The Development of Interpersonal Cognitive Problem-Solving Skills of Eight to Fourteen Year-Old Educable Mentally Retarded Children in a Rural Educational Setting

Jeff Carroll

Follow this and additional works at: http://digitalcommons.wku.edu/theses

Part of the Educational Assessment, Evaluation, and Research Commons, and the Elementary Education and Teaching Commons

Recommended Citation


This Thesis is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Masters Theses & Specialist Projects by an authorized administrator of TopSCHOLAR®. For more information, please contact topscholar@wku.edu.
THE DEVELOPMENT OF INTERPERSONAL COGNITIVE
PROBLEM-SOLVING SKILLS OF EIGHT TO FOURTEEN YEAR-OLD
EDUCABLE MENTALLY RETARDED CHILDREN IN A RURAL
EDUCATIONAL SETTING

A Thesis
Presented to
the Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Jeff Richard Carroll
August 1981
AUTHORIZATION FOR USE OF THESIS

Permission is hereby

☒ granted to the Western Kentucky University Library to make, or allow to be made photocopies, microfilm or other copies of this thesis for appropriate research or scholarly purposes.

☐ reserved to the author for the making of any copies of this thesis except for brief sections for research or scholarly purposes.

Signed ______________________

Date ______________________

Please place an "X" in the appropriate box.

This form will be filed with the original of the thesis and will control future use of the thesis.
THE DEVELOPMENT OF INTERPERSONAL
COGNITIVE PROBLEM-SOLVING SKILLS OF EIGHT TO
FOURTEEN YEAR-OLD EDUCABLE MENTALLY RETARDED
CHILDREN IN A RURAL EDUCATIONAL SETTING

Recommended July 31, 1981
(Date)

William H. Ruhl
Chairman of Thesis

Marcella L. Paik

Neil S. Cohen

Approved September 11, 1981
(Date)

Elmer Drey
Dean of the Graduate College
Acknowledgements

For the contributions of two members of my thesis committee, Dr. Neil Cohen and Dr. Marsha Roit, I am indeed grateful. In addition to many professional contributions, their constant support and willingness to help has meant a great deal to me.

I would especially like to thank my committee chairman, Dr. William Pfohl, for the continual encouragement, patience, and interest he has shown not only with regard to this paper, but also throughout my graduate training. He has given freely of his time, knowledge, and support throughout these two years, and his assistance has been invaluable.

Finally to my wife, I owe a special debt of gratitude. It was her continual trust and support throughout this ordeal that made all of this possible.
# Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>vi</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vii</td>
</tr>
<tr>
<td>Abstract</td>
<td>viii</td>
</tr>
<tr>
<td>Chapter I</td>
<td></td>
</tr>
<tr>
<td>Review of the Literature</td>
<td>1</td>
</tr>
<tr>
<td>Characteristics of Retarded Children</td>
<td>1</td>
</tr>
<tr>
<td>Problem-Solving Training Programs</td>
<td>3</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>17</td>
</tr>
<tr>
<td>Chapter II</td>
<td></td>
</tr>
<tr>
<td>Method</td>
<td>21</td>
</tr>
<tr>
<td>Subjects</td>
<td>21</td>
</tr>
<tr>
<td>Instruments Used</td>
<td>22</td>
</tr>
<tr>
<td>Materials Used by Teachers for Implementation</td>
<td>26</td>
</tr>
<tr>
<td>Procedure</td>
<td>26</td>
</tr>
<tr>
<td>Design</td>
<td>29</td>
</tr>
<tr>
<td>Statistical Analysis</td>
<td>30</td>
</tr>
<tr>
<td>Chapter III</td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td>31</td>
</tr>
<tr>
<td>Chapter IV</td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>36</td>
</tr>
<tr>
<td>Analyses of Data</td>
<td>36</td>
</tr>
<tr>
<td>Other Factors</td>
<td>40</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>41</td>
</tr>
</tbody>
</table>
Summary and Suggestions for Future Research...............42

