., 15 seconds), even when selecting the delayed reinforcement option produced more reinforcers per session. Results showed that an increase in self-control developed in impulsive children by initially delivering both small and large reinforcers immediately, and then gradually increasing the delay to delivery of the larger reinforcer. However, it should be noted that as these delays become increasingly longer, impulsive behavior may begin to recur (Ragotzy, Blakely, & Poling, 1988).
Another method used has been to require the participant to perform distracting activities such as talking or singing during the delay period (Grosch & Neuringer, 1981; Mischel, Ebbesen, & Zeiss, 1972). Mischel and his colleagues have performed numerous studies examining children’s’ use of self-control strategies within choice situations (e.g., Mischel & Ebbesen, 1970; Mischel, Ebbesen, & Zeiss, 1972). These studies examined stimulus conditions and alternative behaviors that children could engage in during delay periods. Results suggest that children waited longer when rewards were not visible and when they were “distracted.” For example, Mischel et al., (1972) found that children were more likely to select the self-control option when they were given a slinky to play with during the delay interval. Grosch and Nuringer (1981) produced similar results with pigeons by reinforcing an alternative response (pecking another key in the rear of the chamber).

Dixon et al., (1998) combined the above two procedures and examined the effects of concurrent fixed-duration/progressive-duration schedules of reinforcement to teach self-control and increase targeted behaviors of three adults with developmental disabilities. Results showed that by establishing a history in which participants are gradually exposed to increasingly longer delays to delivery of a larger reinforcer and are required to engage in a distracting target behavior during that delay, both self-control and engagement in a target behavior may be increased. This design was different in that subjects were required to engage in a target behavior during the delay, rather than simply wait.

A third technique used to increase self-control involves the addition of a punishment component for selecting the impulsive option (Flora, 1995; Ross, 1974). For example, Flora (1995) found that college students chose an immediately delivered, smaller reinforcer (2 points) over a larger reinforcer (10 points) delivered after 19 seconds. However, when choosing the impulsive option resulted in a timeout (i.e., the start of the next trial was delayed), the participants learned to chose the self-control option (i.e., the larger, delayed reinforcer).

Cognitive-Behavioral Definition of Self-Control

The cognitive-behavioral literature also describes self-control as an “opposite” of impulsivity, but conceptualizes these constructs differently given the influence of cognitive theory. Self-control is a process occurring when, in the relative absence of immediate external constraints, a person engages in a behavior that had previously been less probable (Thoresen & Mahoney, 1974). Thus, self-control is needed when new behaviors need to be learned, when choices need to be made, or when habitual response sequences are interrupted or prove ineffective. Given this definition, it is suggested that children with behavioral difficulties generate fewer alternative solutions to interpersonal problems, focus on ends or goals rather than on the intermediate steps toward obtaining them, see fewer consequences associated with their behavior, fail to recognize the cause of other peoples’ behavior, and are less
sensitive to interpersonal conflict (Kazdin, 1988; Ronen, 1992). More specifically, children and adolescents with psychological problems have been said to show signs of maladjustment associated with the processing of information. For example, many researchers have suggested that ADHD is actually mediated by a cognitive deficiency, causing failures in tasks that demand a "stop and think" response (Douglas, 1988; Kendall & Braswell, 1985; Meichenbaum, 1977).

Some work on the development of self-control has adopted a Vygotskian perspective. This perspective states that (a) children's behavioral self-regulation is a collection of higher-order psychological functions that have social origins in that they emerge, in part, from the history of children's social interactions with caregivers during joint activity; (b) the development of self-regulation reflects a gradual shift in the transfer of regulatory responsibility from caregiver to child; and (c) self-regulation is achieved via children's constructive appropriation or internalization of language and other sociocultural tools from joint activity (Berk & Winsler, 1995; Diaz & Berk, 1992; Vygotsky, 1978). Many authors of influential self-instructional programs support Vygotsky's theory by suggesting that the "internalization of verbal commands is the critical step in the child's development of voluntary control over his behavior" (Meichenbaum & Goodman, 1971, p. 115; Meichenbaum, 1977; Kendall & Braswell, 1985, p. 10; Palkes, Stewart, & Kahana, 1968, p. 817).

