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ABSTRACT

The report describes accomplishments of a project to identify patterns of task persistence among handicapped preschoolers and the teacher behaviors that facilitate task persistence. In phase I of the project, 101 children (including 12 nonhandicapped, 57 mildly, 28 moderately, and 4 severely handicapped students) participated in an examination of the relationship between task persistence and four variables: handicapping condition, social functioning, intellectual ability, and school-related achievement. The effect of teacher behavior on task persistence in small group, large group, and free play settings was also examined. In phase II, intervention materials and procedures for teachers were developed and their effects on student achievement measured. Two extensive sets of tables give preliminary summaries of teacher and child behaviors. Revision of the materials will be completed in phase III, and long-term effects on school achievement measured. Significant increases in appropriate teacher and aide behaviors were noted along with significant increases in covert engaged behavior of the children and a significant decrease in off-task behavior. The five appendices consist of training outlines and instructions for preparing teachers to improve students' task persistence (in verbal and fine motor activities) and test-taking skill (maze test and block test). (CL)

DEPARTMENT OF EDUCATION
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Program Performance Report Year II

Research in Education of the Handicapped

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Facilitating School Success Among Young Mildly and Moderately Handicapped Children by Enhancing Task Persistence

5. Certification. I certify that tothe best of my iknowledge and belief this report (consisting of this and subsequent pages and attachments) is correct and complete in all respects, except as maybe specifically noted herein.

Merle B. Karnes

Merle B. Karnes, Project Director

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INTRODUCTION

The purpose of this project is to identify patterns of task persistence among handicapped preschoolers and the concomitant teacher behaviors that facilitate task persistence in handicapped preschoolers. Emphasis during the first year of the project, Phase I, was on investigating the relationship of task persistence with teacher behavior and child characteristics. This information was used in conjunction with findings from other research to develop an inservice training program for preschool teachers which was then implemented during Phase II, the second year of the project. The purpose Phase II was to examine experimentally interventions to enhance verbal and active engagement of handicapped preschool children. While the project has sucessfully completed all the objectives proposed for Phase II, two minor modifications were necessary. These changes are described below:

(1) Originally two teacher interventions were proposed to be experimentally examined. These interventions were to focus on providing teachers with techniques to enhance the verbal engagement and active engagement of their students. Currently these interventions are being tested. A third intervention was added which was not in the original proposal. This intervention focuses directly on children and has been designed to help them develop an internal strategy to follow when presented with a difficult task. This third intervention is derived from the research in cognitive behavior modification which suggests that children can learn to stay on task longer through a self-instructional strategy known as private talk. (Bryant and Budd, 1982, Harris, 1982, and Bornstein and Quevillon, 1976.)

(2) In the proposal submitted in April 1984, it was proposed that the two teacher interventions would be tested simultaneously against a control group at Colonel Wolfe School. Using a multiple baseline design the two interventions would be instituted in two classes with a third class serving as a control class. At the time of the original proposal, each of the classes at Colonel Wolfe School was scheduled to be heterogenous. However, the classes at Colonel Wolfe School remained stratified according to ability level. Therefore, if the proposed experimental design had not been modified, treatment effects would have been confounded by ability level. Presently, all classes at Colonel Wolfe School received each of the proposed interventions and a control group was selected from children in an early childhood special education program within the community.

In the remainder of this report outcomes from the first two years of the project are described.

OBJECTIVES AND ACTIVITIES

Contained below are the objectives that have guided the project to date. All objectives have been successfully completed. Methods used to complete objectives are delineated in the appropriate Accomplishments section of this report.

Phase I

Objectives	Activities
1. To investigate the relationship between task persistence and the following variables: a. Handicapping condition (presence, type, and severity); b. Social functioning; c. Intellectual ability; d. School-related achievement.	1. Develop a data collection system. 2. Hire and train observers. 3. Administer standardized tests and other instruments which assess social functioning, intellectual ability, and school-related achievement. 4. Monitor classroom observation and data collection. 5. Tabulate, reduce, and keypunch data.
2. To investigate the relationship between teacher behavior and task persistence across types of activity settings (small group, large group, free play).	

Phase II

Objectives	Activities
1. To develop intervention materials and procedures, based on the findings of Phase I plus other relevant research, to be used in training teachers in classroom practices which increase task persistence.	1. Review relevant research. 2. Develop a model of teacher behaviors and styles that promotes task persistence in each of 3 settings (small group, large group, free-play). 3. Develop intervention materials to train teachers to engage in these behaviors.
2. To assess experimentally the effectiveness of these intervention materials in (a) promoting the desired teacher behaviors and (b) promoting the desired student behaviors. 3. To assess experimentally the effects of the task persistence intervention upon student achievement.	1. Train teachers in the intervention methods. 2. Collect observational data on child behaviors and teacher behaviors. 3. Collect child achievement data using the Kaufman-ABC and teacher assessments. 4. Tabulate, reduce, keypunch, and analyze data.

Phase III

Objectives	Activities
1. To modify the intervention materials and procedures based on the findings of Phase II.	1. Review Phase II findings. 2. Develop a revised set of intervention materials that incorporate these findings.
2. To assess the long-term effects of different task persistence levels on subsequent school achievement by following up children from Phase II.	1. Locate the children who participated in Phase II (including the control group) in preschool and kindergarten settings. 2. Collect data on placement both for the 1985-86 year and projected placement for the subsequent year. 3. Develop a teacher report form on which to gather data on child adjustment and achievement. 4. Set up a distribution, collection, and follow-up system for the completion of these forms by the teachers. 5. Develop a coding and tabulation system for recording the information from these forms. 6. Perform statistical analyses to measure the long-term effects of the intervention.
3. To develop a task-persistence intervention module which includes materials, procedures, and inservice workshops that is transportable to other preschool special education programs.	1. Develop training options which can be communicated through written materials. 2. Monitor the use of these materials to see if they are being used as intended.
4. To implement the intervention training at selected preschool sites and to evaluate the transportability of the module.	1. Locate preschool sites where teachers will be trained through the module. 2. Collect observation data on these teachers to measure changes in their behavior as a result of the training. 3. Perform statistical analyses to measure the significance of these changes in behavior.

ACCOMPLISHMENTS PHASE I

Method

Setting

Six early childhood special education preschool classrooms, three in each of two buildings, were included in this phase of the project. Five classrooms were single rooms containing between seven and thirteen children, with an average of approximately ten children in each of two daily sessions. One classroom was team-taught and contained an average of eighteen children in each session. Each classroom had different children attending morning and afternoon sessions. In all, there were ten single classes and two double classes.

During large group activities, children gathered in a semicircle on the floor. During free play they were permitted to move throughout the classroom, although each teacher had restricted areas and materials that were off limits. Three classrooms contained smaller rooms used with some of the children during small group instruction. In the other classrooms, the teachers made use of dividers such as bookshelves to separate children when small groups were in session.

Subjects

Subjects for the study were drawn from children and staff in two early childhood special education programs in Champaign and Urbana, Illinois. There were 101 children and 13 adults (teachers and aides) included in the final sample. Data for the adults were analyzed in relation to each of the two daily sessions. In other words, each adult was counted as a subject twice, with data from morning and afternoon sessions analyzed separately (N = 26).

Of the 101 children, 12 were nonhandicapped, 30 had speech handicaps, 51 had cognitive handicaps, 6 had multiple handicaps, 1 had a behavioral handicap, and 1 had a physical handicap. In terms of severity of handicapping conditions, 57 children were classified as mild, 28 as moderate, and 4 as severe. The nonhandicapped or "model" children were enrolled in six of the classes, with an average of two "models" in each of these classes.

Data Collection

Observer Training. During a week-long training session, five observers were trained in the following abilities: (a) to identify the target task (or teacher-intended, instructionally relevant activity) in a given situation, (b) to differentiate instructional versus affective expectations in the classroom, (c) to code specific behaviors according to the categories of the study, (d) to use the stopwatches and coding sheets accurately while demonstrating observer etiquette, and (e) to observe a pair of subjects for an eight-minute segment and code their behavior reliably.

Each observer received a training manual, which described the procedures for observing. Several different activities were used in teaching the system for observation and coding, including lecture-discussions, paired tutorials, simulations, quizzes, games, and coding practice with videotapes. In addition, the observers had out-of-class assignments that involved examining and recording their observations of the classes. Teachers cooperated in orienting the

observers to the classrooms.

Interobserver Reliability. By the end of the training week, each observer was able to code reliably both an eight-minute segment of videotape and an actual classroom interaction. Afterwards periodic meetings were held with the observers to discuss questions about observation and coding procedures. Observers were briefed each week on new data priorities or procedures. A study completed in December, 1983, showed that interobserver reliability for all five observers ranged from 88% to 94%.

Observational Procedures. Each observer collected data daily in one or more classrooms, focusing alternately for 3.5 to 8 minutes on two children or two teachers. Subject behavior was recorded following a momentary time-sampling procedure (Kazdin, 1982): every 15 seconds, the observer coded one subject's behavior based on what was occurring at that moment and then located the other subject. Observers used one to three seconds to record behavior, leaving twelve to fourteen seconds to locate the other subject. Each subject's behavior was recorded every thirty seconds.

Both teacher and child data were collected during three activity settings: (a) large group, (b) small group, and (c) free play. Large group included such activities as sharing time, storytelling, and music movement lessons. Small group activities were usually conducted with two to five children at once. Free play was time when children were allowed to choose their play within the classroom, whether individually or cooperatively. The main consideration in selecting subjects was to equalize time they were observed in each setting. For any activity setting, each subject was observed for no more than eight minutes on a given day.

Teacher and child behaviors were coded according to categories adapted chiefly from Chow, Thomas, Thum, and Phillips (1980). As can be seen in Table 1, child behaviors were assigned to one of six categories, teacher behaviors to one of eight. Child behaviors were further divided into engaged and non-engaged.

Test Data. To measure child achievement and academic potential, children were given four standardized tests. The Kaufman Assessment Battery for Children (Kaufman & Kaufman, 1983), containing an achievement and a mental processing scale, was used as a measure of both academic achievement and potential. The mental processing scale was designed to measure a child's current level of intellectual functioning and has a mean of 100 and a standard deviation of 15. For a second measure of academic potential, children were given the Stanford-Binet Intelligence Scale (Terman & Merrill, 1973). In addition, since it was felt that a measure of social maturity was needed, the California Preschool Social Competency Scale (Levine, Elzey, & Lewis, 1968) was given to all children.

As a fourth test, an experimental measure of task persistence was piloted with all children. In an isolated room the examiner modeled the construction of a house from Lego blocks and then requested that the child build houses for as long as he or she wished. The examiner then left the room and the child was watched and timed through a two-way mirror. The length of time the child persisted at the block-building activity was taken to represent the child's task persistence.