Appendices..........................................................51
A Parental Consent Form...........................................52
B Preschool Interpersonal Problem-Solving Test..............53
C Self-Control Rating Scale.......................................61

Reference Notes.....................................................62
References..........................................................63
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Analysis of Variance of the Preschool Interpersonal Problem-Solving Test</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>
List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mean Number of Alternatives Given on the Preschool Interpersonal Problem-Solving Test (PIPS) Before and After the Training Programs</td>
<td>48</td>
</tr>
<tr>
<td>2.</td>
<td>Mean Score on the Self-Control Rating Scale (SCRS) Before and After the Training Program</td>
<td>50</td>
</tr>
</tbody>
</table>
Spivack and Shure's (1974) Interpersonal Cognitive Problem-Solving (ICPS) model was evaluated on Educable Mentally Retarded (EMR) children. The major question was whether the implementation of Shure and Spivack's (1978) Kindergarten Interpersonal Problem-Solving Program (KIPS) would enhance the ICPS skills and behavioral adjustment of EMR children up to the level needed for successful integration into the regular classroom. The study included 40 EMR children from ages eight to fourteen. The subjects were divided equally into two groups, one receiving Shure and Spivack's (1978) KIPS program and one receiving informal social skills training. These groups were divided further into a younger group, ages eight to nine, and an older group, ages ten to fourteen. In both treatment groups the special education teachers directly administered the program to the children. The experimenter served as a consultant to the teachers. Two evaluation measures were used, Spivack and Shure's (1974) Preschool Interpersonal Problem-Solving Test (an alternative thinking measure) and Kendall and Wilcox's (1979) Self-Control Rating Scale.
(a behavioral adjustment measure). An analysis of variance was utilized to assess both evaluation measures. It was found that on the Preschool Interpersonal Problem-Solving Test there were significant main effects for the type of training the subjects received ($F = 17.14, p < .01$), the age of the subjects ($F = 6.26, p < .05$), and pre- versus post-testing ($F = 56.11, p < .01$). There were two significant interactions, a three-way interaction between age of subjects, type of training, and pre- versus post-testing ($F = 6.60, p < .05$), and a two-way interaction between type of training and pre- versus post-testing ($F = 56.11, p < .01$). The Newman-Keul's Multiple Range Test was used to analyze the interactions. It was found that both the young and old experimental groups obtained a significant increase in their Preschool Interpersonal Problem-Solving Test scores from pre- to post-testing ($p < .01$) while neither the young nor the old control groups had a significant increase from pre- to post-test. On the other evaluation measure, the Self-Control Rating Scale, a significant main effect was found for pre- versus post-testing. There were no other significant main effects or interactions found. These findings suggest that Shure and Spivack's (1978) KIPS program increases alternative thinking and ICPS skills, and improves the self-control of elementary aged EMR children. This study, beside being effective, was also cost-efficient. The program lasted only about five and
one-half weeks and took only 10 to 40 minutes each day to present. In addition, the consultation model was used which reduced the amount of time the experimenter had to spend running the study. Inferences from the findings of this study may be limited, due to the possible lack of equivalent samples. The control and experimental groups were not matched according to SES and IQ. From the results of this study and other problem-solving studies involving children, there appear to be many areas that need to be further investigated.
CHAPTER I

REVIEW OF THE LITERATURE

The following review will focus mainly on studies emphasizing the training of cognitive strategies for dealing with interpersonal situations. In addition, research and theory concerning the problem-solving and behavioral deficits of mentally retarded children will be covered. The purpose of this review is to demonstrate that problem-solving training is a potentially effective training model for Educable Mentally Retarded (EMR) children. Up until now, no one has implemented an interpersonal cognitive problem-solving training program with EMR children. The areas described have been divided into three categories: (a) characteristics of retarded children; (b) problem-solving training programs; and (c) statement of the problem.

