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The Effects of Symbolic Modeling and Parent Training on Noncompliance in Hyperactive Children

George Kahle Henry
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THE EFFECTS OF SYMBOLIC MODELING AND PARENT TRAINING ON NONCOMPLIANCE IN HYPERACTIVE CHILDREN

by

George Kahle Henry

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
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Western Michigan University
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This study examined the interactions of mothers with their hyperactive children during a structured-task period to determine the effects of a symbolic modeling and parent training intervention on child noncompliance. Analysis of videotaped sequences across all phases of the study indicated that symbolic modeling was not a very effective technique for improving compliance in hyperactive children. Phase one of parent training, which taught mothers appropriate attending, ignoring, and rewarding behaviors, was more effective than symbolic modeling. Phase two of parent training, which introduced a time-out contingency for noncompliance, was the most effective intervention as it resulted in significant reductions in child noncompliance. During phase two all six children revealed improvements in their rates of compliance with four reaching significant levels. Significant reductions in latency to comply were exhibited by four of the six subjects, and all subjects increased their rates of task completion with two reaching statistical significance. Parent training which incorporates a time-out procedure appears to offer a promising treatment strategy for noncompliance in hyperactive children.
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George Kahle Henry
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CHAPTER I

INTRODUCTION

Hyperactivity is presently believed to be the leading referral problem to child guidance clinics in this country. Estimates of its occurrence in the school-age population ranges from 2-20% (Barkley, 1981). The hyperactive syndrome is typically characterized by the presence of several behaviors including: impulsivity, inattention, and overactivity. In addition, hyperactive children are often described by their parents as being noncompliant, requiring repeated commands before even partial, though temporary compliance occurs.

Noncompliance is one of the behavior problems that parents report most frequently (Karoly & Rosenthal, 1977; Forehand, 1977; Forehand, 1981; Patterson & Reid, 1973). Behaviors which may be subsumed under the category of noncompliance include: not doing the requested behavior, performing it too slowly, exhibiting long latencies between the request and initiation of compliance, short duration of compliance, promising to do it later, stating a refusal to comply, and engaging in a competing response incompatible with compliance.

In some cases, low compliance rates are a function of particular antecedent conditions such as the topography of
the request delivered. For instance, a request posed in a tentative tone or one which requires the performance of a behavior currently not in the child's repertoire of responses may occasion quite a different response than one stated firmly, decisively, and within the behavioral capabilities of the child. Furthermore, studies in the laboratory have revealed that the consequences of responding, such as rewards for compliance or punishment for noncompliance, are also important variables that control noncompliance (Forehand & King, 1974). Thus, it logically follows that noncompliance may be shaped up and maintained as a result of the quality of parent-child interactions within the family system.

Some of the first studies of parent-child interactions of hyperactive children (Campbell, 1973; Campbell, 1975; Barkley & Cunningham, 1979; Cunningham & Barkley, 1979) have revealed a different pattern of interaction exhibited by mothers of hyperactive children compared to the mothers of normal or learning disabled children. Mothers of hyperactive children typically exhibit significantly more attempts at control, direction, and in general, structuring of their children's behavior. The mothers of hyperactive children tend to give more commands and negative statements, and are less responsive to their child's interactions. These studies suggest that parent-child interactions might best be conceptualized as a reciprocal feedback system in
which the behavior of one person serves as both a
discriminative stimulus and a consequating event for the
response of the other. Thus, these qualitative differences
in parent-child interactions between hyperactive children
and their mothers may reinforce and maintain a host of
noncompliant behaviors. Thus, successful treatment might
rely upon an intervention strategy which impacts on both
the child and the parent as opposed to treatment focusing
on only one member of the dyad.

While methylphenidate (Ritalin) presently remains the
treatment of choice for hyperactivity, various issues need
to be considered when evaluating the usefulness of this
form of therapy. These issues include the negative
side effects of stimulants, ineffectiveness, and the
long-term consequences of psychostimulant medication. A
number of negative side effects have been found in 10-20% of
all children given medication. The most common side effects
are insomnia, convulsions, stomach pains, irritability,
loss of appetite, increased heart rate, photosensitivity
of the skin, and psychotic episodes (Cohen, Douglas &
Morganstern, 1971; Katz, Saraf, Gittleman-Klein & Klein,
1975). Concerning the issue of ineffectiveness, nearly 25% of
all hyperkinetic children receiving stimulant drugs
remain unchanged or deteriorate behaviorally (Barkley, 1977;
Rapoport, Quinn, Bradbard, Riddle & Brooks, 1974). Although
inconclusive, recent research into the long-term side effects
of methylphenidate and dextroamphetamine treatment has revealed a 75-83% suppression of expected yearly growth (Safer & Allen, 1975; Safer, Allen & Barr, 1972). However, growth suppression has been reported to rebound following withdrawal of drugs (Safer et al., 1972). These serious concerns associated with the use of psychostimulant medication sets in motion a plethora of ethical considerations which exert increasing pressure on health care practitioners to investigate and discover more efficacious and socially appropriate methods of managing behavior problems associated with hyperactive children. Nonmedical approaches, such as behavior therapy and behavior modification may offer a promising alternative.

Therapeutic techniques for hyperactivity may be divided into two major categories: medical and nonmedical management. Behavioral management of hyperactivity is presently the most frequently used nonmedical approach (Brundage-Aguar, Forehand & Ciminero, 1976). Behavioral treatment approaches have employed such techniques as differential reinforcement of other behavior (Twardosz & Sajwaj, 1972), withdrawal of positive reinforcement (Sachs, 1973), and punishment (Gilandas & Ball, 1975).

While symbolic modeling in the form of videotape has been used successfully in the treatment of a wide range of childrens' problems including phobias (Lewis, 1974; Kornhaber & Schroeder, 1975), social isolation (Evers-Pasquale &
Sherman, 1975), attentiveness (Keller & Carlson, 1974), and improving oral hygiene (Murray & Epstein, 1981), only one study (Copeland, 1977) utilized videotape feedback as an intervention strategy with hyperactive children. A major source of social learning is the abundant and varied symbolic modeling provided by television, films, and other visual media. It has been demonstrated that both children and adults acquire attitudes, emotional responses, and new ways of behaving through filmed and televised modeling (Bandura, 1973; Liebert, Heale & Davidson, 1973). No studies to date have investigated the effects of symbolic modeling, i.e., videotape, on noncompliance in hyperactive children. Therefore, one objective of the present study was to investigate the effects of symbolic modeling on noncompliance in hyperactive children.

Some attention has been devoted to identifying the types of people who are most responsive to modeling influences. Those who lack confidence and self-esteem, who are dependent, and who have been frequently rewarded for imitative behavior are especially prone to adopt the behavior of successful models (Bandura, 1977). According to Barkley (1981) low self-esteem is a frequent, though little studied, emotional problem often characterizing hyperactive children. Thus, they may prove to be quite susceptible to modeling influences. It was expected that symbolic modeling would significantly reduce each child's
latency to comply to parental commands, and significantly increase each subject's rate of successful task completion.

While videotape procedures have been used in training parents in more appropriate child behavior management procedures (Flanagan, Adams & Forehand, 1979; O'Dell, Mahoney, Horton & Turner, 1979), relatively few have employed videotape feedback with parents of hyperactive children (Furman & Feighner, 1973). No studies to date have investigated the combined effect of symbolic modeling and parent training on noncompliance in hyperactive children. Therefore, a second objective of the present study was to explore the combined effects of symbolic modeling with hyperactive children and a behavioral management program for the parents comprised of videotape feedback, modeling, instructions, and behavioral rehearsal on the quality of parent-child interactions. It was expected that the first phase of parent training would result generally in a significant improvement in the quality of parent-child interactions, and specifically in significant reductions in latency to comply and significant increases in each child's rate of task completion. Phase two of training was expected to result in significant reductions in latency to comply and significant improvements in the rate of completing tasks for each child compared to phase one values.
CHAPTER II

METHOD

Subjects

Six hyperactive children, five boys and one girl, ages 4.5-10.5 years with a mean age of 7.3 years old, and their mothers participated. One father began the study, but withdrew because of a job offer in another city, while another mother and her son did not complete the study because time limits for the study had expired. Children who were given a primary diagnosis of attention deficit disorder with hyperactivity by the clinic psychiatrist at the Kalamazoo Child Guidance Clinic, and who were described by their mother as noncompliant were selected for study.

Subject 1 (Tommy) was a 6 yr-old white male described by his parents as "noncompliant, physically aggressive, and attention-seeking." He would frequently interrupt his parents when they were using the telephone, at mealtimes, and in public places. He would also frequently trip and push his younger sister, and not follow through with parental requests, e.g., putting on his pajamas, picking up his toys. Tommy was on 20mg of Ritalin and 25mg of Mellaril for the duration of the study. The medications were administered approximately three hours before each session.
Subject 2 (Philip) was an 8½ yr-old white male reported by his mother as "noncompliant, verbally abusive, and physically aggressive." He would verbally refuse to comply with maternal commands, and frequently yelled at and hit his mother and 13 yr-old sister. His parents had been divorced for five years, and Philip was currently visiting his father three days each week. Philip began the study on 20mg of Ritalin SR which was administered approximately four hours before each session. At the end of the baseline phase his medication was withdrawn upon the request of his mother. Therefore, data recorded in the post-baseline phases reflect parent-child interactions independent of the influence of psychostimulant medication.

Subject 3 (Eric) was a 4½ yr-old white male described by his mother as "noncompliant, physically aggressive and overactive." Eric was an adopted foster child. His biological mother experienced multiple psychiatric institutionalizations. Eric exhibited grand mal seizures when only a couple of months old, and had experienced a number of grand mal and petit mal seizures since that time. He was taking three medications for the duration of the study which included: 50mg of Mellaril, three times daily; 40mg of Dilantin, four times daily, and 3mg of Depakene, three times a day. Eric received all three medications approximately one hour before each session.