Table 1

Categories of Child and Teacher Behavior

Observed During Phase I

Child Behavior	
Engaged Verbal	child responding to a question, asking a question, or making a comment relevant to a particular task
Engaged Active	child manipulating material for an activity in an appropriate manner
Engaged Covert	child apparently involved in an activity, but no observable behavior (listening, thinking, or watching were all considered engaged covert behaviors)
Not Engaged Interim Activity	child involved in an activity indirectly related to the target task, such as sharpening a pencil
Not Engaged Off-Task	child constructively but inappropriately involved in an activity other than the target task
Not Engaged Disruptive	child involved in an inappropriate activity disruptive to one or more other children
Teacher Behavior	
Task Feedback	providing information on correctness or incorrectness of child's current task-relevant behavior
Task Question	a question relevant to the child's current activity and calling for a response from the student, whether oral or manual
Explanation	information or lecture geared to a particular activity
Structure or Direct	a comment orienting the child to particular goals or specific instructions
Negative Task Engagement Feedback	a statement designed to limit inappropriate child behaviors (excluding indications of incorrect responses)
Attending Non-Verbally	teacher attentive to particular child behaviors but not interacting verbally with the student (Hamilton & Gordon, 1978)
Direct Involvement	teacher directly and physically involved in what the student was doing
Management	a statement to a child or group regarding general classroom practices

Results

Data for each of the child behaviors are presented in Table 2. Across all activity settings, children were engaged between 86% and 90% of the time. Child behaviors in large and small group settings were similar in that children spent most of their time engaged covertly, while in free play children were more likely to be actively engaged. Interestingly, even though preschool programs are designed to foster language development, children were found to be engaged verbally in only 11% of the recorded data points.

Table 3 contains a summary of teacher behaviors across activity settings. Although teachers were engaged non-verbally for the majority of coded intervals, overall their behaviors were more evenly distributed across coding categories than were child behaviors. It is important to note that the behaviors at which children and teachers spent the most time were similar in that they both tended to be passively involved in classroom activities (non-verbal involvement for teachers and covert engagement for children).

To determine whether there were significant differences between nonhandicapped and handicapped children with respect to engaged active and verbal behaviors, a series of one-way ANOVAS were run. Table 4 contains a summary of this analysis. There were no significant differences in engaged verbal behavior between the handicapped and nonhandicapped children across activity settings. Similarly, there were no significant differences in engaged active behavior between handicapped and nonhandicapped children within the freeplay setting. However, there were significant differences in levels of engaged active behavior between large and small group settings. Nonhandicapped children had higher levels of engaged behavior in small and large group settings than did handicapped children.

In Table 5, correlations between a child's formal test data and level of engaged active and verbal behavior are presented. As can be seen in Table 5, these are in the low-to-moderate range. It is particularly important to note that the experimental measure of task persistence that was piloted with these children was not highly associated with classroom levels of task persistence.

A series of multiple regression runs were completed to examine the relationship between child and teacher behavior. Utilizing a stepwise procedure, teacher behavior was regressed on child engaged verbal and active behavior across each of the activity settings. In Table 6 variables that significantly contributed to the regression equations are presented. Positive feedback was negatively related to a child's level of engaged verbal behavior in the freeplay setting. It seemed that teachers with nonverbal or marginally verbal children tended to reinforce any verbal response that their children emitted. As a result, these teachers provided more reinforcement for verbal responses than other teachers, yet their children had lower levels of verbal behavior. Therefore, it appeared that engaged verbal behavior was negatively related to positive feedback. However, positive feedback was associated with higher levels of child engaged behavior in the large group setting. Attending nonverbally and management were negatively related to engaged verbal behavior in the large group setting. Providing children with structure or directions was positively associated with greater levels of engaged active behavior in the small group setting.

Table 2

Proportions of Child Behaviors

For Phase I Across Activity Settings

	Free Play	Small Group	Large Group
Engaged Verbal	.11	.09	.08
Engaged Active	.58	.32	.14
Engaged Covert	.17	.49	.68
Engaged Total	.86	.90	.90
Not Engaged Interim	.06	.03	.02
Not Engaged, Off Task	.07	.06	.07
Not Engaged, Disruptive	.01	.01	.01
Not Engaged Total	.14	.10	.10
Total	1.00	1.00	1.00
N = 101			

Table 3

Proportions of Teacher Behaviors

For Phase I Across Activity Settings

	Free Play	Small Group	Large Group
Task Feedback	.09	.13	.07
Task Question	.11	.13	.09
Explanation	.11	.15	.17
Structuring and Direction	.10	.15	.08
Positive Feedback	.02	.15	.08
Negative Feedback	.02	.02	.03
Non-Verbal Involvement	.37	.25	.38
Direct Involvement	.18	.12	.15
Management	.03	.02	.02
Total	1.00	1.00	1.00

N = 26

Table 4

Summary of One-Way ANOVAS for Phase I Engaged

Active and Verbal Behavior of Handicapped and Nonhandicapped Children

	Student Behavior			
	Engaged Active		Engaged Verbal	
Activity Setting	F-value	p≤	F-value	p≤
Free Play	1.94	.13	.62	.61
Large Group	2.81	.05*	1.97	.13
Small Group	7.08	.01*	1.18	.32
Across Settings	3.24	.04*	1.66	.18

*Statistically significant

Table 5

Correlations for Phase I Between Child Behavior

Across Settings with Formal Test Data

Child Behavior	Task Persistence Piloted Test	Kaufman Achievement Battery	Kaufman Mental Processing Battery	Stanford-Binet Intelligence Scale	California Preschool Social Competency Scale
Free Play Active	.22	-.16	-.08	.04	-.11
Free Play Verbal	-.20	.15	.14	.20	.02
Small Group Active	.16	-.17	-.21	-.09	-.12
Small Group Verbal	-.20	.15	.26	.20	.15
Large Group Active	.00	-.21	-.23	-.19	-.08
Large Group Verbal	.74	.05	-.03	.17	.02

Table 6

Teacher Behavior Significantly Associated

With Child Behavior for Phase I

Activity Setting	Significant Teacher Behaviors	R^2 Change	r	p≤
Free Play				
Active	None Significant	-	-	-
Verbal	Positive Feedback	.14	-.37	.01
Large Group				
Active	Positive Feedback	.08	.28	.02
Verbal	Attending Non-Verbally	.13	-.36	.01
	Management	.08	-.31	.01
Small Group				
Active	Structure or Directions	.18	.42	.01
Verbal	None Significant	-	-	-

Discussion

One of the most striking findings was the high proportion of intervals in which children were recorded as engaged. However, in over 50% of this engaged time, child behavior was coded as covertly engaged. Free play was the only activity setting where in a substantial number of intervals child behavior was recorded as actively engaged. Verbal engagement was the least recorded behavior across all activity settings. Such low levels of engaged active and verbal behavior were surprising, given that preschool programs are generally designed to foster language development and to give children opportunities to refine gross and fine motor coordination. This finding should be researched further to determine whether it is specific to the programs examined in this investigation or indicative of a general trend among early childhood special education programs.

It was interesting that attending non-verbally was the most frequently coded teacher behavior. In a fashion similar to that of their children, teachers were spending most of their time passively involved in the classroom. In part, this high frequency was due to the manner in which both teachers and aides assisted each other during large group activities, with one adult watching and modeling appropriate behavior while the other taught. Other teacher behaviors were much more evenly distributed across coding categories than were student behaviors.

Particularly surprising was the lack of significant difference in the levels of engaged verbal behavior between handicapped and nonhandicapped children. Nor were there any significant differences in the engaged active behavior of handicapped and nonhandicapped children within the freeplay setting. One explanation for these findings is related to the frequency at which the behaviors occurred. Engaged verbal behavior occurred so infrequently that variance may have been undetectable. Another explanation has to do with the focus of the setting in which the behavior occurred. In small and large group settings, many of the activities were academic. Here the engaged active behaviors of handicapped and nonhandicapped children followed a pattern consistent with the findings of earlier investigations, in that nonhandicapped children were actively engaged significantly longer than handicapped children. Conversely, there were no differences in levels of engaged behavior in the nonacademically-oriented free play setting.

One of the most intriguing findings was the lack of clear positive associations between measured academic potential and task persistence. It seems unlikely that no relationship exists, but more plausible that something was wrong with the measurement procedures. One problem may lie in the standardized instruments used to measure academic potential in preschoolers. Such measurement is problematic because children at this age lack a body of common experiences from which to draw sample items (Anastasi, 1976). As a result, these tests lack predictive validity and often disagree with actual classroom performance. It may be that task persistence is more closely associated with what children accomplish in the classroom than with what standardized instruments measure.

Results of the piloted task persistence test were not very promising. Upon reflection, a major flaw appeared in the development of this test. Children were allowed to build as many or as few houses as they wanted. They did not have a specific goal or problem to solve. The authors now believe that this

lack of a goal was the main problem with the test. Further examination of the literature reveals that task persistence may be related to goal-directed behavior. The test has accordingly been redesigned to include a goal-directed component and is currently being tested.

Several teacher behaviors were significantly associated with levels of child engaged verbal and active behaviors. Positive feedback and providing direction or structure were associated with increased child engaged active behavior. These relationships are consistent with findings from previous research. When teachers engaged in the categories of attending non-verbally or management, there was a reduced level of engaged verbal behavior in children. This suggested that teachers may need to spend more time interacting with their children to enhance their engaged verbal behavior. It is encouraging that providing children with structure or directions was positively associated with increased actively engaged child behavior.

In conclusion, the first year of this project, while exploratory, provided insight into the current state of preschool special education and suggested direction for further research into the nature of task persistence among young children. Surprising findings included the low levels of verbal and active engagement in two early childhood special education programs whose major goals were to enhance the verbal and fine motor skills of preschool handicapped children. Moreover, both teachers and children were most often engaged in passive nonverbal watching. On a promising note, the findings suggested that more interactive teacher behaviors, including structuring children's activities and providing positive feedback can in fact impact children's task persistence.

ACCOMPLISHMENTS PHASE II

Method

Setting

The six early childhood special education classrooms described in Phase I of the project, were included in the second year of this project. Three of the classrooms served as control sites and three served as intervention sites. All classrooms had different sets of children attending morning and afternoon classes.

Experimental Interventions

Three interventions were field-tested during the second project year. Two of these involved training teachers to impact children's verbal and active engagement during regular classroom activities in the experimental classrooms. The third intervention involved training children in a self-instructional technique known as private talk in order to increase these children's persistence at a goal-directed task.

Teacher-Intervention I. The goal of the first teacher-training intervention was both to increase the amount of time children were communicating and to increase their attention during language-based group activities. Teachers and aides in three classrooms received training to increase specific teaching behaviors (itemized later in the text) that were seen to have a potential impact on children's verbal engagement and attending behaviors. An outline for this training is included in Appendix A.

For each teacher and aide pair, the project coordinator/trainer facilitated a three to four week long training process that included (a) consulting about the teaching behaviors to be increased, (b) demonstrating these behaviors in the classroom, and (c) observing the teaching staff in order to offer feedback. For each of three activity settings (large group, small group, and free play), the teacher and aide participated in an initial consultation during which they were given specific information and training regarding the teaching behaviors to be increased. Three sets of training matrices were shared with the teacher and aide which included examples of the behaviors in each setting (see Appendix B). In order to plan demonstration lessons that fit with the teaching staff's structure and plans for the classroom, the coordinator/trainer gathered information during this consultation about teacher preferences and IEP goals and objectives. The demonstration lesson that followed was planned to incorporate this input while providing clear examples of each of the five targeted teaching behaviors.

The teacher and aide observed the demonstration lesson taught by the coordinator/trainer using the same observation form that the trainer later used when observing them. During a follow-up consultation, this demonstration was discussed. The teacher and aide then planned ways to incorporate the target behaviors into a language-oriented activity which each of them would lead in the classroom during the large group, small group, or free play setting. Following this consultation, the trainer observed the mutually-planned language lesson and recorded qualitative data using the same observation sheet used by the classroom staff. This qualitative data, along with the quantitative data collected by the data collectors, were used as feedback to the teacher and aide. Further training involved refining the teaching staff's use of these behaviors and mutually determining goals for improvement and maintenance of the behaviors. Follow-up and support procedures for helping the teaching staff maintain the newly acquired or increased teaching techniques were discussed during a transition consultation. This five step process of consulting, demonstrating, consulting, observing, and consulting was repeated for each of the three activity settings in this order: large group, small group, and free play.