Research stemming from the Vygotskian theory suggests that children do use private speech during the preschool years as a tool for regulating their behavior (Berk, 1992; Winsler & Diaz, 1995). One important feature of this theory is associated with adults engaging the children in joint problem-solving situations and assisting children during these activities in a "scaffolding" manner (Berk & Winsler, 1995; Pratt et al., 1988). Children's use and internalization of such speech is facilitated under conditions of adult scaffolding during joint activity (Behrend et al., 1992; Berk & Spuhl, 1995; Diaz, Neal, & Vacchino, 1991; Winsler, Diaz, & Montero, 1997). Studies show that increased private speech at one moment in time has been found to be predictive of later task improvement (Gaskill & Diaz, 1991; Winsler et al., 1997), and the internalization of language has been associated with greater behavioral self-regulation in children (Berk & Potts, 1991; Diaz, Winsler et al., 1992; Winsler, 1998).

In general, cognitive variables have been shown to play a role in self-control. For example, research shows that the selection of delayed reinforcers is also related to age and verbal ability (Miller, Weinstein, & Karniol, 1978). Other research has examined the role of self-instruction (reciting rules to oneself) and cognitive modeling (e.g., Abikoff & Gittelman, 1985; Bornstein & Quevillon, 1976; Coats, 1979; Finch et al., 1975; Friedling & O'Leary, 1979; Heider, 1971; Kendall & Braswell, 1985). Specifically, Mahoney (1974) and Meichenbaum (1977) suggested that the techniques of behavior therapy should be expanded to include underlying cognitions to deal with more complex behavior patterns such as impulsivity and aggression. In addition, Meichenbaum & Goodman (1969) found that impulsive children exercise less verbal control over their motor behaviors and use covert speech
in a less instrumental fashion than reflective children. Thus, the internalization of self-statements have become a basic determinant of self-control and is fundamental in the normal development of the regulatory process of behavior.

In relation to ADHD, a more cognitive conceptualization of self-control is a child's executive ability to plan, guide, monitor, and/or delay behavior via rules and language in order to attain personal goals and meet situational demands (Barkley, 1997b; Douglas, 1988; Schachar et al., 1995). Similarly, children diagnosed with ADHD appear to be delayed in their internalization of private speech (Berk & Potts, 1991; Winsler, 1998). For example, Winsler (1998) found that although 6–8 year old boys with ADHD use a variety of verbal self-regulatory strategies during problem-solving, their private speech is less internalized and less related to attention and behavior. Some research has shown that the private speech of impulsive children may be less mature and less self-guiding than that of control children (Diaz & Lowe, 1987; Diaz et al., 1992). Another recent study found that impulsive preschoolers actually used more overt, task-relevant private speech while working individually on the problem-solving task, compared to a control group (Winsler et al., 1999). These researchers suggest that difficulties in behavioral regulation may not stem from a simple lack of using self-guiding speech, but rather problems with internalizing their existing private speech or using such speech more effectively for guiding behavior (e.g., Diaz & Berk, 1995; Winsler et al., 1999).

One of the most frequently stated advantages to combining behavioral and cognitive techniques is the inclusion of “higher processes” (e.g., Ainslie, 1975). For example, one of the repeated problems experienced in self-control studies focused on delayed reward in humans lies in the possibility that cultural values or higher order processes have somehow mediated the patterns they observe. It is hard to separate cognitive variables when working with human populations.