**Characteristics of Retarded Children**

Problem-solving abilities appears to be an area of deficiency for mentally retarded children. Robinson and Robinson (1976), Spitz and Nadler (1974), and Gruen and Korte (1973) found significant differences between normal and retarded children on problem-solving tasks. Retarded children performed poorly on tasks requiring them to develop
strategies and to plan courses of action prior to making a response (Gruen & Korte, 1973; Spitz & Nadler, 1974). This deficit in mentally retarded children's problem-solving abilities may not only be related to but could also be an underlying cause of their deviant behaviors in the classroom. Spivack and Shure (1974) have demonstrated that with non-retarded children, problem-solving is an important mediator of behavioral adjustment. Spivack and Shure (1974) have found that non-retarded children's maladaptive behaviors may be indicative of a deficit in problem-solving skills. Spivack and Shure (1974) have successfully increased the problem-solving abilities of non-retarded children and concurrently reduced maladaptive behaviors. The maladaptive behaviors which were modified included impulsivity, inhibition, short attention span, distractibility, and excessive demands made on a teacher's time. In addition, Spivack and Shure (1974) were also able to increase the frequency of three adaptive behaviors. These behaviors were concern for others, showing initiative in what one does, and completing activities by oneself.

Many authors maintain that a mentally retarded child cannot be successfully transferred from a self-contained classroom to a regular classroom without any preparation or special training (Baldwin, 1958; Birch, 1974; Johnson, 1950; Robinson & Robinson, 1976). When an unprepared mentally retarded child is placed in a regular classroom, he or she will face rejection and isolation from the non-
retarded classmates (Baldwin, 1950; Johnson & Kirk, 1950). This social stigmatization occurred despite the fact that teachers made an effort to integrate the mentally retarded children into the regular classroom (Johnson & Kirk, 1950). Baldwin (1958) and Johnson (1950) maintained that the reasons for rejection were most frequently based on behaviors unacceptable to the non-retarded children. The behavior problems that interfere with successful integration appear to be of many types including impulsivity, short attention span, distractibility, high activity level, and demands for and use of too much of the teacher's time (Birch, 1974; Palmer, 1980). These behaviors are similar to those discussed earlier which were modifiable using Spivack and Shure's (1974) program with non-retarded children.

Problem-Solving Training Programs

There have been many problem-solving programs. To understand the similarities and differences and strengths and weaknesses of these other problem-solving programs in comparison to Spivack and Shure's program, they will be briefly summarized. The programs have been divided into three sections: (a) verbally mediated self-control training; (b) role-play training; and (c) Spivack and Shure's interpersonal cognitive problem-solving training.

Verbally Mediated Self-Control Training

Meichenbaum and Goodman's (1971) program was one of the first problem-solving programs for children. They designed an intervention strategy to teach verbally medi-
ated self-control to impulsive second graders. They found it possible to train the children first to talk out loud and then to themselves about a problem. The investigators found that their method was effective in producing a more cognitively reflective approach in the trained subjects as compared to the control subjects on impersonal tasks (Matching Familiar Figures Test, Porteus Mazes, and Wechsler Intelligence Scale for Children [WISC] Performance IQ). However, there was no significant generalization of training effects in classroom observations of inappropriate behavior or of ratings for cooperativeness, self-control, and activity level. Other studies using similar verbal self-instruction techniques designed to help children develop their problem-solving skills have demonstrated positive findings on academic tasks such as in the Matching Familiar Figures Test and Porteus Mazes (e.g., Kendall & Finch, 1976, 1978; Douglas, Parry, Marton, & Garson, 1976). The evidence of generalization of training effects on classroom behavior is inconsistent (Meichenbaum & Asarnow, 1979).

Goodwin and Mahoney (1975) applied verbal self-instructional procedures to modify interpersonal behavior. They used modeling of overt self-instructions to help develop impulse control of aggressive children. The examiners observed a substantial decrease in disruptive classroom behavior one week after training.