During this first intervention, five teacher behaviors were targeted. Each of these behaviors are related both to increasing children's verbal engagement and to increasing the frequency of interactions between children and teachers. These behaviors, which teachers were trained to incorporate into their language-based lessons were as follows:

1. Open question asking - posing questions that may be answered in several possible ways and through a longer response.

2. Closed question asking - posing questions which have only one or two brief and predictable responses.

3. Structuring group communication - directing children to respond in a unison, choral fashion.

4. Structuring individual communication - directing a child to repeat or extend a modeled verbal response.

5. Reinforcing verbal responses - providing a positive statement, gesture or reward in response to a child's communication.

Teacher-Intervention II. The second intervention involved increasing certain teaching behaviors that were related to increasing active engagement during classroom fine motor activities. An outline for the teacher training involved in this intervention is found in Appendix C.

Because the teachers in the experimental classrooms only planned fine motor activities for one specific time of the day, the training was modified to focus on this time whether it was small group, large group, or free play. The training followed a similar pattern to that established during the first intervention with the five step process of consultation, demonstration, consultation, observation, consultation, although this process was not repeated for other activity settings. Again the teachers received a training matrix describing the behaviors and giving examples (see Appendix D). Again the teacher and aide observed the coordinator/trainer demonstrating a lesson that fit with their classroom goals and structure. The teacher and aide received both qualitative and quantitative feedback and participated in setting goals for themselves in terms of the targeted teaching behaviors.

Two sets of four teaching behaviors which are all related in increasing children's active engagement during fine motor construction lessons were trained during this second intervention. The first set of four teaching behaviors included skills needed to plan lessons with the characteristics which Kounin & Doyle, (1975) have found to foster children's task persistence. These four characteristics all involve ways to structure the activity or materials so that children get the message of "more to do" while they are working. The teachers were trained to incorporate these characteristics into their fine motor lessons. These characteristics were defined for the teachers in the following way:

1. Slots - a finite number of clearly defined spaces to be filled such as might be found in a puzzle or a worksheet with a set number of boxes.

2. Cyclical steps - a series of subactivities that lead from one to another in a repeating fashion, for instance, cutting and pasting.

3. Stages - longer sets of subactivities where one stage must be completed before another is begun, for example, completing a papier-mache figure before painting it.

4. Schema - the incorporation of a larger concept into the activity which invokes the children's internal knowledge; for instance, asking the children to produce a person, vehicle, or animal. Their internal schema then would lead them to add one more part or one more feature and give them a sense of more to do.

The second set of teaching behaviors included the teaching skills needed to present lessons that encourage task persistence. These four teacher behaviors were intended to focus the child's attention on the task to be completed and were defined as follows: a) model, showing an example of the finished product that is to be completed; b) goal, including both the teacher's use of specific statements and strategies for eliciting goal statements from children; c) analysis, including both task analysis ("What do you need to do?") and schema analysis ("What are all the parts of an airplane to be included?"); and d) debriefing, reviewing with the children what they have accomplished. These four teacher behaviors were packaged according to the time at which the teacher would use them when presenting a lesson. When introducing a lesson the behaviors of

model, goal, and analysis were emphasized. During a lesson the teacher behavior of analysis was emphasized and debriefing was most important after the lesson. Data was recorded according to the number of appropriate teacher behaviors used: (a) in the introduction, (b) during the lesson, and (c) after the lesson.

Child Centered Intervention. The third intervention involved training a group of children in six early childhood classrooms to increase their persistence at goal-directed tasks through their use of a self-instructional strategy called private talk, derived from cognitive behavior modification research. The children participated in seven short individual or small group sessions during which they are instructed in three varieties of private talk. The training procedure for the children used an instructional procedure involving three basic steps: model, lead, and test. Specific instructions for this training are included in Appendix E.

During the first session, children were introduced to the concept of private talk through a story about a distractable rabbit who is taught how to keep himself on task by a wizard. The rabbit learns three varieties of private talk which the children are asked to repeat during the course of the story: a) asking himself questions about what he has to do, b) giving himself information about the task, and c) giving himself feedback and praise.

The remainder of the private talk training was divided into two stages each consisting of three sessions. The first three sessions focused on teaching the children private talk skills with very simple repetitive fine motor tasks. The last three sessions taught children to apply these private talk skills to problem solving tasks. During all six sessions, the children worked either individually or in pairs with an experimenter to practice private talk while completing a paper and pencil task. For each stage during the initial session the experimenter role-played the activity using private talk during the completion of task. The children were then asked to complete the task and through reminders, modeling and prompting are encouraged to practice the three kinds of private talk. For each stage during the next two sessions, longer and more difficult tasks were introduced. The experimenter limited the amount of prompting given to each child depending on the child's level of skill in producing each of the three kinds of private talk. During each session, the experimenter recorded each child's achievement in using private talk according to the following levels of competence: (a) initiates independently, (b) uses after a general reminder, (c) uses after a specific prompt, and (d) repeats after hearing a model. Praise was used to reinforce children for using private talk.

This third intervention was refined and repiloted after the end of the 1984-1985 school year with a group of ten non-handicapped preschoolers enrolled in a daycare program. The purpose of this second pilot of the third intervention was two-fold: to incorportate more problem-solving and goal-directed strategies into the private talk taught to children and to (expand) ways of instructing preschoolers in private talk. This later intervention differed from the earlier one in the following ways:

1. The tasks to be completed by the children during the later intervention all involved solving a problem or acheiving a goal. Whereas the earlier tasks had included some simple tracing activities requiring only perseverence but no cognitive processing, the later tasks were goal-oriented in nature, for example solving mazes or producing complex geometric designs.

2. The difficulty of the tasks to be completed during the later training could easily be manipulated to match the proficiency level of the child.

3. The focus of the later training was on planning, using verbalizations that focused on reaching a set goal. The focus of the earlier training had been on working longer.

4. The early instruction to the children had depended on three stategies that were spelled out in the literature on private talk, i.e., modeling , prompting and reinforcement. The later instruction added some more interactive strategies, for instance a) having the child tell the experimenter how to complete a task, b) having the experimenter and the child take turns completing a single task while each instructed his or herself, c) restricting the use of certain materials until the child had verbalized a plan, and d) having set stopping points built into the task to ensure that the child updated his or her plan.

Experimental Design

The impact of teacher interventions was examined through a multiple baseline design across classes. A baseline was taken before teachers and aides were aware of the intent of the project. A second baseline was taken after teachers and aides had been told of the project's intent but before training began. After a clear baseline was established, training began. The teacher and aide of each class were trained together as a pair with approximately a 20-day lag between the training of each pair. In addition, a control group of children was identified and matched to the intervention group on the basis of handicapping condition.

To examine the impact of the self-instruction intervention a randomized matched-pairs design was used. Thirty-four children from the morning and afternoon classes participated. These children were given the Maze Test and Block Test described in the Phase II Test Data section of this proposal as pre-post measure. Children were grouped into 17 matched pairs based on similarity of scores on the Maze Test. Children were matched on this test because it most closely resembled the training activities used in the self-instructional intervention. Children within matched pairs were then randomly selected to serve in the intervention or control group. Teachers and aides were kept blind as to which group each child had been assigned.

Subjects

Three teachers and their aides at the intervention site served as subjects. Teachers all had Master's degrees and at least three years of experience. One aide had a Master's degree and the two other aides had Bachelor's degrees. All aides had at least six years of experience.

For the two teacher interventions, children in the morning classes at the intervention site served as subjects. There were 33 children in the final sample; of these children 9 were nonhandicapped, 12 had cognitive handicaps, 11 had speech handicaps, and 1 had multiple handicaps. In terms of severity, 18 children were classified as mild, 5 as moderate, and 1 as severe. Based on level of severity a matched sample of children was selected to serve as controls.

To select children for the self-instructional intervention, teachers at the intervention site were asked to nominate children that they thought would benefit from this intervention. A total of 34 children from the morning and afternoon classes were identified.

Data Collection

Observer Training. Four observers were trained to identify the child and teacher behaviors contained in Table 7. Observers met ten times and practiced their recording techniques on two video-tapes of small group lessons. After each of the training sessions observers would spend between 30 and 60 minutes observing the intervention classes to familiarize themselves with children and adults within these classes. Observers had to obtain a Kappa of .50 (Kazdin, 1982) between observer ratings before beginning classroom observations. Periodic meetings were held with the observers to discuss problems or concerns throughout the project. Three observers were assigned to specific classes and one observer rotated through classes to obtain reliability data.

Interobserver Reliability. Twice a week reliability data was collected from each observer. Percent agreement and Kappa coefficients were computed to determine interrater reliability. There was a median Kappa of .72 and a mean Kappa of .74. For percent agreement the median was .92 and the mean was .95. Both reliability coefficients exceed the minimums suggested by Gelfand and Hartman (1975).

Observational Procedures. Each observer collected data daily between 8:30 a.m. and 11:30 a.m. Both teacher/aide and child behaviors were recorded during four activity settings: a) large group, b) small group, c) free play, and d) snack time. Large group included such activities as sharing time, storytelling, and music movement lessons. Small group activities were usually more structured activities conducted with two to five children in a group. During the free play setting children were allowed to play within the classroom, whether individually or cooperatively. At snack time the children would gather around a table to eat a snack.

Behavior was recorded using both momentary time sampling and event recording. Every 15 seconds the observer would alternately record child and then teacher behavior. When recording teacher behavior the observer would tally the number of times that the teacher or aide engaged in behaviors described in Table 7. Two types of child behaviors were recorded. The first type focused on active behaviors and the second type focused on verbal behavior. At the moment a tone was heard from a device used to monitor time intervals, each observer began counting children. When observing active behaviors the observer would record the number of children actively engaged, covertly engaged, and off task immediately following the tone. When observing verbal behavior, the observer would count the number of children that had appropriately communicated with another child or the teacher during the 15 second interval. Overall, the observation system repeated the following cycle: a) teacher behaviors tallied throughout the interval, b) child active behaviors counted at the moment of tone from the timing device, c) teacher behaviors tallied throughout the interval, and d) children counted that had appropriately communicated throughout the interval. Each step (time interval) in the cycle lasted 15 seconds. This cycle was repeated for 4 to 16 minutes in each of the four observation settings. Duration of observations was based on availability of appropriate activities to

be observed. In addition, observers categorized each construction lesson according to the characteristics listed in Table 7.

An additional set of behaviors was collected during free play. Five children who were seen to be likely to remain in the program for the complete year were selected from each class . These children were individually observed weekly throughout the year for 5 to 30 minutes. Observations of these children involved recording both the activities in which they were engaged and the duration of time for each of these activities.

Test Data. To measure student achievement and academic potential, children were given the Kaufman Assessment Battery for Children (Kaufman & Kaufman, 1983). To measure changes in self-concept and motivation, the Self-concept and Motivation Inventory (Milchus, Farrah, and Freitz, 1968) was administered.

Two tests, the Block Test and Maze Test, were developed and piloted to measure a child's level of task persistence. Directions for these tests are contained in Appendix F. Briefly, however, in both tests children were first taught to solve a simple problem and then presented with a problem solving situation that was unsolvable. The length of time that children work at solving these problems is considered a representation of their degree of task persistence.