Cognitive-Behavioral Therapy (CBT)

Many researchers have used Cognitive Behavioral Therapy (CBT) as one method for mediating behavioral excesses and deficits within a classroom. CBT for children consists of a variety of techniques in which children are taught to use cognitive mediational strategies to guide and improve their behavior (e.g., Durlak, Fuhrman, & Lampman, 1991; Kendall, 1991). Elements of behavior therapy (e.g., modeling, feedback, reinforcement) are combined with cognitive approaches (e.g., thinking aloud) to teach individuals cognitive strategies, such as anger control and self-coping, for the purpose of changing behavior. The development of CBT was influenced by research and clinical applications in behavior therapy and cognitive therapy, and by developmental research related to the role of language in guiding behavior (Kendall & Braswell, 1985; Meyers & Craighead, 1984). Applications of CBT have grown in popularity and now occupy a prominent place in child research (Kazdin, Bass et al., 1990) and practice (Kazdin, Siegel, & Bass, 1990).
One feature of these interventions that facilitates segregation of the various techniques into categories is the nature of the cognitive strategy being taught. One strategy consists of self-directive cues to cognitively "slow down" or in some way increase the response latency interval (e.g., Hughes, 1988 for a review). This response-delay training often involves the therapist teaching the child to repeat particular self-instructive phrases at appropriate times. The cues are taught through modeling, direct instruction, or both. A second strategy useful in treating impulsive children is problem solving (e.g., Hughes, 1988 for a review). Problem-solving interventions necessitate a more elaborate, comprehensive approach. One such intervention may include a self-instructive component, training in the problem-solving process, behavioral management contingencies, a modeling component and role-play of realistic problem situations. Another intervention commonly used consists of teaching children to self-instruct. Self-instructional training programs assume that deficiencies in self-directed speech underlie the learning and behavior problems of highly impulsive children. They attempt to move these children through the developmental stages of self-instruction deliberately and quickly.

The vast majority of current research endeavors using cognitive-behavioral interventions to treat impulsivity have their genesis in the work of Meichenbaum & Goodman (1971). In this original study, five students exhibiting hyperactivity or poor self-control were taught to use verbal self-instructions to improve attention and performance on cognitive tasks. The treatment included the following:

1. The examiner performed a task talking out loud while the child observed.
2. The child performed the same task while the examiner instructed out loud.
3. The child performed the task again while instructing himself out loud.
4. The child performed the task while whispering instructions to him/herself.
5. The child performed the task with covert self-instructions.

The self-directive verbalizations included questions about the nature and demands of the task, answers to these questions in the form of cognitive planning and rehearsal verbalizations, and self-guidance statements. The self-guidance statements were comprised of self-reinforcing verbalizations, and coping statements for dealing with errors. The problem-solving sequence was designed to circumvent comprehension, production, and mediational deficiencies. Results demonstrated that children receiving self-instructional training scored significantly better than either group of control children on the Picture Arrangement and Coding subtests, prorated WISC-R IQs, the latency score on the MFFT, and error scores on the Porteus Maze Test. The treatment gains were maintained at 3-week follow-up. The researchers concluded that a cognitive self-guidance program which trains impulsive children to talk to themselves is effective in modifying their behavior on a variety of psychometric tests which assess cognitive impulsivity, performance IQ, and motor ability. Other researchers have demonstrated similar positive results using a more cognitive-
behavioral approach (e.g., Douglas et al., 1976; Meichenbaum & Goodman, 1971; Palkes, Stewart, & Freedman, 1972; Palkes, Stewart, & Kahana, 1968).

Some experiments show positive results with incorporating cognitive and behavioral techniques. For example, Miranda & Presentacion (2000) investigated the effect of two treatment programs of a cognitive-behavioral orientation for hyperactive children, the effect of these treatments on two subgroups of hyperactive children, aggressive and nonaggressive, and whether the effects of these treatments continue over any length of time. Results showed that both interventions produced considerable improvements in the children with ADHD, whether there was evidence of aggression or not. Feindler and her colleagues have found evidence that specific anger control training as a cognitive-behavioral approach reduces the disruptive behavior and improves self-control with aggressive adolescents in various settings including residential centers, hospital programs, and public schools (Feindler, 1987, 1991; Feindler & Ecton, 1986; Feindler, Marriott, & Iwata, 1984). Additional studies also show positive results (Dangel, Deschner, & Rasp, 1989; Glick & Goldstein, 1987; Hains, 1989).