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Subject 4 (Shawn) was a 10½ yr-old white male reported by his mother as "noncompliant, whiny, and verbally abusive." He would become very quarrelsome with his mother and would resort to "baby talk" when interacting with her. Shawn's parents had been divorced for four years and his mother remarried. Shawn was taking 25mg of Mellaril and 20mg of Ritalin for the duration of the study. The Mellaril was administered approximately eight hours before each session, while the Ritalin was given 30 minutes prior to beginning each session.

Subject 5 (Jacob) was a 7 yr-old white male reported by his grandmother as "noncompliant, emotionally distant, and destructive." Jacob's father was currently serving a prison term, and his mother died from injuries sustained in an automobile accident. According to his grandmother, Jacob would not tolerate affectionate physical contact from others, e.g., holding and rocking. He was also described to be impulsive, i.e., acting without thinking. Jacob was on 20mg of Ritalin SR throughout the study which was administered about four hours before each session.

Finally, subject 6 (Maggie) was a 7½ yr-old white female described by her parents as "noncompliant, and verbally and physically abusive with siblings and peers." Mother reported a history of recurrent ear infections and presence of a mild speech disorder, i.e., the imposition of an "s" sound at the beginning of words. Maggie was
currently given 25mg of Mellaril and 20mg of Ritalin SR approximately one hour before data collection. Both medications were in effect for the duration of the study.

Procedure

The present study employed an ABC experimental design with two different intervention phases. Following informed consent and prior to the collection of baseline data each parent underwent an initial behavioral assessment interview. The purpose of the interview was to gather information relevant to the child's developmental history, identification, specification, and prioritization of problem behaviors, and completion of a reinforcement survey in order to identify potential sources of rewards for each child. Also, at this time each parent was given a Parent Questionnaire to complete (Connors, 1973) so as to obtain pretreatment levels of hyperactivity and parental ratings of the current level of the child's behavioral functioning.

Baseline

The baseline phase (A) was in effect for four consecutive weeks. Behavioral observations were made, but there were no experimental manipulations. Each baseline session consisted of a 10-minute free-play period followed by a five-minute structured-task situation. Prior to the free-play period each parent was instructed to: "Interact
with your child, using any of the materials available, as you might at home if you had some spare time and were not expecting to be interrupted." The researcher then left the parent and child alone to play.

A variety of toys and games, e.g., wooden blocks, books, an Etch-a-Sketch board, crayons, coloring book, construction paper, scissors, paste, tape, and clay were provided in the observation room for the dyad. Observations of the 10-minute play period were conducted via a television console in an adjacent room. The console was connected directly to the videotape camera which was unobtrusively positioned in a far corner of the observation room behind a small bookcase.

Following the 10 minutes of play a 25 watt green light bulb, which was located in a corner of the room near ceiling level, was briefly flashed on then turned off. This stimulus signaled the onset of the structured-task condition to the parent, and prompted the parent to give the child the first command. The green light was flashed on and off at one minute intervals for the duration of the five-minute structured-task condition. Each time the green light flashed the parent was required to give their child a new command. Commands were typed on 3x5 index cards and presented to each parent prior to each session. The commands prompted the child to carry out a variety of tasks, e.g., taking off and putting on his shoes, cleaning up the floor, putting
away all the toys, walking along a black line on the floor, sitting in a chair, etc. All structured-task situations were videotaped, while free-play periods were not recorded. The purpose of the 10-minute free-play period was to acclimate the parent and child to the environment of the observation room, and therefore was not videotaped. The purpose of the structured-task condition was to assess the quality of the parent-child interactions and to determine the degree of noncompliance to parental commands prior to treatment.

Symbolic Modeling

Following the initial baseline phase, the first treatment intervention, symbolic modeling, comprising the second phase (B) of the study, went into effect. This intervention phase was similar to the baseline phase in that each parent and child were required to engage in a 10-minute free-play period and a five-minute structured-task condition. However, following the 10-minute free-play period the investigator entered the observation room and invited the child to accompany him to an adjacent room to view "something on T.V." Each child was positioned directly in front of the television screen and instructed to watch the T.V. sequence they would be asked several questions about what they saw on T.V., and that for each question answered
correctly they would receive a nickel. The purpose of this contingency was to ensure that each child was attending to the T.V. as inattentiveness is a symptom which frequently accompanies hyperactivity. Also, this format allowed the investigator to quickly check as to whether the child was able to extract the message or rule, i.e., "I should do what mom asks me to do."

Each child was shown a one minute videotaped sequence depicting a same sex, age-equivalent model exhibiting appropriate compliant behavior in response to adult commands. Each child model on the videotaped sequence emitted first-person, self-guiding statements while carrying out the requested behavior. Research support exists demonstrating that first-person comments by videotape models are more effective than narrative, third-person comments in producing behavior change in observers (Jakibchuk & Smeriglio, 1976).

Model consequences have been extensively researched (Thelen & Rennie, 1972). Although modeled behavior can be acquired by observation alone, rewards are critical if observed behavior is to be performed and maintained over time. Vicarious reinforcement is indicated when observers increase behavior for which they have seen others rewarded. As Bandura (1977) points out, rewarded modeling is more effective than modeling alone. If the outcome experienced by the model is valued by the observer then the greater
probability the observer will enact the modeled behavior on some future occasion under similar stimulus conditions. Thus, each one minute videotaped sequence used in the symbolic modeling phase, and throughout the last phase of the study, depicted a model receiving valued rewards contingent upon complying to parental commands. Each videotape model received a nickel following compliance as all observing children were reported by their parents to value money.

Following observation of the modeled sequence each hyperactive child was asked five questions: 1) "What did the mother ask the child to do?" 2) "What did the child do?" 3) "What did the child say while doing what mother asked?" 4) "What did the mother say to the child after he did what she asked?" and 5) "What did the child get for doing what mother asked?" If the child successfully met the criterion of answering four out of five questions correctly, then he or she was reunited with the mother in the observation room. If the child did not meet the established criterion, then he or she was required to view the videotape sequence a second time. Again, the child was asked the same five questions. This procedure continued until the child successfully met the established criterion.

Following reunion of the child with the mother in the observation room the five-minute structured-task condition was in effect. Again, as in baseline, each mother presented
five different commands at approximately one-minute intervals as signaled by the green light. All structured-task interactions between parent and child were videotaped.

Parent Training

Following four treatment sessions with symbolic modeling alone a second treatment condition, parent training (C), was applied concurrently with symbolic modeling over the final phase of the study. Prior to initiating parent training each parent was requested to complete a questionnaire (O'Dell, Tarler-Benlolo & Flynn, 1979) in order to measure knowledge of behavioral principles as applied to children.

The parent training phase consisted of two sequences. The first sequence was comprised of two sessions and began with the researcher reviewing the questionnaire with each parent and providing a rationale for the correct answers. Next, three target behaviors or parenting skills were taught to each parent and included: attending, ignoring, and rewarding. "Attends" are essentially a running commentary on the child's activity or appropriate in-session behavior, and as such, provide a more constant source of attention than rewards. Attending required each parent to verbally describe the child's ongoing behavior, e.g., "You're stacking the blocks," or "Here comes the truck." When
attending each parent was instructed not to ask questions, give commands, try to direct, try to structure or interrupt, or try to turn it into a teaching session, but rather to use attending only to describe appropriate child behavior.

Ignoring was used to decrease the child's inappropriate behavior by following these guidelines: 1) no eye contact or verbal cues as each parent was instructed to turn at least 90° away from the child, 2) no verbal contact as each parent was told not to talk or attend to the child when he or she did something inappropriate, and 3) no physical contact following inappropriate child behavior.

Rewarding was implemented by each parent in the form of verbal praise contingent upon the child's initiation of compliance in response to parental commands. Parents were instructed to follow these guidelines when rewarding their child for appropriate compliant behavior: 1) reward the child immediately upon the initiation of compliance, 2) reward the child immediately following termination of the task requested, 3) rewards should be consistently applied after every task completed, and 4) rewards should be task specific. Attending and ignoring were emitted by each parent in both the free-play and structured-task conditions throughout the entire parent training phase. Rewarding was applied only during the structured-task situation for appropriate compliant behavior.
The first sequence of parent training consisted of didactic instructions, therapist modeling of appropriate attending, ignoring, and rewarding behavior, followed by behavioral rehearsal by each parent with corrective feedback provided by the researcher. The major purpose of the first two week sequence of parent training was to change the pattern of parent-child interactions from a negative to a more positive exchange. Parents were instructed to practice all three new skills taught in the first sequence for at least 15 minutes daily with their child. The purpose of this between session homework assignment was to facilitate positive behavior change in each parent-child relationship.

The second sequence of the parent training phase consisted of four sessions during which three new parent skills were taught: 1) how to give commands, 2) not repeating commands, and 3) using a time-out procedure. The major purpose of this second sequence was to decrease the rate of noncompliance to parental commands. Throughout this second sequence each parent continued to practice the three skills taught in the first sequence of training, i.e., attending, ignoring, and rewarding.

In giving commands each parent was taught to first get the child's attention by calling the child's first name and pausing until eye contact was established. Then in a firm and slightly louder than usual tone of voice give
one specific command. Next, after the command was presented each parent was instructed to count silently to ten. Each parent was told not to issue additional words, statements, or any verbalization until the child began to comply. If after counting silently to ten the child had not initiated compliance then the parent was to issue a warning: "If... then...," e.g., "If you do not pick up the toys, then you will have to sit in the chair in the corner." Each parent then counted silently to ten following the warning. If the child initiated compliance following the warning statement then the parent praised the child. If the child still failed to begin complying to the parental command after the warning then a time-out (TO) procedure was implemented.

In carrying out the TO procedure each parent was instructed to take the child firmly by the hand and place him or her in the chair located in the corner of the room. The parent then responded by saying, "Since you did not do as I asked, you have to sit in the chair until I say you can get up." Each parent was advised not to provide a rationale or argue with the child while taking the child to TO, or while the child was in TO. The child was required to remain in TO for three minutes. Release from TO was contingent upon sitting quietly in the chair for 15 seconds after the three minutes had expired. The parent would then return to the chair, remove the child, and repeat the original command. Once the original command was repeated

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then the entire sequence of events began again with the parent silently counting to ten for compliance to be initiated. Thus, the child could not avoid complying to a parental command if the TO procedure was consistently and correctly carried out contingent upon noncompliance.