Results

Preliminary summary findings of teacher behaviors are contained in Tables 8 through 14. Table 8 contains the mean rate of teacher behaviors observed across activity settings. Teachers and aides seemed to engage in closed question asking, direct directions, and physical involvement more often than other behaviors regardless of setting. A series of one-way Anovas were run to determine whether there were any significant differences in the rate of teacher and aide behavior across activity settings. Table 9 contains rate per minute of teacher behaviors across lesson types. A series of one-way Anovas were again run, this time to determine whether there were any significant differences between teacher and aide behavior across lesson types. Tables 10 and 11 contain rate of teacher behaviors across the teacher interventions I and II respectively. In Table 10 the first five teacher behaviors all were related to verbal engagement and demonstrated a consistent increase throughout the intervention. Teacher behaviors not related to verbal engagement remained relatively stable. Table 11 contains both the characteristics and mean number of appropriate teacher/aide behaviors across the intervention conditons of teacher intervention. Tables 12, 13, and 14 contain the correlations and intercorrelations between teacher and aide behaviors. One surprising finding was the consistently high correlation of teacher-reinforced active behavior with aide behavior. It appears that teachers supported their aides by reinforcing children for action after the aide had asked the child to do somethng.

Tables 15 through 18 contain preliminary summary findings of child behaviors observed in the project. In Table 15 the percent of child behaviors within each of the activity settings is presented. It was interesting to note the small percent of off-task children across activity settings. The percentage of child behaviors within lesson types is depicted in Table 16. Tables 17 and 18 contain the percent of child behaviors observed within teacher interventions I and II respectively. It was encouraging to note the increase in the percentage of children's covert engaged behavior during the intervention and the

Table 7

Focus of Observations

Categories of Child Behaviors Observed	
Communicating	child is speaking, gesturing, signing, or pointing with the intention of communicating
Not Communicating	child is not speaking, gesturing, signing, or pointing and is not attempting to communicate
Engaged Active	child is manipulating materials for an activity or moving in an appropriate manner
Engaged Covert	child is apparently engaged in a silent or positive way by watching or listening
Off Task	child is distracted or engaged in an inappropriate or distracting activity
Categories of Teacher Behaviors Observed	
Closed Question Asking	teacher asks a question which has one or two brief, predictable responses
Open Question Asking	teacher asks a question which has many possible correct responses
Structured Individual Communication	teacher makes a statement or asks a question that requires a child to verbalize when the goal is to extend language ability
Structured Group Communication	teacher makes a statement, uses a manual sign, or asks a question which requires the group to respond in a unison fashion
Reinforcing Verbal Behavior	teacher provides a positive statement, gesture, or reward which is intended to reinforce the child or children either for communicating or for answering correctly
Task Questions/Statements	teacher asks a question or makes a statement that is related to a fine motor task being completed
Direct Directions	teacher makes an imperative statement or statement of desire, which is intended to direct a child or children to act
Indirect Questions	teacher uses a question or descriptive statement that is intended to direct a child or children to act
Physical Involvement	teacher physically participates in an activity by helping or moving children

Table 7

(Continued)

Reinforcing Active Behavior	teacher provides a positive statement, gesture, or reward which is intended to reinforce a child or children either for engagement or for performance at a task

Characteristics of Construction Lessons Observed

Slots	materials being used contain outlined spaces or slots that provide a clear signal of more to do
Cyclical Steps	lesson is comprised of differentiated subunits of activity which are repeated in a cyclical manner in order to complete the final product
Stages	lesson is comprised of differentiated subunits of activity which are each completed in a single progression in order to complete the first product
Schema	instructions for the lesson include a concept which motivates the child to do more because of an internal knowledge base or set
Model Teacher Goal	teacher provides a model of the finished product teacher introduces the lesson by specifically stating the goal
Child Articulated Goal	one or more children state goal before or during the lesson
Task Analysis	teacher asks questions or makes statements that are intended to breakdown a fine motor task into parts or steps

TABLE 8

MEAN RATE PER MINUTE OF TEACHER AND AIDE BEHAVIOR ACROSS ACTIVITY SETTINGS

TEACHER BEHAVIOR	ACTIVITY SETTING			
	SMALL GROUP	LARGE GROUP	FREE PLAY	SNACK
CLOSED QUESTION ASKING	1.51	1.18	.70	1.05*
OPEN QUESTION ASKING	.42	.15	.07	.20
STRUCTURED INDIVID. COMMUN.	.36	.32	.20	.32
STRUCTURED GROUP COMMUN.	.15	.70	.01	0*
REINFORCING VERBAL BEHAVIOR	.39	.37	.07	.14*
DIRECT DIRECTIONS	3.15	1.78	1.06	.71*
INDIRECT DIRECTIONS	.50	.49	.14	.24*
PHYSICAL INVOLVEMENT	2.37	1.31	1.24	1.59*
REINFORCING ACTIVE BEHAVIOR	1.29	.64	.29	.14*

AIDE BEHAVIOR	ACTIVITY SETTING			
	SMALL GROUP	LARGE GROUP	FREE PLAY	SNACK
CLOSED QUESTION ASKING	1.48	.84	.86	.80*
OPEN QUESTION ASKING	.27	.11	.12	.02*
STRUCTURED INDIVID. COMMUN.	.57	.20	.19	.16*
STRUCTURED GROUP COMMUN.	.21	.40	.00	.02*
REINFORCING VERBAL BEHAVIOR	.58	.27	.08	.07*
DIRECT DIRECTIONS	3.06	1.36	.84	.81*
INDIRECT DIRECTIONS	.59	.31	.23	.16*
PHYSICAL INVOLVEMENT	2 30	1.49	1.50	1.37
REINFORCING ACTIVE BEHAVIOR	1.18	.30	.32	.18*

*$p < .05$

TABLE 9

MEAN RATE PER MINUTE OF TEACHER AND AIDE BEHAVIORS ACROSS LESSON TYPES

	LESSON TYPE		
TEACHER BEHAVIOR	CONSTRUCTION	LANGUAGE	MUSIC/MOVEMENT
CLOSED QUESTION ASKING	.86	1.58	.97*
OPEN QUESTION ASKING	.11	.23	.06
STRUCTURED INDIVIDUAL COMMUN.	.06	.50	.19*
STRUCTRUED GROUP COMMUN.	.05	.68	.71*
REINFORCING VERBAL BEHAVIOR	.09	.61	.15*
DIRECT DIRECTIONS	2.27	1.92	3.40*
INDIRECT DIRECTIONS	.32	.50	.57
PHYSICAL INVOLVEMENT	2.01	1.15	2.13*
REINFORCING ACTIVE BEHAVIOR	1.37	.54	1.11*

	LESSON TYPE		
AIDE BEHAVIOR	CONSTRUCTION	LANGUAGE	MUSIC/MOVEMENT
CLOSED QUESTION ASKING	.82	1.35	.79*
OPEN QUESTION ASKING	.17	.20	.01
STRUCTURED INDIVIDUAL COMMUN.	.26	.47	.18*
STRUCTURED GROUP COMMUN.	.11	.44	.61*
REINFORCING VERBAL BEHAVIOR	.16	.64	.16*
DIRECT DIRECTIONS	2.04	1.70	2.40
INDIRECT DIRECTIONS	.40	.42	.38
PHYSICAL INVOLVEMENT	2.17	1.26	2.49*
REINFORCING ACTIVE BEHAVIOR	.86	.36	.77*

*$p < .05$

TABLE 10

MEAN RATE PER MINUTE OF TEACHER AND AIDE BEHAVIORS

ACROSS CONDITIONS IN TEACHER INTERVENTION I

		TEACHER INTERVENTION		
TEACHER BEHAVIOR	BASELINE I	BASELINE II	DURING INTERVENTION	AFTER INTERVENTION
CLOSED QUESTION ASKING	.84	1.35	2.00	1.94*
OPEN QUESTION ASKING	.18	.14	.67	.33*
STRUCTURED INDIVIDUAL COMMUN.	.19	.33	.58	.31*
STRUCTURED GROUP COMMUN.	.55	.59	.62	.40
REINFORCING VERBAL BEHAVIOR	.23	.43	.90	.42*
DIRECT DIRECTIONS	1.56	2.20	2.43	2.83*
INDIRECT DIRECTIONS	.57	.60	.52	.20*
PHYSICAL INVOLVEMENT	1.48	1.81	1.80	1.36
REINFORCING ACTIVE BEHAVIOR	.60	.92	.84	1.05
		TEACHER INTERVENTION		
AIDE BEHAVIOR	BASELINE I	BASELINE II	DURING INTERVENTION	AFTER INTERVENTION
CLOSED QUESTION ASKING	.79	.89	1.77	1.90*
OPEN QUESTION ASKING	.03	.08	.40	.40*
STRUCTURED INDIVIDUAL COMMUN.	.17	.20	.41	.47*
STRUCTURED GROUP COMMUN.	.28	.28	.60	.54*
REINFORCING VERBAL BEHAVIOR	.25	.40	.75	.61*
DIRECT DIRECTIONS	1.89	1.69	2.11	2.59*
INDIRECT DIRECTIONS	.69	.44	.32	.22*
PHYSICAL INVOLVEMENT	1.63	1.84	1.19	1.14*
REINFORCING ACTIVE BEHAVIOR	.57	.74	.39	.49

*$p < .05$

TABLE 11

MEAN PERCENTAGE OF LESSON CHARACTERISTICS AND

MEAN NUMBER OF TEACHER/AIDE BEHAVIORS ACROSS TEACHER INTERVENTION II

LESSON CHARACTERISTICS	BASELINE	DURING INTERVENTION	AFTER INTERVENTION
SLOTS	.39	.45	.36
STEPS	.23	.24	.09
CYCLES	.26	.48	.73
SCHEMA	.16	.41	.27

TEACHER/AIDE BEHAVIOR	BASELINE	DURING INTERVENTION	AFTER INTERVENTION
INTRODUCTION	1.84	2.52	2.73*
DURING	1.06	1.34	1.18
AFTER	.94	1.52	1.00*

$p < .05$

TABLE 12

INTERCORRELATIONS OF TEACHER BEHAVIOR

	OPEN QUESTIONS	CLOSED QUESTIONS	STRUCTURE INDIVIDUAL COMMUNICATIONS	STRUCTURE GROUP COMMUNICATIONS	REINFORCE VERBAL	INDIRECT DIRECTIONS	DIRECT DIRECTIONS	PHYSICAL INVOLVEMENT	REINFORCE ACTIVE
OPEN QUESTIONS	1.00	.18	-.01	.05	.16	-.01	-.05	-.04	-.03
CLOSED QUESTIONS		1.00	.21	.22	.63	.17	.24	.21	.13
STRUCTURE INDIVIDUAL COMMUNICATIONS			1.00	.19	.38	.10	.03	.13	-.07
STRUCTURE GROUP COMMUNICATIONS				1.00	.40	.26	.07	.09	.00
REINFORCE VERBAL					1.00	.26	.13	.18	.03
INDIRECT DIRECTIONS						1.00	.28	.32	.26
DIRECT DIRECTIONS							1.00	.38	.57
PHYSICAL INVOLVEMENT								1.00	.41
REINFORCE ACTIVE									1.00

TABLE 13

INTERCORRELATIONS OF AIDE BEHAVIOR

	OPEN QUESTIONS	CLOSED QUESTIONS	STRUCTURE INDIVIDUAL COMMUNICATIONS	STRUCTURE GROUP COMMUNICATIONS	REINFORCE VERBAL	INDIRECT DIRECTIONS	DIRECT DIRECTIONS	PHYSICAL INVOLVEMENT	REINFORCE ACTIVE
OPEN QUESTIONS	1.00	.69	.88	.89	.87	.89	.55	.63	.82
CLOSED QUESTIONS		1.00	.70	.67	.77	.66	.51	.46	.60
STRUCTURE INDIVIDUAL COMMUNICATIONS			1.00	.88	.90	.88	.60	.67	.81
STRUCTURE GROUP COMMUNICATIONS				1.00	.88	.90	.59	.65	.82
REINFORCE VERBAL					1.00	.86	.59	.60	.79
INDIRECT DIRECTIONS						1.00	.62	.72	.87
DIRECT DIRECTIONS							1.00	.60	.70
PHYSICAL INVOLVEMENT								1.00	.70
REINFORCE ACTIVE									1.00