A number of literature reviews have been conducted to examine the overall effectiveness of cognitive-behavioral techniques in increasing self-control. Abikoff (1991) reviewed the literature, examining CBT studies. Results showed that 62% (8 of 13) of the investigators reported no positive effect and that only 15% (2 of 13) suggested treatment generalization. Abikoff (1991) also identified numerous inherent problems with many of the studies. Whalen, Henker, & Hinshaw (1985) reviewed the literature to define CBT, delineate the problems in the use of CBT strategies, and outlined the prospects for its future use with children diagnosed with ADHD. These researchers reported that the effectiveness of CBT has been demonstrated only for specific behavioral domains, in certain contexts, for brief periods of time and primarily with nonclinical samples of children considered deficient in self-control skills. Abikoff & Gittelman (1984) also reported serious behavioral deterioration following cessation of treatment such that almost all cases required medication.

More recently, Robinson et al., (1999) used meta analysis to examine the outcomes of cognitive-behavioral interventions in school settings on the hyperactivity-impulsivity and aggression of children and adolescents. Results provided strong evidence for the efficacy of CBT in reducing the occurrence of maladaptive behaviors both during and after treatment. Specifically, across 17 studies in which researchers targeted the reduction of hyperactive/impulsive behaviors, interventions using some cognitive component were 0.79 standard deviations above the mean. Although these results contrast with Abikoff (1991) and Whalen et al. (1985), it is noted that meta-analytic techniques allowed the researchers to account for all the variations within studies and to aggregate the findings to determine the relative strength or magnitude of CBT interventions (Glass, 1977).
Some researchers claim that one reason for discrepant results within studies examining the efficacy of CBT is inconsistent application of different techniques borrowed from adult CBT models. Forehand & Wierson (1993) stated that the practice of borrowing from the adults' CBT model for the application to children has ignored developmental theory and has avoided the application of techniques to children's specific needs, problems, and characteristics. Furthermore, it has been suggested that every child, no matter how young can benefit from CBT if the therapist adapts the treatment to the child's personal cognitive style and suits the treatment goals and procedures to the child's individual pace, as related to age and cognitive level (Ronen, 1992). Different dysfunctions require different CBT techniques that are devised to meet the specific needs of each child. Kendall (1985, 1993) suggested that impulsive children act without thinking or planning and lack careful information processing in situations in which thinking would be beneficial. Kendall and Braswell (1985) do note that interventions that involve much therapist/child interaction, child involvement in the problem-solving process, and behavioral contingencies produce more gains than programs in which one of these components is missing.

**Comparison Study**

Kendall & Braswell (1982) compared a cognitive-behavioral intervention, consisting of self-instructional training, modeling, and behavioral contingencies, to a behavioral treatment program that involved modeling and behavioral contingencies, but not the self-instructive component. Dependent measures included parent and teacher ratings on the SCRS and CPRS/CTRS, and the child’s performance on the MFFT, Wide Range Achievement Test (WRAT), Peabody Picture Vocabulary Test (PPVT), the Peirs-Harris Children’s Self Concept Scale, and behavioral observations. Behavioral observations were of verbal or physical behavior that was off-task, attention diverted off-task, out-of-seat behavior, “bugging” others verbally, or blurt out a comment and “bugging” others physically. Statistical analysis indicated that the cognitive-behavioral group had significantly improved teacher ratings of self-control at post-treatment and at 10-week follow-up (both within subjects and relative to behavioral and control groups). The cognitive-behavioral and behavioral groups both demonstrated statistically significant changes from pre to post-treatment for latency scores on the MFFT. However, only the behavioral group maintained this improvement at 10-week follow-up. All three groups improved on the error scores of the MFFT. No improvements were found in parent blind ratings of self-control, but both the cognitive-behavioral and behavioral groups improved on therapist ratings. There were no significant group by treatment interactions for teacher ratings, latency or error scores on the MFFT, children’s self-concept data, parent ratings of self control, therapist ratings. The cognitive-behavioral group showed a decrease in off-task behavior at post-treatment and 10-week follow-up. Both the CB and behavioral groups showed a decrease of verbal “bugging” of others and in physical off-task behavior; however, only the CB group maintained these
decreases at follow-up. Only the behavioral group showed decreases in out-of-seat behavior at post-treatment and follow-up. Unfortunately, significant group differences did not maintain at the 1-year follow-up.