A back-up procedure for a child leaving the TO chair prematurely was also in effect. The first time this happened the parent was to say, "If you get off the chair again, I will spank you." This warning was only given once. If the child then left the chair again before parental release from TO he or she was returned to the TO chair and given two spans on the bottom with an open hand. The child was then placed back in the TO chair and the parent repeated the warning.

Parent training was conducted in a room adjacent to the observation room at the clinic, and was in effect for the last eight weeks of the study. Parent training was carried out prior to each session's 10-minute free-play period. During parent training each child was instructed to play alone in the observation room. After the parent training session the parent was reunited with her child and allowed 10 minutes of free-play. Following the free-play period the child viewed another videotaped sequence with the investigator, and then was returned to his or her mother for the five-minute structured-task condition which was videotaped. Following the end of the second sequence of
parent training, each parent completed another Parent Questionnaire to provide a posttreatment measure of hyperactivity and overall behavioral functioning of each child.

Dependent Variables

An observation coding system was developed which allowed for the continuous recording of 17 different parent and child behaviors operationally defined as follows:


2. Compliance (Com): Physical contact with the object of the command within five seconds of end of command.


4. Latency (L): Time from end of command to physical contact with the object of parental command.

5. Negative Nonverbal (-NV): Tantrums, spanking, pinch, hit, kick, throw things, shove, push or yank on things.

6. Negative Verbal (-V): Direct disapproval or criticism, whining, crying, swearing, no, don't, stop, quit, that's not right, that's all wrong, that is not contingent upon child noncompliance to parental command.

7. Noncompliance (NCom): No physical contact with the object of the command within five seconds of end of the command.

8. Other (Other): Any other form of behavior that does not

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fit into any of the established categories.

9. Punishment (Pun): Time-out, spanking, or slapping contingent upon noncompliance to parental command.

10. Question (Q): Any question asked by child or parent, or may be a single word indicating a question, e.g., "Why?"

11. Repeat (R): Repeating a command or part of a command or may even be a single word prompting compliance, e.g., "Please?".

12. Positive Verbal (+V): Praise, compliment, thank you, you're welcome, I like that, good boy, etc., not contingent upon command compliance.

13. Positive Nonverbal (+NV): Hugs, kisses, embracing, cleaning up or helping out without being asked, not contingent upon compliance to parental command.

14. Reward (Rew): Verbal praise following initiation or completion of task requested.

15. Task Completion (TC): Successful completion of task requested without assistance from parent and completed before onset of next command.

16. Warning (\textit{\textbf{\textlangle}}}): Warning statement issued by parent for noncompliance, e.g., "If you do not \underline{___} then you will have to sit in the chair."

17. Alpha Command: Any parent command or request stated directly and decisively without a questioning tone.

18. Beta Command: Command or request stated in a questioning tone.
Reliability

Interobserver reliability was calculated between the researcher and a trained volunteer familiar with behavioral observation techniques and scoring principles. Independent totals were derived from each observer from 50% of the videotaped sequences. Representative sequences from all phases of the study were randomly selected for analysis. Observer agreement was calculated using the per cent agreement method. Agreement was determined by dividing the number of intervals in which both observers scored an occurrence of a particular behavior by the total number of intervals agreed plus disagreed.
CHAPTER III

RESULTS

Two statistical procedures, a one-way analysis of variance (anova) and repeated measures analysis of variance (rmaov) were used to analyze the data. Anova was applied to all mother and child behavioral measures across all treatment conditions, while rmaov was employed to analyze the children's latency to comply across all four phases of the experiment. Examination of the results might best be accomplished in this single-subject design experiment by analyzing the obtained results on an individual within-family basis.

Subjects

Tommy and Mother

While symbolic modeling did not produce any significant reductions in Tommy's latency to initiate compliance to parental commands, it did result in a significant increase in the rate of compliance, $F(1, 6) = 11.48$, $p < .01$, compared to baseline levels. Symbolic modeling was not associated with any other significant changes in any of Tommy's behavioral measures.

In comparison to symbolic modeling, parent training resulted in significant reductions in Tommy's latency to
comply to parental commands, $F(1, 55) = 6.62, p < .01$.
The first phase of parent training, which consisted of
parent attending, ignoring, and rewarding, did not prove
to be effective in reducing the child's latency to begin
compliance. However, phase two of parent training, which
introduced a time-out procedure, resulted in a significant
reduction in the time Tommy took to begin compliance to
parental commands, $F(1, 37) = 3.77, p < .05$. Figure 1
represents graphically the subject's latency to comply
across all phases of the study.

The rate at which Tommy successfully completed tasks
without assistance from his mother was significantly
greater in the parent training phase in relation to baseline
and symbolic modeling conditions, $F(1, 10) = 28.44, p < .0003$.
Parent training was also associated with significantly more
positive verbal comments directed at mother, $F(2, 13) = 11.32,
p < .001$, and a significant reduction in negative nonverbal
behaviors, $F(1, 10) = 4.90, p < .05$.

Examination of the behavioral data for Tommy's mother
revealed a significant increase in negative verbal comments
directed at the child in the symbolic modeling phase,
$F(1, 6) = 5.88, p < .05$, but was not maintained during
parent training, $F(1, 10) = 4.95, p < .05$. Parent negative
verbal behavior was the only dependent measure reflecting
a significant change in the symbolic modeling phase.
Figure 1. Latency to Initiate Compliance to Maternal Commands for Tommy
Parent training, which followed the symbolic modeling phase, witnessed a significant increase in parent positive verbal comments, $F(2, 13) = 8.37, p < .004$, and contingent rewards, $F(2, 13) = 53.72, p < .0000$, for initiation of compliance. There was a significant reduction in the total number of commands repeated by the parent as a result of parent training, $F(2, 13) = 9.99, p < .002$, while the frequency of alpha commands, $F(2, 13) = 2.51, p < .11$, and parental attending behavior, $F(2, 13) = 2.73, p < .10$, approached significant levels. Table 1 displays the changes in mean values of all parent and child behaviors which were significantly altered as the result of symbolic modeling and parent training. Rates of compliance and successful task completion are reported as percentages. All other dependent measures reflect frequency counts.

Tommy's father was the only father who participated in the study, however, baseline data are all that is available as he withdrew from the study before the symbolic modeling phase commenced. Comparison of parent-child interactions revealed several trends during baseline. In spite of receiving significantly more contingent rewards from his father than mother, $F(1, 6) = 9.00, p < .02$, Tommy took longer to begin compliance to his father's commands, $F(1, 38) = 4.23, p < .04$, and was more verbally active with his father than mother, $F(1, 5) = 27.16, p < .003$. 

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An evaluation of the difference scores on the Parent Symptom Questionnaire (PSQ) completed at pretreatment and posttreatment revealed a significant reduction in Tommy's hyperactivity index, $F(1, 20) = 242, p < .0000$, and overall decrease in inappropriate child behavior, $F(1, 94) = 43.48, p < .0000$. Thus, a measure of social validation was obtained which supported the behavioral observation data.

Table 1

Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Base Sym. Modeling</th>
<th>Parent Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\bar{x}$</td>
<td>$\bar{x}$</td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>11.41</td>
<td>8.70</td>
</tr>
<tr>
<td>+ Verbals</td>
<td>0.00</td>
<td>0.25</td>
</tr>
<tr>
<td>- Nonverbals</td>
<td>0.50</td>
<td>1.50</td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>15.0%</td>
<td>68.8%</td>
</tr>
<tr>
<td>Completion Rate</td>
<td>78.8%</td>
<td>77.5%</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Verbals</td>
<td>0.50</td>
<td>0.75</td>
</tr>
<tr>
<td>- Verbals</td>
<td>0.50</td>
<td>4.00</td>
</tr>
<tr>
<td>Rewards</td>
<td>0.25</td>
<td>0.00</td>
</tr>
<tr>
<td>Repeats</td>
<td>10.00</td>
<td>8.75</td>
</tr>
</tbody>
</table>

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**Philip and Mother**

Examination of the data generated by Philip are of special interest because he was the only subject who was voluntarily withdrawn from psychostimulant medication at the termination of the baseline phase. Thus, baseline data were collected while the subject was under the influence of medication to control his hyperactivity.

Behavior recorded during symbolic modeling and parent training provided an unique opportunity for behavioral assessment under drug-free conditions. Following baseline and withdrawal of psychostimulant medication, Philip emitted significantly more negative verbal statements, $F(1, 6) = 6.99$, $p < .03$, and negative nonverbal behaviors, $F(1, 6) = 6.38$, $p < .04$, while interacting with his mother in a structured-task condition. Philip verbally interacted with his mother to a significantly less degree while on medication, $F(1, 6) = 30.14$, $p < .001$, and when medication was withdrawn he took significantly longer to begin complying to his mother’s commands, $F(1, 36) = 9.63$, $p < .003$.

Transition from symbolic modeling to the first phase of parent training was accompanied by a significant reduction in the number of negative verbal comments emitted by Philip, $F(1, 10) = 78.01$, $p < .0000$, and a significant decline in the level of verbal interaction with his mother, $F(1, 4) = 7.41$, $p < .05$. Also, during the first phase of
parent training there was a significant increase in the frequency of positive nonverbal behavior by Philip, $F(3, 13) = 3.82, p < .03$. While a decline in negative nonverbal behaviors was observed during the first phase of parent training, it was not until the second phase of parent training that a significant reduction was achieved, $F(1, 6) = 30.42, p < .001$. Also, it was not until the second phase of parent training when a time-out procedure was implemented that Philip initiated compliance significantly sooner following maternal commands, $F(1, 35) = 64.52, p < .0000$, and successful completion of tasks requested, $F(1, 6) = 112.5, p < .0000$. Figure 2 graphically displays Philip's latency to comply for the duration of the study.