TABLE 14

CORRELATIONS OF TEACHER AND AIDE BEHAVIOR

	TEACHER BEHAVIOR								
AIDE BEHAVIOR	OPEN QUESTIONS	CLOSED QUESTIONS	STRUCTURE INDIVIDUAL COMMUN.	STRUCTURE GROUP COMMUN.	REINFORCE VERBAL	INDIRECT DIRECTIONS	DIRECT DIRECTIONS	PHYSICAL INVOLVEMENT	REINFORCE ACTIVE
OPEN QUESTIONS	.08	.53	.00	.01	.34	.30	.45	.36	.63
CLOSED QUESTIONS	.02	.49	-.03	-.08	.25	.22	.39	.32	.56
STRUCTURE INDIVID. COMMUN.	.07	.52	.03	-.00	.34	.30	.45	.37	.63
STRUCTURE GROUP COMMUNICATIONS	.08	.52	.01	.09	.39	.31	.46	.37	.63
REINFORCE VERBAL	.07	.52	.00	.01	.35	.30	.45	.36	.63
INDIRECT DIRECT.	.04	.50	.00	.00	.34	.31	.45	.38	.66
DIRECT DIRECTIONS	.04	.43	.00	-.04	.24	.21	.43	.37	.64
PHYSICAL INVOLVEMENT	.06	.40	-.02	-.05	.21	.24	.43	.53	.60
REINFORCE ACTIVE	.06	.49	-.01	-.01	.31	.31	.47	.39	.66

TABLE 15

Percent of Child Behaviors Within Activity Settings

Child Behaviors	Activity Settings			
	Small Group	Large Group	Free Play	Snack
Communication	.34	.26	.30	.32
Engaged Active	.47	.27	.77	*
Engaged Covert	.54	.66	.26	*
Off-Task	.05	.07	.03	*

* Data not collected

TABLE 16

Percent of Child Behaviors Within Lesson Types

Child Behaviors	Lesson Types		
	Construction	Language	Music/movement
Communication	.34	.28	.27
Engaged Active	.64	.18	.38
Engage Covert	.40	.74	.56
Off-Task	.03	.08	.06

TABLE 17

Percent Of Child Behaviors Across Conditions of Teacher Intervention I

Child Behaviors	Teacher Intervention I Conditions			
	Baseline I	Baseline II	During Intervention	After Intervention
Communication	.30	.30	.28	.29
Engaged Active	.41	.42	.30	.39
Engaged Covert	.50	.58	.77	.54
Off-Task	.09	.09	.06	.06

TABLE 18

Percent of Child Behaviors Across Conditions of Teacher Intervention II

Child Behaviors	Teacher Intervention II Conditions		
	Baseline I	During Intervention	After Intervention
Communication	.28	.28	.29
Engaged Active	.61	.62	.67
Engaged Covert	.32	.34	.31
Off-Task	.07	.02	.03

significant decrease in children's off-task behavior during teacher intervention II.

Tables 19 through 22 contain summaries of multiple regression runs of teacher and aide behaviors on each of the child behaviors. Behavior from the whole year was included in this analysis. Both teacher and aide behavior was entered into the equation separately since the aide and the teacher were operating within a class at the same time. It was felt that including these behaviors separately was more precise than entering them as a combined average. It is interesting to note that teacher behavior was generally entered first into the regression equation. This suggests that teacher behavior generally had a more powerful impact than aide behavior.

A split-plot factorial with one within-group factor and one between-group factor was used to determine differences between test scores of children in the comparison and intervention groups. The within-group factor had two levels, one representing scores obtained prior to teacher training, and the second representing scores obtained after teacher training. The between-group factor had two levels, one representing scores of the intervention group and a second representing scores of the control group. Results of this analysis indicated that there were significant increases over pretest scores but no significant differences between groups.

Data from the self-instruction intervention was also be analyzed through a split-plot factorial; however, this factorial had two within-group factors, each having two levels representing pre and post test scores on the Block Test and Maze Test. The between-group factor had two levels representing scores of the comparison and intervention group. Results of this analyses indicated that there were no significant differences between the comparison or intervetnion groups.

Discussion

An abundance of data was generated in the second year of this project. Several publications are planned that will delineate the wide range of findings. This discussion will focus on findings related to the two teacher interventions and the child-centered intervention.

One of the most dramatic findings of the second year were the effects of Teacher Intervention I on the behavior of teachers and aides. As can be seen in Table 10, both teacher and aide behavior increased significantly during the intervention phase of Teacher Intervention I. Furthermore, increases in aide behavior were generally maintained after the intervention phase was completed. Although some of the teacher behviors were maintained, the impact was not as durable as the aide behavior. These effects are encouraging in that they demonstrate that a systematic and integrated inservice program can have positive and lasting impact on the behavior of teachers and aides within the classroom.

In addition to the increases of teacher and aide behavior, there was a significant increase in the covert engaged behavior of children during the intervention phase of Teacher Intervention I. It appears that as teachers and aides increased the verbal signals given to children, there was a corresponding increase in children's attending behavior. However, these increases were not maintained after the intervention phase was completed, which suggests that this intervention should be examined further to determine how its impact can be made

more durable. Therefore, in the third year of the project this intervention will be refined and reexamined to determine whether its positive effects can be maintained over time.

As can be seen in Table 11, during the intervention phase of Teacher Intervention II, there were significant increases in teacher and aide behaviors related to the introduction and debriefing of lessons. Moreover, these increases were maintained after the intervention was completed. In addition, there was also a significant decrease in the off-task behavior of children during the intervention phase. This decrease was also maintained after the intervention. Again, these findings point to the importance of a systemat and integrated intervention program.

The findings of Teacher Interventions I and II are complementary and have the potential to be combined in a more potent intervention package. Teacher Intervention I impacted on teacher and aide behaviors that occurred during the lesson, while Teacher II impacted on teacher behaviors that occurred before and after the lesson. With regard to children behavior, Teacher Intervention I affected covert engaged behavior, whereas Teacher Intervention II affected off-task behavior. In the third year these two interventions will be combined and experimentally examined to determine if their overall impact on children can be improved.

Although the quantifiable results of the piloted child-centered intervention were not encouraging, a redesigned version of this intervention will be tested in the third year of the project. Based on our examination of the literature and on the experience from the first two years, it is clear that a child's ability to persist at a difficult task is related to his/her ability to solve problems. The task-persistent children we have observed seemed to utilize specific strategies when confronted with a problem. Conversely, impulsive children whom we have observed did not appear to utilize strategies when confronted with a problem. Our observations are generally consistent with findings reported in the literature. In the third year of the project we plan to use a meta-cognitive approach to teach impulsive children a strategy to use when confronted with a problem. Based on our experiences to date and on findings reported in the literature, we believe impulsive children who learn to use a specific strategy when confronted with a problem will increase in ability to persist at a difficult task.

In sum, the second year of this project produced very encouraging findings. There were significant increases in appropriate teacher and aide behaviors in both of the teacher interventions. In Teacher Intervention I there was a significant increase in covert engaged behavior of the children, and in Intervention II there was a significant decrease in off-task behavior. In the third year of the project, a combined refinement of these two interventions will be experimentally tested. In addition, a meta-cognitive child-centered intervention based on the results of the piloted child-centered intervention conducted in the second year of the project will be instituted on an experimetal basis.

TABLE 19

MULTIPLE REGRESSION SUMMARY TABLE FOR ENGAGED BEHAVIOR

VARIABLE	R SQUARE CHANGE	MULTIPLE R SQUARED	SIMPLE R	OVERALL F	p <.05
TEACHER PHYSICAL INVOLVEMENT	.04	.04	.21	8.08	.01
TEACHER REINFORCE VERBAL	.03	.08	-.16	6.80	.00
TEACHER DIRECT DIRECTIONS	.02	.10	-.06	5.92	.00
AID REINFORCE VERBAL	.03	.12	-.14	5.77	.00
TEACHER STRUCTURE INDIVIDUAL COMMUNICATIONS	.01	.13	-.09	5.11	.00
TEACHER INDIRECT DIRECTIONS	.01	.14	-.08	4.64	.00
AID PHYSICAL INVOLVEMENT	.01	.16	.07	4.42	.00
AID REINFORCE ACTIVE	.03	.19	.12	4.90	.00
AID CLOSED QUESTIONS	.02	.21	-.08	4.76	.00
TEACHER STRUCTURE GROUP COMMUNICATIONS	.01	.22	-.13	4.57	.00
TEACHER OPEN QUESTIONS	.01	.23	-.03	4.42	.00
AID DIRECT DIRECTIONS	.01	.24	.03	4.18	.00
AID OPEN QUESTIONS	.01	.25	-.01	4.02	.00
AID INDIRECT DIRECTIONS	.00	.25	.02	3.74	.00
TEACHER CLOSED QUESTIONS	.00	.25	-.04	3.49	.00
TEACHER REINFORCE ACTIVE	.00	.25	.10	3.28	.00
AID STRUCTURE GROUP COMMUNICATIONS	.00	.25	-.11	3.08	.00
AID STRUCTURE INDIVIDUAL	.00	.25	-.10	2.90	.00

TABLE 20

MULTIPLE REGRESSION SUMMARY TABLE FOR COVERT ENGAGED BEHAVIOR

VARIABLE	R SQUARE CHANGE	MULTIPLE R SQUARE	SIMPLE R	OVERALL F	$p < .05$
TEACHER REINFORCE VERBAL	.10	.10	.31	18.77	.00
AIDE CLOSED QUESTIONS	.07	.17	.18	16.91	.00
TEACHER CLOSED QUESTIONS	.03	.20	.27	13.80	.00
TEACHER STRUCTURE GROUP COMMUNICATIONS	.02	.22	.13	11.86	.00
TEACHER INDIRECT DIRECTIONS	.01	.23	.09	10.22	.00
TEACHER PHYSICAL INVOLVEMENT	.01	.25	-.15	9.11	.00
AIDE PHYSICAL INVOLVEMENT	.02	.27	-.07	8.84	.00
TEACHER STRUCTURE INDIVIDUAL COMMUNICATIONS	.02	.29	.14	8.45	.00
TEACHER DIRECT DIRECTIONS	.01	.30	-.02	7.93	.00
TEACHER REINFORCE ACTIVE	.01	.31	-.20	7.46	.00
AIDE REINFORCE VERBAL	.01	.32	.12	7.02	.00
AIDE DIRECT DIRECTIONS	.01	.32	-.03	6.63	.00
AIDE REINFORCE ACTIVE	.01	.34	-.01	6.26	.00
TEACHER OPEN QUESTIONS	.01	.35	.04	5.98	.00
AIDE OPEN QUESTIONS	.01	.35	.04	5.74	.00
AIDE STRUCTURE INDIVIDUAL COMMUNICATIONS	.00	.36	.08	5.42	.00
AIDE INDIRECT DIRECTIONS	.00	.36	-.05	5.12	.00
AIDE STRUCTURE GROUP COMMUNICATIONS	.00	.36	.06	4.84	.00