Literature Review References


65

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68

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72


75
Appendix B

HSIRB Approval
Date: 8 September 2000

To: R. Wayne Fuqua, Principal Investigator
Laura K. Murray, Student Investigator for dissertation

From: Sylvia Culp, Chair

Re: HSIRB Project Number: 00-08-05

This letter will serve as confirmation that your research project entitled “Self-Control Training in Young Children” has been approved under the full category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: 8 September 2001
Appendix C

Consent Forms
PERMISSION FORM

Self-control training for young children

Principal Investigator: R. Wayne Fuqua, Ph.D.
Student Investigator: Laura K. Murray, M.A.

Department of Psychology
Western Michigan University

My child has been invited to participate in a research project, conducted through Western Michigan University. Potentially useful structured interventions dealing with self-control issues will be part of one classroom run by Mrs. Munley. I will be informed about the placement of my child in the classrooms. These five group lessons are entitled “Ability to sit and listen quietly”, “Waiting”, “Learning to take turns”, “Remembering to walk-not run”, and “Fully understand the situation before taking action”. The purpose of this study is to learn whether efficient, in-classroom interventions with young children can have an impact on a range of problematic behaviors. My child will have the opportunity to participate due to his/her inclusion in the CHIRPENS pre-kindergarten program.

My permission for my child to participate in this study means that the researchers will ask my child, myself, and his/her teacher to complete some questionnaires or tasks regarding his/her behavior. There will be trained graduate and undergraduate university students present in my child’s classroom observing behavior. After a few months, the researchers will again ask my child, myself, and his/her teacher to complete identical questionnaires regarding his/her behavior. In addition, my child will have the opportunity to earn some edible snacks including M&Ms, Doritos, Skittles, Goldfish, or Raisins.

Parent Forms – If I sign this permission form, I will be asked for some additional demographic information and for a list of any diagnoses and/or medications my child may be on. I will be asked to fill out two, one-page questionnaires on my child’s behavior patterns. These will be filled out at the parent orientation session before the start of my child’s class. At the completion of the study, I will be mailed the same two forms to fill out again. These will be sent to me with an addressed, stamped envelope to be mailed back to the researchers.

Child Forms – My child will be administered a brief test where he/she will match two familiar figures together. Some children will also have two individual sessions with a trained researcher during which he/she will be given a choice between a smaller, immediate reward (e.g., half a bag of M&Ms immediately) and a larger, delayed reward (e.g., whole bag of M&Ms after task is completed). The task during these sessions will be talking about what makes my child angry and how he/she acts when he/she is angry. Some children will also be observed by trained researchers for 6 to 10 minutes, once a week in a non-distracting fashion. Finally, some children...
will also participate in a group vote once a week, choosing between a smaller, immediate reward (e.g., 5 minute break immediately) and a larger, delayed reward (e.g., 15 minute break after current activity is complete).

Potential Benefits of Participating in this study: Several benefits are present in this study. First, my child will have an opportunity to earn rewards, such as edible items, when completing certain tasks. Second, my child will have a rich environment with additional trained adults in the classroom. Third, this study will allow us to learn more about the effectiveness of training programs that can be added to schools to prevent future behavior problems that a child may develop. In addition, this project will allow for ongoing collection of behavioral data for each child that may help a teacher(s) or parent(s) create more appropriate and beneficial environments.