While Philip's rate of compliance was not altered significantly following the first phase of parent training, it improved significantly following commencement of the second phase of parent training, $F(1, 6) = 7.17, p < .03$. Thus, a time-out procedure coupled with instructions on how to give commands during the second phase of parent training proved to be quite effective in shaping up appropriate compliant behavior in the absence of medication.

Review of the mother's behavior during the symbolic modeling phase, when the child was taken off stimulant medication, revealed no significant changes, however, several measures approached statistical significance.
Figure 2. Latency to Initiate Compliance to Maternal Commands for Philip
During the symbolic modeling phase Philip's mother asked more questions, $F(1, 6) = 4.00, p < .09$, and was more verbally active, $F(2, 13) = 2.95, p < .08$, when compared to baseline conditions. This increase in verbal interaction may have occurred in response to an increase in negative child behaviors following withdrawal of the psychostimulant medication, and as such, may have represented attempts at reestablishing some sense of control.

Parent training witnessed a significant reduction in the number of questions directed at the child by the mother, $F(1, 10) = 8.67, p < .01$, and a decline in the rate of verbal interaction approaching baseline levels, when the child was under the influence of medication. Thus, support appears to be provided for the control hypothesis postulated above. Philip's mother also emitted significantly more verbal rewards contingent upon initiating compliance to commands during parent training, $F(2, 13) = 11.19, p < .001$, and her rate of positive verbal statements was significantly greater, $F(2, 13) = 3.23, p < .05$, than symbolic modeling and baseline conditions.

While parent training did not result in a significant increase in attending behavior for appropriate child behavior, the second phase of parent training resulted in a significant decrease in the number of commands repeated, $F(3, 12) = 8.02, p < .003$, and reduction in the number of
Table 2

Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Base</th>
<th>Sym. Modeling</th>
<th>Parent Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phase 1</td>
<td>Phase 2</td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>19.21</td>
<td>42.32</td>
<td>47.00</td>
</tr>
<tr>
<td>+ Nonverbals</td>
<td>0.00</td>
<td>0.00</td>
<td>1.50</td>
</tr>
<tr>
<td>- Nonverbals</td>
<td>0.50</td>
<td>7.25</td>
<td>6.50</td>
</tr>
<tr>
<td>- Verbal</td>
<td>3.25</td>
<td>9.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>26.3%</td>
<td>21.3%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Completion Rate</td>
<td>67.5%</td>
<td>30.0%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>45.5%</td>
<td>5.0%</td>
<td>17.5%</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Verbal</td>
<td>0.25</td>
<td>0.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Questions</td>
<td>6.50</td>
<td>10.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Rewards</td>
<td>0.25</td>
<td>0.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Repeats</td>
<td>4.00</td>
<td>4.25</td>
<td>1.00</td>
</tr>
<tr>
<td>Alpha Commands</td>
<td>70.0%</td>
<td>47.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>37.5%</td>
<td>17.8%</td>
<td>50.0%</td>
</tr>
</tbody>
</table>
Anova applied to the PSQs completed by Philip's mother at pretreatment and posttreatment revealed a significant reduction in Philip's hyperactivity index, \( F (1, 20) = 15.51, \ p < .0008 \), and overall decline in his level of inappropriate behavior, \( F (1, 94) = 17.60, \ p < .0001 \).

**Maggie and Mother**

Analysis of the data generated by Maggie revealed that she asked significantly more questions in response to initial commands by mother throughout the baseline phase, \( F (2, 10) = 7.59, \ p < .009 \). This tendency declined in the symbolic modeling phase and ceased with the commencement of parent training, \( F (1, 8) = 14.40, \ p < .005 \). The only significant change in child behavior associated with the symbolic modeling phase was an increase in negative verbal comments by Maggie, \( F (2, 10) = 9.34, \ p < .005 \), while interacting in the structured-task situation with her mother.

Comparisons between symbolic modeling and the first phase of parent training revealed a significant reduction in the time expended to begin compliance, \( F (1, 23) = 10.64, \ p < .003 \), and a significant increase in the rate of successfully completing tasks requested, \( F (1, 7) = 28.00, \ p < .001 \), as a result of parent attending, ignoring, and rewarding behaviors taught in the first phase of training. Maggie's rate of compliance improved during the first phase.
of parent training with results approaching statistical significance, $F(1, 3) = 7.30$, $p < .07$.

Improvements in the subject's latency to comply, rate of compliance, and rate of successful task completion were demonstrated throughout the second phase of parent training, but these changes did not reach statistical significance. Figure 3 graphically represents Maggie's changes in latency to comply for the entire study.

Examination of mother's behaviors revealed only one change during the symbolic modeling phase of the study that approached statistical significance, i.e., an increase in the number of negative verbal statements directed at her daughter, $F(1, 7) = 2.93$, $p < .13$. This may have occurred as a result of Maggie's negative verbal comments with the purpose of punishing the child's inappropriate behavior. It is equally plausible that mother's negative verbal statements functioned as conditioned social reinforcers by providing attention contingent upon the child's negative verbal comments, thus maintaining them.

Parent training was associated with significant increases in attending behavior, $F(2, 10) = 5.36$, $p < .02$ for appropriate child behavior and verbal rewards contingent upon the initiation of compliance, $F(1, 7) = 12.44$, $p < .009$. Also, during parent training Maggie's mother issued significantly more positive verbal comments, $F(2, 10) = 3.91$, $p < .05$, and asked less questions, $F(2, 10) = 40.83$, $p < .0000$. 

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Figure 3: Latency to Initiate Compliance to Internal Commands for Maggie
A significant increase in mother's rate of extinction during parent training, $F(1, 7) = 13.08, p < .008$, may be partially explained by an increase in ignoring inappropriate child behavior coupled with asking fewer questions.

The second phase of parent training resulted in a significant reduction in the number of times a command or part of a command was repeated, $F(2, 10) = 21.06, p < .0003$, with a concomitant increase in the frequency of alpha commands, $F(3, 9) = 4.48, p < .03$. Table 3 summarizes the mean values associated with significant changes in the parent-child behaviors across all phases of the study.

Comparison of change scores on the PSQ from pretreatment to posttreatment demonstrated a significant reduction in Maggie's hyperactivity index score, $F(1, 20) = 13.89, p < .001$, and a significant decline in the amount of child inappropriate behavior, $F(1, 99) = 32.59, p < .0000$, as a result of parent and child participation in the study.

**Jacob and Grandmother**

Analysis of the behavioral data for Jacob revealed that symbolic modeling resulted in a reduction in his latency to comply to parental commands which approached statistical significance, $F(1, 36) = 3.21, p < .08$. While the first phase of parent training continued to reduce his latency to comply, improvements achieved here were not significantly different from the symbolic modeling phase.
Table 3
Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Base</th>
<th>Sym. Modeling</th>
<th>Parent Training</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>6.68</td>
<td>6.68</td>
<td>2.50</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>- Verbals</td>
<td>0.00</td>
<td>4.00</td>
<td>0.00</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Ques. to Command</td>
<td>1.50</td>
<td>0.33</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>48.8%</td>
<td>40.0%</td>
<td>87.5%</td>
<td>90.0%</td>
<td></td>
</tr>
<tr>
<td>Completion Rate</td>
<td>68.8%</td>
<td>60.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Mother</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Verbals</td>
<td>1.75</td>
<td>2.00</td>
<td>5.50</td>
<td>8.25</td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>13.25</td>
<td>14.00</td>
<td>1.00</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>Rewards</td>
<td>1.00</td>
<td>0.66</td>
<td>3.50</td>
<td>3.30</td>
<td></td>
</tr>
<tr>
<td>Repeats</td>
<td>6.00</td>
<td>10.00</td>
<td>1.00</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Attends</td>
<td>0.00</td>
<td>0.00</td>
<td>8.50</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Alpha Commands</td>
<td>50.0%</td>
<td>33.3%</td>
<td>0.0%</td>
<td>80.0%</td>
<td></td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>2.5%</td>
<td>5.3%</td>
<td>18.0%</td>
<td>23.0%</td>
<td></td>
</tr>
</tbody>
</table>

However, phase two of parent training did result in a significant lowering of his latency complying to maternal commands, $F(1, 34) = 5.24$, $p < .02$, as contrasted with values obtained from the first phase of training. Figure 4 represents graphically Jacob's latency to comply for the study.
Figure 4. Latency to Initiate Compliance to Maternal Commands for Jacob

- Baseline
- Symbolic Modeling
- Parent Training
  - Phase 1
  - Phase 2

Seconds
While Jacob's rate of compliance was not significantly altered by the symbolic modeling intervention, the first phase of parent training produced results which approached statistical significance, $F(1, 4) = 4.89, p < .09$. The second phase which followed revealed significant improvements in his compliance rate, $F(1, 6) = 10.12, p < .01$. Analysis of the data generated throughout the entire parent training phase revealed a significant improvement in his rate of successfully completing tasks without assistance, $F(3, 12) = 4.47, p < .02$, and he was less verbally active, $F(2, 13) = 3.57, p < .05$. Parent training was also associated with a significant reduction in the number of negative verbal behaviors, $F(1, 10) = 11.67, p < .006$, and negative nonverbal behaviors, $F(1, 10) = 7.28, p < .02$, exhibited by Jacob in the structured-task situation with his grandmother. During parent training several child behaviors approached statistical significance, i.e., a reduction in total questions asked, $F(1, 10) = 3.91, p < .07$, and a tendency to ask fewer questions in response to initial parental commands, $F(1, 10) = 3.91, p < .07$.

A review of the data obtained from grandmother's interactions with Jacob revealed that she was significantly less verbal during the symbolic modeling phase, $F(1, 6) = 8.88, p < .02$, as contrasted to baseline values. This may have reflected a helpless resignation by Jacob's grandmother in view of the significantly high rate of
negative verbal and nonverbal behaviors during this phase
of the study.