TABLE 21

MULTIPLE REGRESSION SUMMARY TABLE FOR COMMUNICATIONS BEHAVIOR

VARIABLE	R SQUARE CHANGE	MULTIPLE R SQUARE	SIMPLE R	OVERALL F	$p<.05$
TEACHER STRUCTURE GROUP COMMUNICATIONS	.03	.03	.17	5.20	.02
AIDE REINFORCE VERBAL	.03	.06	.14	5.37	.01
TEACHER REINFORCE ACTIVE	.02	.07	.10	4.54	.00
AIDE DIRECT DIRECTIONS	.02	.10	-.12	4.39	.00
TEACHER DIRECT DIRECTIONS	.04	.13	-.09	5.05	.00
AIDE CLOSED QUESTIONS	.01	.14	.09	4.53	.00
TEACHER REINFORCE VERBAL	.01	.15	.08	4.16	.00
AIDE INDIRECT DIRECTIONS	.01	.15	.08	3.80	.00
AIDE REINFORCE ACTIVE	.01	.16	-.10	3.56	.00
AIDE OPEN QUESTIONS	.01	.17	.10	3.37	.00
AIDE STRUCTURE INDIVIDUAL COMMUNICATIONS	.10	.18	.10	3.13	.00
TEACHER INDIRECT DIRECTIONS	.00	.18	.11	2.92	.00
TEACHER CLOSED QUESTIONS	.00	.18	.05	2.72	.00
AIDE PHYSICAL INVOLVEMENT	.00	.18	-.13	2.55	.00
TEACHER PHYSICAL INVOLVEMENT	.00	.18	-.04	2.41	.00
TEACHER STRUCTURE INDIVIDUAL COMMUNICATIONS	.00	.19	.03	2.29	.01
AIDE STRUCTURE GP. COMMUN.	.00	.19	.12	2.17	.01
TEACHER OPEN QUESTIONS	.00	.19	.02	2.05	.01

TABLE 22
MULTIPLE REGRESSION SUMMARY TABLE FOR OFF TASK BEHAVIOR

VARIABLE	R SQUARE CHANGE	MULTIPLE R SQUARE	SIMPLE R	OVERALL F	$p<.05$
TEACHER CLOSED QUESTIONS	.01	.01	.12	2.52	.11
TEACHER REINFORCE VERBAL	.01	.02	-.04	1.92	.15
TEACHER REINFORCE ACTIVE	.01	.03	-.08	1.75	.16
TEACHER PHYSICAL INVOLVEMENT	.01	.04	.06	1.74	.14
TEACHER DIRECT DIRECTIONS	00	.04	-.06	1.53	.18
TEACHER OPEN QUESTIONS	.00	.05	-.03	1.37	.23
AIDE OPEN QUESTIONS	.00	.05	-.01	1.23	.29
AIDE REINFORCE ACTIVE	.00	.05	.02	1.12	.35
AIDE PHYSICAL INVOLVEMENT	.00	.05	.02	1.03	.42
AIDE STRUCTURE INDIVIDUAL COMMUNICATIONS	.00	.06	-.02	.95	.49
AIDE REINFORCE VERBAL	.00	.06	-.00	.89	.55
AIDE CLOSED QUESTIONS	.00	.06	.01	83	.62
AIDE DIRECT DIRECTIONS	.00	.06	-.01	.78	.69
TEACHER STRUCTURE INDIVIDUAL COMMUNICATIONS	.00	.06	-.00	.72	.75
TEACHER INDIRECT DIRECTIONS	.00	.06	-.04	.69	.81
AIDE INDIRECT DIRECTIONS	.00	.06	-.00	.63	.86

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Appendix A

Teacher Intervention I - Phase II

Outline for Training

TEACHER INTERVENTION I - PHASE II

Outline for Training

I. Large group

A. Initial consultation

1. Listing and recording of current objectives and activities

2. Explanation of the target behaviors

3. Sharing of data

4. Self-evaluation exercise regarding the target behaviors

5. Arrangements for demonstration in the classroom and for observation by the teacher and aide

B. In-class demonstration by the trainer

C. Planning consultation

1. Debriefing from observation of demonstration lesson

2. Review of instructional techniques

3. Planning of story lesson using the target behaviors

4. Arrangements to observe large group lessons

D. In-class observations of a large group story activity

E. Transition consultation

1. Review feedback from observation

2. Brainstorming and discussion of the use of the target behaviors in other large group activities

3. Review of data

4. Goal setting for all relevant target behaviors in this setting

II. Small Group

A. Initial consultation

1. Listing and recording of current instructional objectives and activities

2. Explanation of the target behaviors in relation to this setting

3. Sharing of data

4. Self-evaluation exercise regarding the target behaviors

5. Arrangements for demonstration in the classroom and for observation by the teacher and aide

B. In-class demonstration of a lesson (or two) based on the above objectives for both small groups

C. Planning consultation

1. Planning of a lesson using the target behaviors

2. Roleplaying or practice in using the target behaviors

3. Making of a visual display to serve as a reminder of the behaviors

4. Arrangements to observe lessons by both the teacher and aide

D. Review and transition consultation

1. Review feedback from observation

2. Brainstorming and discussion of the use of the target behaviors in other small group activities

3. Review of data

4. Goal setting for all target behaviors in this activity setting

5. Discussion of change strategies, if time permits

III. Free Play

A. Initial consultation

1. Listing and recording of current objectives, activities, and uses of free play

2. Explanation of the target behaviors in relation to this setting

3. Sharing of the data

4. Self-evaluation exercise regarding the target behaviors

5. Arrangements for either videotaping or observation

B. In-class videotaping or observation session

C. Review and transition consultation

1. Review videotapes or observations and give feedback.

2. Review of data.

3. Goal setting for all target behaviors in this activity setting.

4. Further discussion of change strategies.

5. Clarification of maintenance phase.

IV. Maintenance

A. Monitoring of levels of target behaviors in all three settings

B. Troubleshooting consultation

C. Plans for further training

Appendix B

Teacher Behavior to Increase Verbal Engagement

Large Group, Small Group, and Free Play

SMALL GROUP
TEACHER BEHAVIORS TO INCREASE VERBAL ENGAGEMENT

	CLOSED QUESTION ASKING	OPEN QUESTION ASKING	STRUCTURING INDIVIDUAL COMMUNICATION	STRUCTURING GROUP COMMUNICATION	REINFORCING VERBAL BEHAVIOR
DEFINITIONS	Teacher asks a question to which there is one or two brief, predictable responses.	Teacher asks a question to which there are many possible correct responses.	Teacher makes a statement or asks a question that requires a child to verbalize or extend a verbalization when the goal is to extend language ability but not necessarily mental processing.	Teacher makes a statement, uses a manual sign, or asks a question which requires the group to respond in a unison fashion.	Teacher provides a posi-statement, gesture or reward which is intended to reinforce a child (or children) either for communicating or for answering correctly.
EXAMPLES	COLORS: What color is an apple? What is red, round, crunchy, and tastes good? Point to the red circle.	COLORS: What are all the things in this classroom that are red? What color do you want the flower to be? Tell me about the colors in your picture.	COLORS: Tell me the whole sentence about the apple: the apple is red.	COLORS: I'll say a rhyme; see if you can tell me the colors: Once I knew a boy named Fred, on his head he wore ___. On his shoe, he wore ___.	COLORS: You are really learning your colors. I couldn't trick you. You named them right.
	NUMBERS: Find the picture with one balloon. How many balloons do you see? Which two sets have the same number of balloons?	NUMBERS: How many stars do you want for your picture? What are some things on our bodies that come in twos? Fives? Ones? What are some things in the classroom that we could count?	NUMBERS: Tell me the whole sentence when you answer. How many books does John have? Count the balloons slowly with me--one at a time. Touch each one before you say the number.	NUMBERS: Lets count the balloons together. Remember to go slowly and wait till I touch each one.	NUMBERS: Nice careful counting. You gave me the answer in a whole sentence.
	COMMUNITY HELPERS: Which one of these helpers puts out fires? What does a mail carrier bring to your house? Where does a librarian work?	COMMUNITY HELPERS: Why do we need fire fighters? What would happen if there weren't any? How does a mail carrier know where you live? When you to to the library, what are all the things that you see?	COMMUNITY HELPERS: Pick up the phone and tell the fire department your address. Here comes the mail carrier. Remember what you are going to tell her? Who can ask the librarian for some help finding a book? Remember our sentence.	COMMUNITY HELPERS: Let's all make the sound of a fire truck. Tell me what the mail carrier says when you answer the door? Everyone, tell me what we go to the library to find? Do we get to keep the books? No, we get to _____ them.	COMMUNITY HELPERS: You told us exactly what the mail carrier does. Thank you. What a fine sentence you used.
NOTES	Expected response may be a sign or pointing response. Includes yes/no questions. May include higher order questions when a one-word answer is appropriate.	Includes questions when a longer response is desired. Includes questions with many possible correct answers.	Expected response may be modeled by the teacher. Includes all kings of communication, e.g. pointing, signing and talking. You're goal is getting the child to talk or to use a longer sentence.	Expected responses include sound effects, singing, babbling and finger plays. Includes choral responses.	Includes telling a child that a response was correct.

Appendix C

Teacher Intervention II - Phase II

Outline for Training

TEACHER INTERVENTION II - PHASE II

Outline for Training

I. Training Strategies

A. Initial consultation

1. Listing and recording of current fine motor objectives and activities

2. Explanation of the two sets of target behaviors:

a. Characteristics of the lesson

b. Instructions during the lesson

3. Sharing of data

4. Sharing of observation form

5. Arrangements for demonstration in the classroom and for observation by the teacher and aide

B. In-class demonstrations by the trainer during small group

C. Planning consultation

1. Debriefing from observation of demonstration lesson

2. Clarification of instructional techniques

3. Planning of activities by teacher and aide

4. Arrangements to observe fine motor activities

D. In-class observations of small group fine motor activities taught by teacher and aide

E. Transition consultation

1. Review feedback from observation

2. Brainstorming and discussion of the use of the target behaviors in other fine motor activities

3. Review of data

4. Goal setting for target behaviors

II. Maintenance

A. Monitoring of target behaviors for fine motor lessons

B. Troubleshooting consultation

C. Plans for further training

Appendix D

Fine Motor Lessons

Strategies for Increasing Task Persistence

FINE MOTOR LESSONS
STRATEGIES FOR INCREASING TASK PERSISTENCE

	CHARACTERISTICS OF THE LESSON			TEACHER BEHAVIORS			
	SLOTS to be Filled	Cyclical STEPS to be completed	STAGES to be completed	Use of a SCHEMA representation	Showing an example or MODEL of a finished product.	GOAL Statements from both teacher and children.	Task ANALYSIS and Schema Analysis	DEBRIEFING the children on their accomplishments
DEFINITION	The materials you are using have a set number of spaces to be filled in so that the child sees how many more there are to do.	The activity is comprised of 2 or more different sub-activities that the the child completes in a cyclical manner, where one activity leads to the next.	This activity is comprised of 2 or more subunits of activity which are completed in a single progression, so that one must be completed before the next is started.	The child's knowledge about a particular thing is the basis for measuring how much is completed or what else is missing.	You provide a model of the finished product.	A) You provide clear statement of what needs to be accomplished OR B) You ask the children to provide a goal statement.	You ask questions and make statements to help the children see what needs to be done, including steps to be completed or parts to be included.	Reviewing with the children what has been completed so far or altogether.
EXAMPLES	-coloring in picture -pasting pieces of a picture on an outline -completing puzzles -being asked to fill the whole page. -dot-to-dot drawing -workbook page with items.	cutting and pasting when completed in a cyclical manner. watercolor when the pigment and water are separate.	creating something from paper mache and painting it. drawing a picture and painting it. long term projects that last over several days. cutting and pasting when children complete all cutting before starting to paste making playdough from a recipe (individually)	children are asked to find pictures of foods that might be served at breakfast. children are asked to draw a picture of their families. Common Schemas for preschool children: 1. Person 2. Automobile 3. Animal 4. House	Model of a block design Model of a completed picture Models of other children's work.	A) "Today we are going to draw a picture of ourselves." "Today I want you to paste 3 colored balls on your page: a red one, a blue one, and a green one." B) "What are you going to draw?"	A) "Let's talk about everything you will need to do." "What will you need to get started?" "What do you need to do next?" B) "What are the parts of the body we need to include? Let's name them."	Ask the children to tell what they are accomplishing. Ask children to describe their pictures or products. "Tell me what you got done." "Let's see what you made. Tell me about it."
NOTES	The slots should be finite and the child should understand the goal of filling all of them.	The steps should be repeated several times and lead logically from one to the next. Cyclical steps and stages can be present in the same lesson. Steps should be distinct and involve different motions. Not blocks or coloring	Cyclical steps and stages can both be present.	Each child's world knowledge is the basis for completing the task. Try the "What's Missing" criterion.	The model may be produced in front of the children. The model need NOT be left in sight during the lesson.	Does not include descriptions of the end-product by children if the work is completed. Must indicate a goal for intended work.	Involves detailed planning ahead.	After-the fact statements. Debriefing may occur during or after the activity.