In addition, some children will be exposed to potentially useful structured self-control training. If there is a significant, positive effect from the intervention, the same intervention will be run in the second classroom. I will have an opportunity to learn what skills are taught through the training and how these can be practiced at home to further benefit my child. Finally, if I wish, following the completion of the study, the researchers may provide me with information regarding my child’s behavior patterns.

Risks of Participation in this study: There are minimal risks to my child in this study. My child may experience some frustrations with making choices between rewards. He/She may also experience some frustration from having to participate in a decision that the class votes on as a group, which he/she disagrees with. However, it is not expected that this frustration would exceed that experienced throughout the course of a normal day.

As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or additional treatment will be made available to the subject except as otherwise stated in this permission form.

Confidentiality of Data: Any information obtained in connection with this study that can be identified with myself or my child will remain confidential. If the information from his/her data becomes part of a publication in a professional journal or a conference presentation, it will be anonymous so as to ensure the confidentiality of me and my child.

My decision whether or not to participate will not jeopardize my future relations with Western Michigan University or . Furthermore, I may discontinue participation at any time without penalty. If I decide to withdraw from the study, I may also withdraw any information, which has been collected, on my child. My child may withdraw or refuse to participate in this study at any time.
This permission document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Subjects should not sign this document if the corner does not show a stamped date and signature.

I am invited to ask any questions I may have. If I have additional questions later, Laura Murray (387-4497) will be happy to answer them. I may also contact the Chair, Human Subjects Institutional Review Board (387-8293) or the Vice President for Research (387-8298) if questions or problems arise during the course of the study. I will be given a copy of this form to keep.

I AM MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. MY SIGNATURE INDICATES THAT I HAVE DECIDED TO PARTICIPATE HAVING READ THE INFORMATION PROVIDED ABOVE.

I, as parent or guardian, can and do give my permission for ______________________ (child’s name) to participate in this research.

Date

Time

Signature of Parent/Guardian

Signature of Investigator
Appendix D

Michigan At-Risk Criteria
PART E. CHART 2:
CHILD IDENTIFICATION CRITERIA

DIRECTIONS.
1. Children eligible for the Michigan School Readiness Program must be four, but less than five, years of age as of December 1 of the year in which the program is offered. Children must be identified by two or more of the following characteristics which place them "at risk" of being educationally disadvantaged and in need of special assistance.
2. Identify the risk factors which the agency will be using for screening and selecting four year olds to be eligible for the project, including any instruments or priority system that the program has developed. Priority rank the top six (6) factors to be used.

<table>
<thead>
<tr>
<th>RISK FACTORS</th>
<th>CHECK FACTORS TO BE USED</th>
<th>PRIORITY RANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. LOW BIRTH WEIGHT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. DEVELOPMENTALLY IMMATURE*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. PHYSICAL AND/OR SEXUAL ABUSE AND NEGLECT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. NUTRITIONAL DEFICIENCY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. LONG-TERM OR CHRONIC ILLNESS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. DIAGNOSED HANDICAPPING CONDITION (mainstreamed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. LACK OF A STABLE SUPPORT SYSTEM OF RESIDENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. DESTRUCTIVE OR VIOLENT TEMPERAMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. SUBSTANCE ABUSE OR ADDICTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. LANGUAGE DEFICIENCY OR IMMATURITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. NON-ENGLISH OR LIMITED ENGLISH SPEAKING HOUSEHOLD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. FAMILY HISTORY OF LOW SCHOOL ACHIEVEMENT OR DROP-OUT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. FAMILY HISTORY OF DELINQUENCY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. FAMILY HISTORY OF DIAGNOSED FAMILY PROBLEMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. LOW PARENTAL/SIBLING EDUCATIONAL ATTAINMENT OR ILLITERACY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. SINGLE PARENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. UNEMPLOYED PARENTS/ PARENTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. LOW FAMILY INCOME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. FAMILY DENSITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. PARENTAL/SIBLING LOSS BY DEATH OR PARENTAL LOSS BY DIVORCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. TEENAGE PARENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. CHRONICALLY ILL PARENT/SIBLING (physical, mental, or emotional)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. INCARCERATED PARENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. HOUSING IN RURAL OR SEGREGATED AREA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. OTHER (as identified by the applicant and presented to the State Board of Education to justify funding)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* A Pre-hunt Screening test should NOT be used as a sole indicator of risk for the criteria of developmental immaturity.
Other indicators of risk must also be present for enrollment.
MASTER DATA SHEET