As a result of parent training and establishment of
greater control over Jacob's inappropriate behaviors,
grandmother's rate of verbal interaction increased
significantly with Jacob, $F(1, 10) = 41.97, p < .0001$, and she issued significantly more positive verbal comments
to him, $F(1, 10) = 10.11, p < .009$. Also, parent training
resulted in significant increases in grandmother's
frequency of attending to appropriate child behaviors,
$F(2, 13) = 8.21, p < .005$, and applying social rewards
contingent upon Jacob initiating compliance to her commands,
$F(2, 13) = 25.83, p < .0000$.

The second phase of parent training was associated
with a significant reduction in the number or commands or
partial commands repeated, $F(1, 6) = 16.07, p < .007$, to
bring about the initiation of compliance by Jacob. Table 4
presents the means across all phases of the experiment for
those parent and child behaviors which were significantly
altered as a result of the interventions employed.

The PSQ completed by Jacob's grandmother upon
completion of the study failed to indicate a significant
reduction in his hyperactivity index, a subscale of the
PSQ, however, the questionnaire did reveal an overall
significant reduction in the amount of inappropriate
child behavior as a result of participation in the study,
$F(1, 94) = 4.91, p < .02$. 

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Table 4

Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Base</th>
<th>Sym. Modeling</th>
<th>Parent Training</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>20.11</td>
<td>12.05</td>
<td>9.37</td>
<td>3.75</td>
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</tr>
<tr>
<td>- Verbals</td>
<td>7.75</td>
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<td>0.25</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>- Nonverbals</td>
<td>4.00</td>
<td>2.50</td>
<td>0.50</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>35.0%</td>
<td>30.0%</td>
<td>63.5%</td>
<td>90.0%</td>
<td></td>
</tr>
<tr>
<td>Completion Rate</td>
<td>75.0%</td>
<td>90.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>29.0%</td>
<td>48.0%</td>
<td>51.8%</td>
<td>60.8%</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Verbals</td>
<td>0.00</td>
<td>1.25</td>
<td>5.25</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Rewards</td>
<td>0.75</td>
<td>1.50</td>
<td>4.50</td>
<td>4.50</td>
<td></td>
</tr>
<tr>
<td>Repeats</td>
<td>11.25</td>
<td>7.50</td>
<td>3.00</td>
<td>0.50</td>
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</tr>
<tr>
<td>Attends</td>
<td>0.00</td>
<td>0.00</td>
<td>5.75</td>
<td>13.25</td>
<td></td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>35.5%</td>
<td>60.0%</td>
<td>24.5%</td>
<td>13.5%</td>
<td></td>
</tr>
</tbody>
</table>

Shawn and Mother

Analysis of the behavioral data for Shawn reveals a lack of significant changes in any of the behavioral measures as a result of the symbolic modeling intervention, however, there was an increase in negative nonverbal behaviors.
during this phase which approached statistical significance, \( F (1, 6) = 4.84, p < .07 \).

Parent training witnessed a significant reduction in the number of negative nonverbal child behaviors, \( F (1, 8) = 7.96, p < .02 \), with a concomitant significant increase in positive nonverbal behaviors, while interacting with his mother, \( F (2, 11) = 4.62, p < .03 \). Shawn exhibited no positive nonverbal behaviors toward his mother throughout the baseline and symbolic modeling phases. Shawn tended to ask questions such as, "Why?," and "How come?" in response to parental commands throughout the study, however, during parent training he continued to do so at a significantly higher rate, \( F (1, 8) = 8.71, p < .01 \). Intermittent attention or comments provided by mother in response to Shawn's queries may have maintained this inappropriate behavior throughout parent training. Also, this may have represented Shawn's attempts at counter-control in the parent-child interactions as the external contingencies for noncompliance and inappropriate behavior, i.e., attending, ignoring, rewarding, and TO were in effect.

While Shawn demonstrated a consistent reduction in latency to initiating compliance to parental commands in response to the different interventions applied, statistical significance was not obtained between any of the adjacent phases. However, comparison of mean latency to comply values generated during baseline with the second phase of
parent training revealed that as a result of the change in contingencies due to the parent training program, Shawn was complying significantly sooner to parental commands, $F(1, 39) = 7.20, p < .01$, with an associated significant improvement in his rate of compliance, $F(1, 6) = 8.02, p < .02$. Figure 5 graphically displays the subject's latency to comply across all phases of the study. Thus, for some hyperactive children changes in noncompliance may be less immediately affected by changes in the external contingencies, but rather evolve more slowly over a longer period of time. This would assume, of course, a consistency in the application of appropriate consequences by the parent for inappropriate child behaviors. Parental inconsistencies in the contingent application of rewards and punishers, and parental attending and ignoring behavior could result in the lack of significant treatment gains or even an exacerbation of the child's noncompliance.

Analysis of Shawn's mother's behavioral data revealed no significant changes in any of the parental behavioral measures in the symbolic modeling phase. Parental training revealed that mother applied significantly more rewards contingent upon initiating compliance, $F(2, 11) = 11.50, p < .002$, and issued significantly more positive verbal statements to Shawn, $F(2, 11) = 9.08, p < .004$. She also interestingly, significantly reduced the number of commands or partial commands repeated during the first phase of parent...
Figure 5. Latency to Initiate Compliance to Maternal Commands for Shawn
training, $F(1, 4) = 9.20, p < .03$, a target behavior which normally was taught during the second phase of parent training.

Shawn's mother's rate of attending behavior for appropriate child behaviors as a result of the first phase of parent training did not reach statistically significant levels. This may offer some clarification for the preponderence of negative child verbal and nonverbal behaviors during this phase. As a result of the second phase of parent training she issued significantly more alpha commands, $F(1, 4) = 37.50, p < .003$, and more warnings, $F(3, 9) = 18.46, p < .0003$. Table 5 displays mean values for all parent and child behavioral measures which were significantly changed as the result of the behavioral interventions. Her ratings on the PSQ at posttreatment revealed nonsignificant changes in Shawn's hyperactivity index score, but an overall improvement in appropriate child behaviors was indicated by questionnaire scores which approached statistical significance, $F(1, 94) = 2.90, p < .09$.

Eric and Mother

Although Eric and his mother did not complete the study their data are included here as it adds support to the data collected on the other subjects in the study. Analysis of child behavioral data gathered in the symbolic
Table 5
Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Experimental Condition</th>
<th>Parent Training</th>
<th>Parent Training</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base Sym. Modeling Phase 1 Phase 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>19.20 14.30</td>
<td>11.30 5.85</td>
<td></td>
</tr>
<tr>
<td>+ Nonverbals</td>
<td>0.00 0.00</td>
<td>0.00 0.75</td>
<td></td>
</tr>
<tr>
<td>- Verbals</td>
<td>4.75 9.00</td>
<td>2.00 2.50</td>
<td></td>
</tr>
<tr>
<td>Ques. to Command</td>
<td>1.75 1.25</td>
<td>1.25 3.25</td>
<td></td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>25.0% 45.0%</td>
<td>45.0% 72.5%</td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Verbals</td>
<td>0.75 0.50</td>
<td>5.00 3.00</td>
<td></td>
</tr>
<tr>
<td>Rewards</td>
<td>1.25 1.75</td>
<td>3.00 4.50</td>
<td></td>
</tr>
<tr>
<td>Repeats</td>
<td>12.00 12.00</td>
<td>2.00 0.50</td>
<td></td>
</tr>
<tr>
<td>Warnings</td>
<td>0.00 0.00</td>
<td>0.00 0.75</td>
<td></td>
</tr>
<tr>
<td>Alpha Commands</td>
<td>62.5% 60.0%</td>
<td>12.5% 88.8%</td>
<td></td>
</tr>
</tbody>
</table>

modeling phase revealed that Eric asked fewer total questions, F (2, 8) = 5.68, p < .02, and responded to maternal commands with significantly less questions, F (2, 8) = 6.91, p < .01. During the symbolic modeling phase Eric was significantly less verbal, F (1, 6) = 14.63, p < .008, as contrasted with baseline levels of verbal.

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interaction.

During the abbreviated parent training phase, Eric's rate of verbal interaction increased significantly over symbolic modeling levels, $F(1, 5) = 17.85, p < .008$. Nonsignificant reductions were recorded for his latency to comply to parental commands throughout both symbolic modeling and the first phase of parent training. In fact, the data show quite the opposite effect, i.e., an increased but nonsignificant change in the amount of time elapsed between the end of a parental command and initiation of child compliance.

Comparisons of latency values between the first and second phase of parent training revealed that Eric's latency to comply to his mother's commands approached statistical significance when the second phase of training was implemented, $F(1, 10) = 3.57, p < .08$. The second phase of training was also associated with a significant increase in the child's rate of compliance, $F(3, 7) = 4.82, p < .03$. The paucity of data points representing phase two of parent training warrants a cautious adherence to their validity and significance, however, the trend is consistent with that observed in the other five subjects. Figure 6 graphically represents the abbreviated set of data available on Eric's latency to comply for the time he did participate in the study.
Figure 6. Latency to Initiate Compliance to Internal Commands for Eric
Analysis of mother's behavior revealed no significant changes during the symbolic modeling phase. However, parent training resulted in Eric's mother asking fewer questions, $F(2, 8) = 11.99, p < .003$, repeating fewer commands or partial commands, $F(2, 8) = 6.58, p < .02$, and issuing significantly more alpha commands, $F(2, 8) = 5.82, p < .02$. Mother also demonstrated a significant reduction in her rate of verbal interaction with Eric during parent training, $F(2, 8) = 43.48, p < .0001$, however, her frequency of attending behavior and application of rewards contingent upon initiation of child compliance was not significantly increased. Thus, she apparently relied more upon ignoring inappropriate child behavior which resulted in an increase in Eric's refusals to initiate compliance.