Appendix E

Child-Centered Intervention - Phase II

Instructions for Training

CHILD CENTERED INTERVENTION - PHASE II

Instructions for Training

Day 1: to repeat the three kinds of private talk after hearing them described in a story..

WHAT YOU DO	WHAT YOU SAY
Introduce story and concept of private talk.	What does it mean to talk to yourself? Do you ever ask yourself questions? Sometimes it's a good idea to talk to yourself and tell yourself what to do. Sometimes when I'm working, I'll ask myself questions like, What am I supposed to do? and then I'll answer myself and tell myself what to do. And that helps me work. When I've been working a while, sometimes I'll tell myself, Hey (Larry), you're doing a great job. Keep it up! Do you ever do that? When you talk to yourself, it's called private talk - because it's talk just for you. Well I have a story about a rabbit who didn't know how to work. He's going to learn how to talk to himself. This rabbit's name is Ripley.
Read story slowly with expression. On pages 3 and 4, mime pushing up your sleeves and rubbing your hands together.	
On page 4, have children repeat in unison and then individually.	What did Ripley ask himself?
On page 7 , again mime pushing up sleeves and rubbing hands together	
At end, review all 3 of Ripley's steps, asking each child to repeat the step after you.	What did Ripley need to do first? (Wait for possible answers.) Yes he needed to ask himself what to do. Than what did he say to himself? (Wait for answers.) Yes, he told himself what to do. Then what did he say when he had done some work? Yes, he told himself how well he had done.
Prepare children for the next intervention lesson.	Next time we meet, you're going to try some work of your own and practice talking to yourself just like Ripley did. Do you think you can be wizards too?

Day 2: to use the three kinds of private talk after seeing them modeled, during a short, simple activity.

WHAT YOU DO	WHAT YOU SAY
Tie the activity back to the story. (Put up picture.) Review the 3 kinds of private talk.	Remember Ripley Rabbit and the wizard? What did the wizard teach Ripley to do? What were the three kinds of private talk Ripley used? He asked himself questions about the work he needed to get done. Then he told himself what to do and he told himself how great he was doing.
Introduce your role play of the tracing task.	I've got some work to do today and I want you to watch me and listen. After I finish my work, it will be your turn to try it. While I am doing my work, I'm going to use private talk. When you do your work, I want you to use private talk too. I have a picture I need to finish. See all these broken lines? I need to connect them by tracing.
Push up your sleeves and rub your hands together like the wizard does. Complete tracing task, modeling all three kinds of private talk 5-8 times.	Examples: A) What do I need to do first? What is my job? Where should I start? What should I do next? B) I need to trace all these lines I have to be careful and stay on the lines. I'm going to start with the tree. I'm going to work on the boy next. C) I'm being very careful and getting it right. I'm really working hard. I am almost finished. I've really gotten a lot done. This picture is looking good.
Signal that it is the children's turn to complete the task while using private talk.	Now I'm going to give each of you a picture to trace. Remember how I used private talk. I want you to do the same thing as you work. Ask yourself questions; tell yourself what to do and tell yourself how well you're doing. Get ready like Ripley did. Push your sleeves up and rub your hands together. I'll help you think of things to say.

Day 2: Con't.

WHAT YOU DO	WHAT YOU SAY
Go around to individual children and stimulate all three kinds of private talk as they work.	Examples: (model) Say, Nice drawing Tell yourself, I need to draw a long line. Say, What do I need to do? (prompt) What would Ripley say? Tell yourself something good.
Praise children for any appropriate use of private talk. Don't praise irrelevant talking, including questions directed to others and negative remarks. Code a data sheet as you go.	Yes, you are talking to yourself just like a wizard.

Day 3: to use the three kinds of private talk when prompted during a longer simple activity.

WHAT TO DO	WHAT YOU SAY
Remind the children about Ripley, the wizard and the 3 kinds of private talk. (Put up picture.) Demonstrate the gestures Ripley and the wizard used.	Remember Ripley Rabbit who was so jumpy? How did the wizard help him learn to sit still and complete a lot of work? Yes he taught him to talk to himself. He would get himself ready to work by rubbing his hands together and pushing up his sleeves and then what would Ripley say to himself?
Give examples if children do not.	1. He'd ask himself what to do. What is a question he might ask? (What is my job. What do I have to do first?) 2. He'd tell himself what he needed to do. How would he do that? What is something he might say? (I need to work carefully. I need a pencil.) 3. Then he'd tell himself what a good job he was doing. What might he say to himself? (Nice work, Ripley Rabbit. I'm a real wiz.)
Introduce the task and demonstrate task briefly.	Now it's your turn to work and be wizards. You are to finish this picture. See all these broken lines? Make them all whole. See how I'm starting this picture?
Remind the children to use private talk.	Remember to ask yourself questions. Tell yourself what to do and tell yourself how well you did. Talk to yourselves just like Ripley.
Give children their papers. Have them rub their hands together and push up their sleeves.	Get ready to be wizards.
Work with individual children by stimulating all 3 kinds of private talk by using modeling and prompting. Praise children for any appropriate private talk. Ignore inappropriate private talk. Code on data sheet as you go.	Examples: (Model) Say, Good work, Jose. Say, What next? Tell yourself, I need to connect the lines. (Prompt) What do you need to ask? Tell yourself what you got done.

Day 4: to use the 3 kinds of private talk with limited prompting during a longer simple activity.

WHAT YOU DO	WHAT YOU SAY
Introduce task	I want you to trace these pictures. Finish all the broken lines. Remember to talk to yourselves.
Give children their papers to complete. Demonstrate the hand rub and sleeve push.	Get ready to work hard.
Sit with children giving clues, prompts and models in that order as necessary.	Clues: I don't hear you talking. Remember to talk to yourselves. Prompts: Remember to ask yourself what to do. Tell yourself how good you're doing. Model: Ask what do I need to do?
Praise children for remembering to use private talk by themselves.	You are a real wizard. You remember to ask yourself questions.
Do not give more clues, prompts or models than is required to get children to use all 3 kinds of private talk. Ignore all inappropriate talk. Code on data sheet as you go.	

Day 5: to use the three kinds of private talk after seeing them modeled, during a hidden figures activity.

WHAT TO DO	WHAT YOU SAY
Tie the activity book to the story. (Put up picture.) Review the 3 kinds of private talk.	Remember Ripley Rabbit and the wizard? What did the wizard teach Ripley to do? What were the three kinds of private talk Ripley used? He asked himself questions about the work he needed to get done. Then he told himself what to do and he told himself how great he was doing.
Introduce your role play of the tracing task.	I've got some work to do today and I want you to watch me and listen. After I finish my work, it will be your turn to try it. While I am doing my work, I'm going to use private talk. When you do your work, I want you to use private talk too. I need to find all the hidden birds in this picture. Then I have to circle each one.
Push up your sleeves and rub your hands together like the wizard does.	
Complete tracing task, modeling all three kinds of private talk 5-8 times.	Examples: A) What is my job? Where should I start? What should I do next? B) I need to find all those birds. I have to look carefully. I have to circle every bird. C) I'm being very careful and getting it right. I'm really working hard. I'm finding a lot of birds. I've really gotten a lot done. This picture is looking good.
Signal that it is the children's turn to complete the task while using private talk. Distribute pictures. Leave your model picture in sight. Encourage children to use it as needed.	Now I'm going to give each of you a picture to work on. Remember how I used private talk? I want you to do the same thing as you work. Ask yourself questions; tell yourself what to do and tell yourself how well you're doing. Get ready like Ripley did. Push your sleeves up and rub your hands together. I'll help you think of things to say.

Day 5: Con't.

WHAT YOU DO	WHAT YOU SAY
Go around to individual children and stimulate all three kinds of private talk as they work.	Examples: (model) Say, I found a bird Tell yourself, I need to draw a a circle. Say, What do I need to do? Say, First I'll look at this picture to help me. (prompt) What would Ripley say? Tell yourself something good. What are your steps?
Praise children for any appropriate use of private talk. Don't praise irrelevant talking, including questions directed to others and negative remarks. Code a data sheet as you go.	Yes, you are talking to yourself just like a wizard.

Day 6: to use the three kinds of private talk when prompted during a maze activity.

WHAT TO DO	WHAT YOU SAY
Remind the children about Ripley, the wizard and the 3 kinds of private talk. (Put up picture.) Demonstrate the gestures Ripley and the wizard used.	Remember Ripley Rabbit who was so jumpy? How did the wizard help him learn to sit still and complete a lot of work? Yes he taught him to talk to himself. He would get himself ready to work by rubbing his hands together and pushing up his sleeves and then what would Ripley say to himself? 1. He'd ask himself what to do. What is a question he might ask? (What is my job? What do I have to do first?) 2. He'd tell himself what he needed to do. How would he do that? What is something he might say? (I need to work carefully. I need a pencil.) 3. Then he'd tell himself what a good job he was doing. What might he say to himself? (Nice work, Ripley Rabbit. I'm a real wiz.)
Introduce the task and demonstrate task briefly. Point to boy and drum. Trace part of line with your finger.	Now it's your turn to work and be wizards. I want you to finish this maze. See the boy here. Help him find the drum. You can't cross any black lines. Keep your pen on the paper.
Remind the children to use private talk.	Remember to ask yourself questions. Tell yourself what to do and tell yourself how well you did. Talk to yourselves just like Ripley.
Give children their papers. Have them rub their hands together and push up their sleeves.	Get ready to be wizards. Start with the boy and draw a line to the drum. (Reminder) Remember to talk to yourself.
Work with individual children reminding them to us all 3 kinds of private talk and with limited modeling and prompting. Praise children for any appropriate private talk. Ignore inappropriate private talk. Code on data sheet as you go. Only use models and prompts for children who do not initiate private talk after a more general reminder.	Examples: (model) Say, Good work, Jose. Say, What next? Tell yourself, I need to stay in the lines. (prompt) What do you need to ask? Tell yourself what you got done.

Day 7: A. to use the 3 kinds of private talk without prompting during a problem solving activity.
B. to use covert silent talk.