Full Name: ____________________________  Age: ______  D.O.B. ______  

Assigned research number: ________  

Teacher: ____________________________  Class (circle one): AM  PM  

Parent(s) name(s): ____________________________  

Address: ____________________________  

Phone: ____________________________  

Diagnosis (if any): ____________________________  

Medication(s): ____________________________  

(Include length of time on each, dosage, and how often administered)  

Any additional information: 

Scores:  

SCRS: ______  CPRS: ______  CTRS: ______

85

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Appendix F

MFFT Data Form
FIRST INDIVIDUAL SESSION

ID#: __________________ R/As Initials: __________
Teacher: __________________ Class (circle one): AM PM
Date: _____________________ Time: __________

Agenda: Administer MFFT

“I am going to show you a picture of something you know and then some pictures that look like it. You will have to point to the picture on this bottom page (point) that is just like the one on this top page (point). Let’s do some for practice.”

DO PRACTICE ITEMS…KEEP SCORES!

MFFT Scores:
Sample #1: (3) Latency _________ Responses _________
Sample #2: (6) Latency _________ Responses _________

“Now we are going to do some that are a little bit harder. You will see a picture on top and six pictures on the bottom. Find the one that is just like the one on top and point to it.”

If correct – PRAISE
If wrong – “No, that is not the right one. Find the one that is just like this one (point).”

1) House: (1) Latency _________ Responses _________
2) Scissors (6) Latency _________ Responses _________
3) Phone (3) Latency _________ Responses _________
4) Bear (1) Latency _________ Responses _________
5) Tree (2) Latency _________ Responses _________
6) Leaf (6) Latency _________ Responses _________
7) Cat (3) Latency _________ Responses _________
8) Dress (5)    Latency _________    Responses _________

9) Giraffe (4)  Latency _________    Responses _________

10) Lamp (5)    Latency _________    Responses _________

11) Boat (2)    Latency _________    Responses _________

12) Cowboy (4)  Latency _________    Responses _________

- After completing the test, state the following choice option for the child. “You have done such a good job today working with me that I want to thank you! I have five different treats for you to pick from. I want you to tell me which one you like best out of all of them, and you can take that one treat with you today.”

Treat chosen (circle one): (10 in each bag)
M&Ms    Skittles    Doritos    Goldfish    Raisins
Appendix G

Baseline Individual Session #1
Agenda: Anger assessment task (See attached.)

What makes you angry?

1.) “We are going to talk a little about getting mad. What do you look like when you get mad?” (If they are not sure, demonstrate what your expression of anger looks like.)

2.) “Good! Now, we are going to talk about some things that make you mad. But, first, I’m going to give you a choice. You said that you liked _____ (their preferred treat), so you can have 5 of those at any time you want or you can wait 5 minutes, when we are done with our activity, and you will get 20 ______. If you would rather have the 5 ______ sooner, just let me know by raising your hand (like this, give example) when you would like them. If you don’t say that you want them, I will give you the bigger reward of 20 ______ after 5 minutes when we are done. Do you understand?

BEGIN TIMER   Wait time: _______ Reward: _______

“Ok, now, let’s keep talking about anger. What makes you mad?” (If they are having trouble, prompt with some ideas from below.)