It was not until the introduction of the TO procedure in phase two of parent training that appropriate changes in Eric's compliant behavior began. Table 6 shows the mean values associated with significant changes in the parent and child's behavior for this dyad. Again, extinction rate, compliance rate, and alpha commands are reported as percentages, whereas all other dependent measures represent mean frequencies. While trends in the data are evident across the first three phases of the study and may represent valid treatment effects, or the lack of, values for the second phase of parent training should be viewed with caution. PSQ data at the end of treatment was not completed.
Table 6
Significant Changes in Mean Values for Parent-Child Behavior Across All Four Phases of the Experiment

<table>
<thead>
<tr>
<th>Behavioral Measure</th>
<th>Experimental Condition</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td>Sym. Modeling</td>
<td>Parent Training</td>
</tr>
<tr>
<td>Child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latency</td>
<td>22.30</td>
<td>25.44</td>
<td>41.40</td>
</tr>
<tr>
<td>Total Questions</td>
<td>6.75</td>
<td>1.75</td>
<td>6.00</td>
</tr>
<tr>
<td>Ques. to Command</td>
<td>3.50</td>
<td>0.50</td>
<td>3.50</td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>15.0%</td>
<td>5.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>38.0%</td>
<td>68.0%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>13.00</td>
<td>9.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Repeats</td>
<td>18.50</td>
<td>12.50</td>
<td>7.50</td>
</tr>
<tr>
<td>Alpha Commands</td>
<td>20.0%</td>
<td>20.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>3.8%</td>
<td>9.8%</td>
<td>46.0%</td>
</tr>
</tbody>
</table>

Figure 7 presents a graphic summary of all six subject's rate of compliance in terms of mean percentages for the entire study, whereas Figure 8 represents graphically the rate of successful task completion for all participating subjects.
Figure 7. Mean percentage for rate of compliance within five seconds of command.
Figure 8. Mean percentage for rate of task completion.
A one-way anova repeated measures analysis was conducted for latency to comply for all subjects across all phases of the study. The repeated measures analysis is a much more powerful statistical technique than anova alone as it control for variability among subjects. Analysis revealed a significant reduction in all subject's latency to initiate compliance as the result of the second phase of parent training when a time-out contingency was introduced, $F(3, 18) = 3.47, p < .04$.

Reliability

Interobserver reliability using the per cent agreement method was performed on 50% of the videotaped sequences. Sequences were randomly selected and independent totals were derived from each observer. Agreement was determined by dividing the number of intervals in which both observers scored an occurrence for the specific behavior of interest by the total number of intervals agreed plus disagreed. Reliability coefficients ranged from .73 to 1.00 with a mean intercoder reliability of at least .87. This value is quite satisfactory considering the complex coding system employed in this study. Table 7 lists the reliability coefficients for the dependent variables observed.
Table 7

Interobserver Reliability for Dependent Variables

<table>
<thead>
<tr>
<th>Behavioral Measures</th>
<th>Reliability Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha Commands</td>
<td>1.00</td>
</tr>
<tr>
<td>Contingent Rewards</td>
<td>1.00</td>
</tr>
<tr>
<td>Warnings</td>
<td>1.00</td>
</tr>
<tr>
<td>Latency to Comply</td>
<td>.99</td>
</tr>
<tr>
<td>Successful Task Completion</td>
<td>.94</td>
</tr>
<tr>
<td>Extinction Rate</td>
<td>.93</td>
</tr>
<tr>
<td>Repeats</td>
<td>.88</td>
</tr>
<tr>
<td>Questions</td>
<td>.82</td>
</tr>
<tr>
<td>Other Behavior</td>
<td>.82</td>
</tr>
<tr>
<td>Positive Nonverbals</td>
<td>.80</td>
</tr>
<tr>
<td>Negative Verbals</td>
<td>.80</td>
</tr>
<tr>
<td>Attends</td>
<td>.75</td>
</tr>
<tr>
<td>Positive Verbals</td>
<td>.73</td>
</tr>
<tr>
<td>Negative Nonverbals</td>
<td>.73</td>
</tr>
</tbody>
</table>

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CHAPTER IV

DISCUSSION

Parent training generally, and the second phase of training specifically, was significantly more effective than symbolic modeling alone in reducing noncompliance in the hyperactive children in this study. Symbolic modeling was associated with nonsignificant reductions in latency to comply in four of the six children, whereas the opposite effect was exhibited in two children, i.e., increased latencies to comply to parental commands with one reaching statistically significant levels. Two subjects, Tommy and Shawn, manifested improvements in their rate of compliance to the symbolic modeling intervention with one reaching statistical significance. However, the remaining four subjects demonstrated a decline in their rate of compliance during this phase. The symbolic modeling phase was also associated with a decline in the rate of task completion for four of the six subjects, whereas only one subject, Jacob, increased his rate of task completion while one subject's completion rate remained unchanged.

Overall, the symbolic modeling intervention was not very effective in producing significant changes in child noncompliance, i.e., reductions in latency to comply, improvements in the rate of compliance, and increases in
the rate of successful task completion. Thus, it appears that viewing by hyperactive children of videotaped productions of age-equivalent, same-sex models displaying appropriate compliant behavior is not very influential in significantly altering their noncompliant behavior.

Speculations as to why this is so might find clarification by examining the concept of reinforcement. Vicarious reinforcement has been suggested as an explanatory factor for the imitative behavior that occurs following observation of a successful model, however, rewards are critical if observed behavior is to be performed and maintained over time. In the present study each hyperactive child viewed a videotaped child model receiving valued rewards contingent upon the completion of appropriate compliant behavior. Also, each hyperactive child indicated knowledge of having extracted the rule, i.e., "I should do what mother asks," by correctly answering questions relevant to the sequence viewed. However, when each child was reunited with his or her mother and given the opportunity to comply, there was no monetary reward contingent upon appropriate compliant behavior, as was depicted in the videotaped sequence. Therefore, the probability of enacting the modeled behavior in the absence of any valued, external, tangible rewards would be less likely to occur.

Thus, while observational learning is undoubtedly an important source of learning new behaviors and the development
of various attitudes and emotional responses, opportunities for access to valued rewards would appear to be necessary for imitative behavior to be maintained via intermittent reinforcement. Before any premature or erroneous conclusions are drawn regarding the effectiveness of symbolic modeling in significantly altering noncompliance in hyperactive children, one might attempt to investigate this intervention coupled with the application of valued, tangible rewards by each parent contingent upon appropriate compliant behavior. In this way, the parent-child interaction would more closely resemble the videotaped sequence observed by the hyperactive child.

During the first phase of parent training four subjects' latencies to comply to parental commands declined with one child, Maggie, complying significantly sooner. Two subjects actually took longer to comply with one subject, Eric, reflecting a significant increase in his latency to comply. Five of the six subjects demonstrated improvements in their rate of task completion, however, only one was significantly improved over symbolic modeling levels. While five of the six subjects demonstrated gains in their rate of compliance to parental commands, only Tommy's rate of compliance was significantly improved, while two other childrens' rates approached statistical significance.

The first phase of parent training witnessed a general reduction in the hyperactive childrens' negative verbal and
negative nonverbal behaviors with a significant increase in the number of positive verbal statements issued by five of the six mothers. Generally, mothers were applying significantly more rewards and attends contingent upon appropriate child behavior which was expected as these behaviors were specifically taught during this phase of training. Also, 50% of the mothers significantly increased their rate of ignoring inappropriate child behavior coupled with asking significantly fewer questions throughout the first phase of training.

Thus, it appears that while attending, ignoring, and rewarding by mothers was more effective than symbolic modeling alone in improving the overall quality of parent-child interactions, it was not 100% effective in reducing latency to comply, improving the rate of task completion, or rate of compliance. These results are what were expected and are consistent with the intended purpose of the first phase, i.e., to alter the quality of mother-child interactions from a negative to a more positive focus. However, because the symbolic modeling procedure was also in effect during the first phase of parent training, it is not possible to parcel out its relative contribution to the improvements observed between mother and child. Thus, carry-over effects from symbolic modeling may have contributed to the overall general improvements in parent-child interactions. However, a more likely explanation

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would reside with an alteration in the contingencies of reinforcement as a function of more effective parental attending, ignoring, and rewarding behavior.

The second phase of parent training was significantly more effective than either the first phase of training, or symbolic modeling in terms of shaping up appropriate compliant behavior. It produced significant reductions in latency to comply in four of the six children, improved compliance rate in all six hyperactive children, four whose values were significantly improved over phase one levels, and resulted in significantly higher rates of task completion for two subjects, Philip and Eric. By the end of the first phase of parent training all subjects, with the exceptions of Philip and Eric, were successfully completing tasks at or near their rate of completion reflected in the second phase of training. When the TO procedure was initiated, Philip and Eric's latency to comply, rate of completion, and rate of compliance changed dramatically in the direction of the other four children.

Generally, throughout the second phase of training mothers issued significantly more alpha commands, and significantly reduced the number of commands repeated. Again, both of these results were in the expected direction as these target behaviors were specifically taught during the second phase of training. The results obtained here were consistent with the intended purpose of the second phase of
parent training, i.e., to decrease the child's noncompliance to parental commands.

Again, it is not possible to determine the relative contribution of the symbolic modeling intervention here during the second phase of training, however, the rapidity at which positive results were achieved would tend to shift attention away from the symbolic modeling intervention and towards changes in the external contingencies, specifically the introduction of a TO procedure. Imposition of a TO procedure for noncompliance provided each parent with a more effective back-up procedure than simply ignoring noncompliance. Research evidence exists which suggests that the simplest of treatment techniques, namely differential attention, may be ineffective when used alone in the treatment of inappropriate child behavior (Herbert, Pinkston, Hayden, Sajwaj, Pinkston, Cordua & Jackson, 1973). Time-out appears to be an essential component of many treatment programs, as Patterson (1976) found that it was the most effective component in his treatment package. Also, by silently counting to 10 after issuing a warning each child was given two opportunities to comply, and the danger of mother interacting with her child from a position of anger was attenuated.

It is not possible at this time to parcel out the relative effects of the individual component skills taught to parents and their contributions to improving child
noncompliance. While all parents increased their rates of attending, ignoring, rewarding, and giving alpha commands, and decreased their rates of repeating commands, some did not do so significantly, yet all parents managed to achieve improvements in noncompliance, especially following the introduction of the TO contingency. Thus, further study is warranted to determine which skills are essential in producing more appropriate compliant behavior in hyperactive children.