WHAT TO DO	WHAT TO SAY
Introduce task	I want you to draw a picture just like this one. Connect the dots in just the same way. Use the same colors. Make sure your lines go between the same dots as mine do. First look up here. Then find the right color and the right dot and then draw your line. Remember to talk to yourselves.
Give children their papers to complete. Demonstrate the hand rub and sleeve push.	Get ready to work hard.
Sit with children giving clues, prompts and models in that order as necessary. Monitor how children are doing with task and help them with steps.	Clues: Remember to talk to yourselves. Prompts: Remember to ask yourself what to do. Tell yourself how well you're doing. Remember to tell yourself the steps: First look up here. Then find the right color.
Extra instruction for children who have initiated all 3 kinds of private talk during the previous intervention (Day 6): While children are working, ask this child to try saying his private talk silently, just moving his lips but not making any sound.	(Sit near the child and whisper.) Ask yourself questions just like Ripley did. Did you do it? Are you talking to yourself? Now tell yourself what to do. Did you tell yourself? Good job. Now tell yourself how well you're doing.

THIRD INTERVENTION - PHASE II

OVERVIEW OF PRIVATE TALK TRAINING

INTRODUCTION

Day 1 Story of "Ripley Rabbit meets the Wizard"

LEARNING TO USE PRIVATE TALK WITH SIMPLE TASKS

Day 2 Short, simple tracing task with roleplay by experimenter plus modeling and prompting during activity

Day 3 Longer, simple tracing task with introduction by experimenter plus modeling and prompting during activity

Day 4 Longer, simple task with limited reminders, prompting and modeling during activity

TRANSFERRING THE USE OF PRIVATE TALK TO PROBLEM SOLVING TASKS

Day 5 Hidden figures task with roleplay by experimenter plus modeling, prompting and reminders during activity

Day 6 Maze task with introduction plus limited reminders, prompting, and modeling during activity

Day 7 Problem solving drawing task with reminders and praise for private talk during activity

GENERAL TRAINING PROCEDURES AND INFORMATION

A. We are training the children in 3 kinds of private talk.

1) The first category involves the children asking themselves questions about what they are to do, including self-directed questions like the following:

What do I need to do?
What does the teacher want?
What do I need to get started?
What's my next step?
How am I doing?
Am I doing this right?
How much more do I have to go?
I wonder how you do this.

It does not include questions that are unrelated to the task. For instance --

Who are you?
Are we going outside after this?
Is John here today?

Moreover this category does not involve questions about the task that are directed to you or anyone else OTHER than themselves.

2) The second involves children giving themselves information about what to do, whether or not it is in response to a question. This category involves self-directed talk about how to complete the task, for example --

First I need to draw a line.
I need another color.
Better start with blue.
I have to be careful.
I have 2 more to go.
These are supposed to be red.
This guy needs two eyes.

It does <u>not</u> include statements that are more descriptive cognitive in nature, for instance, "This is a picture of a snowman", "I've drawn a red circle." These statements, when self-congratulatory or given as feedback to oneself, may fit under the 3rd category below.

Whether or not, the statements are self-directed is less critical in this category than in the first one. The child may be directing the statements both to you and to him/herself.

3) The third kind of private talk involves giving praise or feedback to oneself including statements about what's been accomplished and how well the child is doing. Examples include:

Nice work.
I'm finished.
I've gotten half done.
I'm working hard.
I did a good job.
I'm being careful.
I've made a dog and two fish.

3) Con't.

Not included in this category are statements that are negative in nature:

This is too hard.
Boy, is this tricky.
I made a mess of this.
I don't know how to do this.
I give up.

B. There are three levels of competence which correspond roughly with the age old steps of model; lead; test:

1) Model or repetition involves saying the sentence you want the child to use as private talk and asking the child to repeat it. For instance, say, "I'm doing a great job." When the child accomplishes this, we are coding it as R for repetition.

2) Leading or prompting involves telling the child to use private talk with a prompt such as:

"Remember what Ripley said."
"Remember to tell yourself what to do."
"Did you ask yourself what to do?"
"Tell yourself how well you're doing."

If the child uses private talk when prompted, we are coding it as P for prompted.

3) The highest level of competence involves the child initiating the private talk without a prompt immediately preceding it. Code as I for initiates.

C. For each intervention, it is most critical to keep track of the highest level of competence achieved by each child for each of the three kinds of private talk. Write the appropriate code in the space under each category of private talk on the data sheet. If the child moves to the next level of competency during the intervention, write the second highest code under it.

D. Praise children for using private talk appropriately. Acknowledge the completion of the task by trying to get children to praise themselves for completing the work.

E. Ignore inappropriate private talk and non-private talk. Redirect with prompts as necessary.

F. Review the instructions for each days intervention before starting. Since there are 3 of us training, it is critical to follow instructions to maintain consistency. Note that days 2 and 5 involve shorter tasks with a role play of how to employ private talk. Days 3 and 6 involve a lot of modeling and prompting, whereas days 4 and 7 involve more limited prompting.

G. However, after you have introduce the intervention, you may individualize instruction to meet the needs of the children you are training. So if you have a child that has not yet used any private talk after a prompt, you may need to back track to giving a model and asking for a repetition. However, the inverse is not true: Even if the children are using the private talk fairly easily during earlier lessons, give the prescribed models and prompts as indicated in the instructions. The basic rule of thumb is to move the children to using private talk independently, but to ensure that all children hear a certain number of reminders, models, or prompts. (So you may individualize down from instructions but not up.)

H. At least one day of the final three intervention sessions should be completed by a person other than the experimenter who told the story of Ripley. This tactic is to encourage the child to transfer the private talk strategy to situations in which other adults preside.

I. Children should be encouraged to talk very softly or to whisper their self-directed talk. Model the use of private talk by using a stage whisper. As private talk develops, it will become a silent or covert skill.

Appendix F

Directions for Maze Test

and

Task Persistence Block Test Directions

DIRECTIONS FOR MAZE TEST

WHAT TO DO	WHAT TO SAY
1. Show the child MAZE 1. Give the child the directions on the right side of this page before you give the child the pen.	1. I have some pictures of a very hungry mouse. He is looking for cheese, but first he must go through some long tunnels. I want you to help him by showing him the way with your pen. The mouse can't cross any black lines. Go slowly. Keep your pen on the paper and don't lift it up. If you start to go the wrong way, turn back and try again. I'll help you with this first maze.
Hand the child the pen. Point to the mouse on the left hand side.	Start here.
Point to the mouse on the right hand side.	Help the mouse find the cheese over here.
While the child is working on this maze, you may offer the following kinds of help:	
a. Praise the child for being successful or having the right idea.	a. Examples: You're staying in the lines. You did it. That mouse is eating the cheese. Good work. (Etc.)
b. If a child goes over a line, take the child's hand and move it back to the place on the child's line before that happened. Remind the child that the mouse can't go over any black lines.	b. Remember the mouse can't cross any lines. Start here and try again.
c. If a child has the wrong idea and (for instance) tries to fill in all the spaces. Use your finger and trace a part of the maze to show the child where to go.	c. Help the mouse find the way to the cheese. Look for the shortest way to the cheese.
--On this first maze you may give as much help as necessary.	
2. After the child has completed the first maze, take back the pen and show the child the second maze. Give the child the following directions.	2. That mouse ate the cheese you helped him find, but he is still hungry. Now he has to find his way through this tunnel. I want you to help him again. Remember: He can't cross any black lines. Keep you pen on the page and don't lift it up. If you start to go the wrong way, turn back and try again.

WHAT TO DO	WHAT TO SAY
Tell the child that you will be giving less help with MAZE 2.	I'd like you to work on your own. I'll help you if you have trouble.
Point to the two mice, one at a time.	Start here and help the mouse find the cheese over here.
Hand the child the pen and start the stopwatch.	
For MAZE 2, give the following kinds of help:	
a. Each time the child successfully goes past one of the three X's, praise the child.	a. Examples: You're staying in the lines. Good job. Etc.
b. Correct the child no more than three times: If the child goes over a line, take the child's hand and move it back to the place on the child's line right before that happened.	b. Remember the mouse can't cross any black lines. Start here and try again.
c. If the child picks up his or her hand or makes a discontinous pen stroke, take the child's hand and move it back to the place before this happened.	c. Remember to keep your pen on the paper and don't lift it up. Start here and try again.
d. If the child has the wrong idea, use your finger to show the way.	d. Help the mouse to find the way to the cheese. Look for the shortest way to the cheese.
(These corrections are only for actually crossing a line or skipping to another part of the maze, not for small errors due to psychomotor difficulty.)	
Limit these corrections to three for this maze. After that allow the child to finish independently.	
When the child reaches the second mouse with the cheese or gives up, turn off the stop watch.	That mouse is sure glad to have some more cheese, but he's still hungry.
RECORD THE TIME FOR MAZE TWO ON THE MAZE ITSELF. Take back the pen.	RESET STOP WATCH.
3. Show the child the third maze.	3. Now that poor mouse has got himself inside a big long tunnel. He needs to find his way out to get some more cheese. I want you to help him again by drawing a line to show him the way.

WHAT TO DO	WHAT TO SAY
	Point to both mice.
Remind the child of what is expected.	Remember to go slowly and stay in the lines. Don't cross any black lines. Keep your pen on the paper and don't lift it up. If you start to go the wrong way, turn back and try again.
Hand child pen, turn on stop watch.	
Do not praise the child during this try.	
For MAZE 3, you may offer any of the following kinds of corrcctions <u>three times only</u>:	
a. If a child goes over a line, take the child's hand and move it back to the place on the child's line before that happened. Remind the child that the mouse can't go over any black lines.	a. Remember the mouse can't cross any black lines. Start here and try again.
b. If the child lifts up the pen and makes a discontinuous pen stroke by moving to another part of the maze, take the child's hand and move it back to the place before that happened.	b. Remember to keep your pen on the paper and don't lift it up. Start here and try again.
c. If the child has the wrong idea, use your finger to trace the way.	c. Help the mouse to find the way to the cheese. Look for the shortest way to the cheese.
(These corrections are only for actually crossing a line or skipping to another part of the maze, not for small errors due to psychomotor difficulty.)	

Turn off the stopwatch when the child completes the maze or skips to the end. If the child gives up and hands you the pen or starts to do some unrelated activity--such as coloring--turn off the stopwatch.

RECORD THE TIME FOR MAZE THREE ON THE MAZE ITSELF.

Task Persistence
Block Test
Directions

Testers should follow the standard directions for the Triangles subtest of the Kaufman Mental Processing Battery. In addition, testers should attend to the following modifications:

1. Start the child with the Sample Item and Item 1. If the child passes these items, proceed to step 2, if the child fails either of these items proceed to substep 1.

    1.1. Demonstrate and explain to the student the correct response as outlined in the manual.

    1.2. After demonstration and training, present the child with Item 2. If the child passes this item proceed to step 2, if the child fails this item stop testing.

2. Present the child with Item 13. Make sure that all the triangles are spread out on the table.

    2.1. Once the child is told to start, begin timing the child with the stop watch.

    2.2. Stop timing and terminate the test under the following conditions.

        2.2.1. The child makes it clear either verbally or nonverbally that the task is finished.

        2.2.2. The child, in your judgement, responds nonproductively for 30 consecutive seconds. This would include the child not moving any of the pieces or randomly moving the pieces with no attempt to solve the puzzle, for the full 30 seconds.

        2.2.3. The child attempts to solve the puzzle for a full 15 minutes.

    2.3. The amount of time up to 15 minutes that the child spends trying to solve Item 13 is his/her task persistence score.

    2.4. Do not encourage the child at any time while you are timing the child.