• brother or sister?
• Someone skips you in line
• Someone takes your favorite toy
• Someone makes fun of you

3.) List their responses as you talk.
What makes you mad??
Appendix H

Baseline Individual Session #2
BASELINE INDIVIDUAL SESSION - Number Two

ID#: _____________________

Teacher: _______________ Class (circle one): AM PM

Date: _______________ Time: _______________

Agenda: Anger response task (See attached.)

What do you do when you are mad?

1.) “Today we are going to talk a little about what you do when you get mad. Can you show me again what you look like when you get mad?” (If they are not sure, demonstrate what your expression of anger looks like.)

2.) “Good! Now, we are going to talk about some things that make you mad. But, first, I'm going to give you a choice. You said that you liked ______ (their preferred treat), so you can have ______ of those at any time you want or you can wait 5 minutes, when we are done with our activity, and you will get 20 ______. If you would rather have the 5 ______ sooner, just let me know by raising your hand (like this, give example) when you would like them. If you don't say that you want them, I will give you the bigger reward of 20 ______ after 5 minutes when we are done. Do you understand?

BEGIN TIMER Wait time: _________ Reward: _________

3.) “Ok, now, let's talk about what you do when you get mad! If someone really made you mad, what would you do?” (If they are having trouble, prompt with some ideas from below.)

- Ignore the situation
- Call them a name
- Tease them
- Talk bad about them to another friend
- Yell
- Push, shove, or kick
- Bite
- Tell the teacher
- Tell my mom or dad
- Slam a door
- Throw something

** Use their response from the first session to role-play if they are having trouble.

3 ) List their responses as you talk (or circle from above).
What do you do when you are mad??
Appendix I

Behavioral Coding Form
## Behavioral Coding Form

### Interval #

| Interval # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Talking out of turn |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Aggressive Behavior |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Off-task Behavior |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

### Interval #

<table>
<thead>
<tr>
<th>Interval #</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking out of turn</td>
<td>/30</td>
</tr>
<tr>
<td>Aggressive Behavior</td>
<td>/30</td>
</tr>
<tr>
<td>Off-task Behavior</td>
<td>/30</td>
</tr>
</tbody>
</table>

**TOTAL** /90

### Comments:

#### Behavior Definitions

**Talking out of turn:** Any verbalizations that occur without prompting or permission from an adult. For example, talking to a friend, talking to self, blustering out an answer.

**Aggressive Behavior:** Any negative physical behavior directed toward another object or individual. For example, hitting, kicking, biting, or throwing something.

**Off-task Behavior:** Any action apart from the current classroom activity. For example, out of seat work, coloring when should be listening, etc.
Appendix J

Objective Data Sheet
OBJECTIVE DATA SHEET

Teacher: _______________  Class: (circle one)  AM  PM

Date: _______________

**Total number of children sent to the office:** __________

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
</table>

**Total number of total time-outs given:** __________

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
</table>

**Total number of children who lost a privilege:** __________

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
</table>

*List any loss of privileges the class received:*

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
</table>

98

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Appendix K

Review Session Sheet
Review Session

ID#: ________________________  Research Assistant ________________

Date: ________________________  Time: ________________________

Review Session: ________________________

Before beginning the lesson, give the child a choice.

First, I'm going to give you a choice. You said that you liked ____ (their preferred treat), so you can have 5 of those at any time you want or you can wait 5 minutes, when we are done with our activity, and you will get 20 ______. If you would rather have the 5 ______ sooner, just let me know by raising your hand (like this, give example) when you would like them. If you don't say that you want them, I will give you the bigger reward of 20 ______ after 5 minutes when we are done. Do you understand?

BEGIN TIMER  Wait time: _______  Reward: _________

Begin Review (check the following when completed)

______  Skill components reviewed

______  Role-play performed

Skill Level (Circle one)

Poor  Good  Exceptional

Additional Comments?
REFERENCES


101