Also, it is not possible to determine the influence of practice effects on noncompliance with these children. Different commands were randomly selected from a list of potential commands prior to each session to minimize any gains or losses associated with compliance to parental commands from session to session. An extended baseline may offer some clarification on this issue, however, time constraints and ethical considerations may work against employing such a strategy.

Several additional issues associated with the current study warrant mentioning. One of these involves the differential interaction between Tommy and his father and mother during the baseline conditions. While Tommy received more contingent social praise for compliance from his father than mother, he took longer to initiate compliance to his father's requests, and his interactions with his father were more negative as revealed by a greater frequency of
negative verbal and negative nonverbal behaviors. Tommy's rate of completing tasks for his father (60%) was considerably less than his rate of completion for his mother (78.8%). According to Barkley (1981) mothers of hyperactive boys complain that their children tend to behave better for their fathers. Also, in the only study to date on father-child interactions of hyperactive boys, hyperactive boys engaged in more negative and competing behavior in response to their mother's commands than in response to their father's commands (Tallmadge & Barkley, 1983). Thus, the observations between Tommy and his parents in the present study may represent an exception to the differential pattern of interaction which is typically found in the relationships between hyperactive children and their parents.

Another issue which is shrouded in much controversy and laden with numerous ethical debates is the use of psychostimulant medication to control hyperactivity. All subjects in the present study, with the exception of Philip, were on medication for the duration of the study. Philip's medication was withdrawn upon termination of the baseline condition. The symbolic modeling phase which followed was characterized by significant increases in negative verbal and negative nonverbal behaviors, and a decline in his rate of completing tasks, rate of compliance, and increase in latency to comply. In short, withdrawal of medication was accompanied by a rapid deterioration in
the quality of his interactions with his mother and an exacerbation of his noncompliance. Thus, under baseline conditions when Philip was under the influence of psychostimulant medication he was more compliant and exhibited a lower rate of social interaction with his mother. These observations are in agreement with the findings of Barkley and Cunningham (1979) who reported that methylphenidate improved the compliance of hyperactive children, but also tended to decrease their sociability.

While the first phase of parent training improved the quality of interactions between Philip and his mother, the second phase resulted in significant improvements in his completion rate of tasks started, compliance rate, and latency to comply to parental commands. Thus, while the current results suggest that significant improvements in the quality of parent-child interactions and reduction of noncompliance can be achieved in hyperactive children who are not under the influence of stimulant medication, the significant gains should be viewed with caution until additional replications are forthcoming.

Another issue concerns the parent's level of knowledge of behavioral principles and success in training. While the current range of scores obtained by parents on a behavioral principles questionnaire was quite variable, i.e., 23%-87% correct responses, there appeared to be no relationship between questionnaire scores and success in
learning the target skills taught in parent training or ability in applying the skills learned in interactions with their children. In fact, Eric's mother, who scored the highest of all mothers on the questionnaire assessing knowledge of behavioral principles, had one of the most noncompliant sons in the study. Thus, the relative simplicity and ease at which the various component skills can be taught and put into practice without extensive knowledge of behavioral principles prior to training speaks well for the overall usefulness and applicability of this procedure with parents of hyperactive children who are noncompliant.

Several factors unfortunately limit generalization of the results obtained in the present study. First, all hyperactive children were receiving psychostimulant medication prior to beginning the study and therefore the obtained results do not apply to hyperactive children without a similar history of medication to control their hyperactive behavior. As Barkley and Cunningham (1979) point out, the administration of stimulant medication over several months time may produce changes in the manner in which parent and child interact with one another that does not immediately reverse when medication is discontinued. Secondly, all children in the present study were given a primary diagnosis of attention deficit disorder with hyperactivity and therefore treatment effects are not
applicable to attention deficit disordered children without hyperactivity or to learning disabled children. Third, all subjects were exposed to a symbolic modeling and parent training intervention and therefore results can only be generalized to other hyperactive subjects who have been exposed to all treatment conditions. Fourth, all children in the present study were between the ages of 4\(\frac{1}{2}\) and 10\(\frac{1}{2}\) and therefore limits generalizability to this age range. It is quite possible that the quality of parent-child interactions is differentially related to the age of the child.

Training which teaches parents of hyperactive children how to attend, ignore, reward, give commands, and use a TO procedure for noncompliance appears to be an effective method for significantly altering dysfunctional patterns of parent-child interactions. It remains the task of future research to parcel out the relative contributions of the various components comprising the training sequence. Also, it is quite likely that different results may have been obtained without the children initially stabilized on psychostimulant medication. Thus, medication may be necessary in order to reduce the intensity of the symptoms of the hyperactive child so that parent training can take hold and provide the parent with greater control over the child's inappropriate behavior in general, and noncompliance in particular. Future research might also consider
documenting each parent and child's emotional response throughout the intervention process. While the hyperactive children in the present study were complying more appropriately to parental commands, no information was collected as to changes in self-perception or level of self-esteem as a result changes in the external contingencies. In is quite plausible that a perceived loss of control in the parent-child relationship may be experienced by the child as a result of parent training which may in turn reduce self-esteem and negatively impact his social relationships in the natural environment.

In the final analysis one might conclude that the rigor and control of stimuli in the experimental situation gives us only an illusory advantage, since what must be in doubt is the generalizability of the data from the strictly defined laboratory conditions to the natural environment in which the child grows up and is socialized. However, it does offer us a starting point from which we can begin to formulate a functional analysis of behavioral interactions and in doing so may provide a stepping stone to improving the quality of the child's interactions parents, siblings, and other significant others in his or her socio-cultural environment.
APPENDICES

Appendix A - Consent to release information
Appendix B - Consent to participate in research
Appendix C - Consent to publish
Appendix D - Behavioral Coding Matrix
Appendix E - Parent's questionnaire
Appendix F - Developmental history
Appendix G - Problem guidesheet
Appendix H - Parent behavior checklist
Appendix I - Hyperactivity reinforcement survey
APPENDIX A

Consent to Release Information

I have been informed that a research project is currently available at the Child Guidance Clinic that may help me and my child.

The nature and purpose of the research project have been briefly described to me. I understand that the principle investigator is George K. Henry who is a doctoral student in clinical psychology at Western Michigan University.

I also understand that a contractual staff member will assist Mr. Henry in collecting data during the project. This assistance will take the form of scoring videotaped interactions between myself and my child; however, at no time during the project will my name or my child's name, or any identifiable information be given to the staff member assisting Mr. Henry.

I hereby agree to have my name, my child's name, and telephone number released to Mr. Henry so that he may contact myself and my child so that we may obtain more information concerning the research project.

__________________________  _________________________
Parent's Signature          Date

__________________________
Child's Name

__________________________
Case Manager or Therapist
(Witness)

The witness is insuring that the person signing this form fully understands what this form means, is able to sign it, and they are willing to sign it without force or threat. The date of termination of consent to release information will be 30 days from the signing date.
APPENDIX B

Consent to Participate in Research

Children who are diagnosed as hyperactive are often described by parents as noncompliant, that is, the child often requires repeated commands before even partial, though temporary compliance occurs. Behaviors which may be included under noncompliance include: not doing the requested behavior, performing it too slowly, taking too long from the time the command or request is given to beginning compliance, not complying long enough, stating a refusal to comply, promising to do it later, or doing something else.

The purpose of this project is to improve the present quality of your child's compliant behavior and your responses to your child. If you agree to participate you and your child will be required to attend clinic sessions once a week for approximately one hour's time for the duration of the study. The study will include 3 stages and will run a minimum of 12 sessions or 3-4 months. The project will commence on October 1, 1983 and terminate on approximately May 1, 1984. The study is under the supervision of Dr. Rodenhizer at the Child Guidance Clinic.

The first session will be an interview about 1 hour in length during which important background information will be obtained. The week following the interview will begin Stage 1 of the study with videotaping interactions between you and your child. In Stage 1 a minimum of four 20 minute interactions will be videotaped over a 2-4 week period. Stage 2 will follow the four videotaped sessions and consist of your child watching a 5 minute film. After the film another 20 minute interaction between you and your child will be videotaped. Following a minimum of four sessions in Stage 2, the final phase, or Stage 3 will begin. In Stage 3 I will review videotapes with you that were recorded in Stage 1. During these sessions in Stage 3 I will continue to show your child the 5 minute film, but in addition I will begin to work with you directly on how to obtain more compliance with your child. Training will involve offering suggestions, and practicing with me in trying out new ways of responding. You will eventually be asked to try out some of these new ways of responding with your child, i.e. being more direct in your requests, changing questioning commands into commands.

Following training with you several home observations will be set up during which time I will evaluate how you request compliance from your child, and how quickly and how long your child complies to your request or does not comply.

The expected benefits for your child include: 1) more appropriate compliance, 2) increased self-esteem, and 3) the reduction or eventual elimination of psychotropic medication. Expected benefits for you may be primarily psychological in nature and include a greater sense of control and development of more effective parenting skills; however you understand that as a result of participating in this study your child's behavior or your responses to your child's noncompliance may not improve or may improve significantly.

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You also grant permission for me to review the videotapes with Dr. Rodenhizer and Dr. Creager for discussion and feedback for the benefit of improving the effectiveness of the intended treatment.

You understand that the following statements apply to being a subject:

A) I have the right to refuse my consent.
B) My consent has been given voluntarily without threats or force.
C) I am free to withdraw my consent to participate in this study at any time without prejudice, to seek care from any professional of my choice at any time, and I reserve the right to have any information destroyed at any time in the study without any negative consequences. I understand that this may be done by calling the Child Guidance Clinic at 343-1651.
D) I understand that this study will last 3-4 months and that treatment will begin with my child watching a 5 minute film with a temporary delay of parent training procedures.
E) I understand that a record of my and my child’s progress while in the study will be kept in a confidential file at the Child Guidance Clinic in Dr. Rodenhizer’s office. This will take the form of a separate research file and be available only to myself (George K. Henry), Dr. Rodenhizer, and Dr. Creager. In such cases subject confidentiality and anonymity will be carefully guarded and no information by which I or my child can be identified will be released or published. Confidentiality means that all subject information gathered will be kept secret and remain known only to the researcher. Anonymity means that my name or my child’s name will not be revealed thereby protecting my individuality.
F) I understand that all videotapes used in this study will be erased and left at the clinic when the project is completed. Also, all identifiable information will be destroyed at the project’s completion.

I have read all of the above, asked questions, received answers to my complete satisfaction, and willingly give my consent to participate in this program with my child. I understand that I will receive a copy of the consent form to keep as my own. If you have any questions or concerns about the project you may call Dr. Rodenhizer at 343-1651 at any time throughout the project.

(Father’s Signature) ___________________________ (Date) ___________________________

(Mother’s Signature) ___________________________ (Date) ___________________________

(Child’s Signature) ___________________________ (Date) ___________________________

(Researcher’s Signature) ___________________________ (Date) ___________________________

(Witness) ___________________________ (Date) ___________________________

(Physician’s Signature) ___________________________ (Date) ___________________________

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APPENDIX C

Consent to Publish

I have had the opportunity to meet with the principle investigator, George K. Henry, and have reviewed the pertinent information concerning my child and myself that Mr. Henry would like to communicate to the scientific community by means of publication.

I realize that the data Mr. Henry wishes to publish will not contain any identifiable information by which my child or myself can be identified. I also realize that subject anonymity will be carefully protected and ensured in the publication process. Anonymity means that my name, or my child’s name or any information by which my family might be identified will not be used, thereby protecting the individuality of myself, my child, and my family.

I have read all of the above, asked questions, received answers to my complete satisfaction and willingly give my consent to have the material reviewed with the researcher submitted for publication.

_________________________  ______________________
(Parent's Signature)        (Date)

_________________________  ______________________
(Researcher's Signature)    (Date)

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### Behavioral Coding Matrix

<table>
<thead>
<tr>
<th>Parent:</th>
<th>Child:</th>
<th>Date:</th>
<th>Observer:</th>
<th>Phase:</th>
<th>Session:</th>
<th>VN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Par Com</td>
<td>Child Parent</td>
<td>0-10 sec</td>
<td>11-20 sec</td>
<td>21-30 sec</td>
<td>31-40 sec</td>
<td>41-50 sec</td>
</tr>
</tbody>
</table>
## Parent's Questionnaire

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Date</th>
</tr>
</thead>
</table>

Please answer all questions. Beside each item below, indicate the degree of the problem by a check mark (**N.I.,**...**Very much**).

<table>
<thead>
<tr>
<th>Number</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Picks at things (nails, fingers, hair, clothing).</td>
</tr>
<tr>
<td>2</td>
<td>Easy to grow-up.</td>
</tr>
<tr>
<td>3</td>
<td>Problems with making or keeping friends.</td>
</tr>
<tr>
<td>4</td>
<td>Excitable, Impulsive.</td>
</tr>
<tr>
<td>5</td>
<td>Wants to run things.</td>
</tr>
<tr>
<td>6</td>
<td>Sucks or chews (thumb; clothing; blankets).</td>
</tr>
<tr>
<td>7</td>
<td>Cries easily or often.</td>
</tr>
<tr>
<td>8</td>
<td>Carries a chip on his shoulder.</td>
</tr>
<tr>
<td>9</td>
<td>Sleeps.</td>
</tr>
<tr>
<td>10</td>
<td>Difficulty in learning.</td>
</tr>
<tr>
<td>11</td>
<td>Restless in the &quot;squirm-y&quot; sense.</td>
</tr>
<tr>
<td>12</td>
<td>Fearful (of new situations; new people or places; going to school).</td>
</tr>
<tr>
<td>13</td>
<td>Restless, always up and on the go.</td>
</tr>
<tr>
<td>14</td>
<td>Destructive.</td>
</tr>
<tr>
<td>15</td>
<td>Tells lies or stories that aren't true.</td>
</tr>
<tr>
<td>16</td>
<td>Shy.</td>
</tr>
<tr>
<td>17</td>
<td>Gets into more trouble than others same age.</td>
</tr>
<tr>
<td>18</td>
<td>Speaks differently from others same age (baby talk; stammering; hard to understand).</td>
</tr>
<tr>
<td>19</td>
<td>Denies mistakes or blames others.</td>
</tr>
<tr>
<td>20</td>
<td>Quarreloose.</td>
</tr>
<tr>
<td>21</td>
<td>Pouts and sulks.</td>
</tr>
<tr>
<td>22</td>
<td>Shells.</td>
</tr>
<tr>
<td>23</td>
<td>Disobedient or obeys but resentfully.</td>
</tr>
<tr>
<td>24</td>
<td>Worries more than others (about being alone; illness or death).</td>
</tr>
<tr>
<td>25</td>
<td>Fails to finish things.</td>
</tr>
<tr>
<td>26</td>
<td>Feelings easily hurt.</td>
</tr>
<tr>
<td>27</td>
<td>Bullies others.</td>
</tr>
<tr>
<td>28</td>
<td>Unable to stop a repetitive activity.</td>
</tr>
<tr>
<td>29</td>
<td>Cries.</td>
</tr>
<tr>
<td>30</td>
<td>Childish or immature (wants help he shouldn't need); clinging; needs constant reassurance.</td>
</tr>
<tr>
<td>31</td>
<td>Distractions or attention span a problem.</td>
</tr>
<tr>
<td>32</td>
<td>Headaches.</td>
</tr>
<tr>
<td>33</td>
<td>Mood changes quickly and drastically.</td>
</tr>
<tr>
<td>34</td>
<td>Doesn't like or doesn't follow rules or restrictions.</td>
</tr>
<tr>
<td>35</td>
<td>Fights constantly.</td>
</tr>
<tr>
<td>36</td>
<td>Doesn't get along well with brothers or sisters.</td>
</tr>
<tr>
<td>37</td>
<td>Easily frustrated in efforts.</td>
</tr>
<tr>
<td>38</td>
<td>Disturbs other children.</td>
</tr>
<tr>
<td>39</td>
<td>Basically an unhappy child.</td>
</tr>
<tr>
<td>40</td>
<td>Problems with eating (poor appetite; up between bites).</td>
</tr>
<tr>
<td>41</td>
<td>Stomach aches.</td>
</tr>
<tr>
<td>42</td>
<td>Problems with sleep (can't fall asleep; up too early; up in the night).</td>
</tr>
<tr>
<td>43</td>
<td>Other aches and pains.</td>
</tr>
<tr>
<td>44</td>
<td>Vomiting or nausea.</td>
</tr>
<tr>
<td>45</td>
<td>Feels cheated in family circle.</td>
</tr>
<tr>
<td>46</td>
<td>Boasts and brags.</td>
</tr>
<tr>
<td>47</td>
<td>Lets self be pushed around.</td>
</tr>
<tr>
<td>48</td>
<td>Bowel problems (irregular habits; constipation).</td>
</tr>
</tbody>
</table>
APPENDIX F

DEVELOPMENTAL HISTORY

Parent's name: 
Child's name: 
Birthdate: 

Pregnancy: 
Birth: 
Early childhood: 

Developmental milestones

Sitting: 
Standing: 
Walking: 
Talking: 

Medical History

Speech disorders: 
Hearing problems: 
Presence/absence of toilet problems: 
Current medication and dosage: 

Temperamental characteristics

Activity level: 
Sleeping: 
Eating: 
Distractibility: 
Attention Span: 

Adaptability to new situations: 
Approach/withdrawal from new stimuli: 

Interviewer: 
Date: 

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## APPENDIX G

### PROBLEM GUIDESHEET

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
<th>Frequency</th>
<th>Duration</th>
<th>Parent Response</th>
<th>Child Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedtime</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.m. &amp; p.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mealtime</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bath time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On phone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visitors-at home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visiting others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Places</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(stores etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siblings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discipl.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other parent/relative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discipl.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX II

PARENT BEHAVIOR CHECKLIST

Check the behaviors below that represent problem areas with your child. Then rank order the behaviors you checked from primary problem (rank of 1) to least problem.

1. Whine
2. Physical negative (attacks another person)
3. Humiliate (makes fun of, shames, or embarrasses others)
4. Destructiveness (destroys, damages, or attempts to damage any object)
5. Tease
6. Smart talk
7. Noncompliance (does not do what he or she is told to do)
8. Ignore (fails to answer)
9. Yell
10. Demand attention
11. Temper tantrum

Parent's name: ________________________________

Child's name: ________________________________

Date: ________________
APPENDIX I

Hyperactivity Reinforcement Survey

<table>
<thead>
<tr>
<th>Child:</th>
<th>Parent:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Reinforcers</th>
<th>Activities</th>
<th>Noneedibles</th>
<th>Edibles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise/Attention</td>
<td>Shopping</td>
<td>Models</td>
<td>Candy</td>
</tr>
<tr>
<td>Affection (verbal physical)</td>
<td>Gym/ Playground</td>
<td>Records</td>
<td>Gum</td>
</tr>
<tr>
<td>Extra privileges</td>
<td>Movies</td>
<td>Posters</td>
<td>Soda</td>
</tr>
<tr>
<td>Time on phone</td>
<td>Hobbies</td>
<td>Clothes</td>
<td>Cookies</td>
</tr>
<tr>
<td>Time out of house</td>
<td>Camping</td>
<td>Toys</td>
<td>Cakes/pies</td>
</tr>
<tr>
<td>Awards/ Certificates</td>
<td>Drawing/ coloring</td>
<td>Sporting goods</td>
<td>Ice cream</td>
</tr>
<tr>
<td>Public display of work</td>
<td>Baking/ cooking</td>
<td>Pets</td>
<td>Hamburgers</td>
</tr>
<tr>
<td>Special playtime with parent</td>
<td>Travel</td>
<td>Bicycle</td>
<td>Fruit</td>
</tr>
<tr>
<td>Others:</td>
<td>Television</td>
<td>Go-cart</td>
<td>Nuts</td>
</tr>
<tr>
<td></td>
<td>Radio</td>
<td>Others:</td>
<td>Others:</td>
</tr>
<tr>
<td></td>
<td>Use of car</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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BIBLIOGRAPHY


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