Camp, Bloom, Herbert, and van Doornick (1977) developed a program entitled Think Aloud which applies self-instructional
methods more specifically to the training of interpersonal problem-solving processes. First, Camp et al. (1977) had the children identify emotions; second, the children considered what might happen next; and finally, they had the children generate many alternatives to a given problem. Results showed that both trained and untrained aggressive groups improved on aggressive behavior ratings. Even though there were no significant differences obtained between the control and experimental subjects, teachers rated the experimental subjects as improving more on prosocial behaviors.

Kendall and Wilcox (1979) and Kendall and Finch (1979) have combined the cognitive-behavioral procedures of verbal self-instruction, therapist modeling, and contingency management to improve interpersonal problem-solving skills. The children were first trained in the use of self-instructions to handle educational tasks and later to handle interpersonal problems. Treatment results indicate that the children's self-report did not change. However, teacher ratings of self-control (Self-Control Rating Scale, Kendall and Wilcox, 1979) and hyperactivity (Connors, 1969) demonstrated therapeutic generalization after treatment.

Kendall and Zupan (as cited in Urbain & Kendall, 1980) utilized a similar cognitive-behavioral self-control training program as Kendall and Wilcox (1979) and Kendall and Finch (1979). However, their programs focused mainly on interpersonal events rather than academic tasks (puzzle
solving, arithmetic problems, etc.). The treatment groups received verbal self-instructional training through modeling, a response cost for errors, and social and self-reward for correct behavior. The cognitive behavioral treatment program placed the experimental group (who were originally rated as lacking self-control) within one standard deviation of the normative mean on the rating of self-control.

According to Urbain and Kendall (1980), one of the problems in the verbally mediated self-control training programs is the lack of follow-up studies. Another problem may be that the experimenters are teaching children what to think, and not how to think, possibly resulting in a lack of long-term generalization of treatment effects (Spivack & Shure, 1974; Urbain & Kendall, 1980).

**Role-Play Training**

Van Lieshout, Lecke, and Van Sonsbeek (1976), Kameza (1975), and Iannotti (1978) attempted to develop the role-taking abilities of young children. Van Lieshout et al. (1976) and Kameza (1975) utilized puppets to help the children role-play. Iannotti (1978) had the children act out skits (social situations) to enhance role-taking ability. In all three studies, discussions concerning the thoughts and feelings of the characters involved in the role-play were carried out. There was a consistent increase in the role-playing ability of the children in all three studies. Behaviors such as those affected by problem-solving training (e.g., impulsiveness and inhibition) were not investigated.
Dupont (as cited in Urbain & Kendall, 1980) developed a comprehensive program entitled "Toward Affective Development." Although there is a primary emphasis on developing role-playing ability, there are many other abilities covered including awareness of individual differences, emotional and body awareness, and awareness of career opportunities. Urbain and Kendall (1980) report that preliminary outcome data indicate that children who participated in the program scored higher than untreated children on measures of self-esteem and alternative thinking. Again there is a lack of behavioral measure.

Elardo and Cooper (1979) developed a social development program similar to Shure and Spivack's (1978) Kindergarten Interpersonal Problem-Solving (KIPS) program. Even though the major emphasis is on enhancing perspective taking abilities, they also attempted to develop other problem-solving abilities such as alternative solution thinking. Urbain and Kendall (1980), in regard to Elardo and Cooper's (1979) work, state that:

The outcome data to date indicate that the program was successful in producing significantly higher scores for the experimental children versus the no treatment controls on measures of cognitive role-taking, alternative thinking, and classroom adjustment, as measured by certain subscales of the Devereux Elementary Behavior Rating Scale. (p. 134)
All of the role-playing programs covered have been successful in improving a child's skills at tasks assessing perspective taking skills. However, there have been inconsistent results concerning behavioral adjustment and a lack of information on long term effects. At this point, it is difficult to say whether role-play training is sufficient for teaching children how to solve many interpersonal problems at home and school (Spivack, Platt, & Shure, 1976).

**Spivack and Shure’s Interpersonal Cognitive Problem-Solving System**

Since research indicates that good problem-solvers tend to evidence better social adjustment than those with limited skills in this area, problem-solving appears a critical factor in social skills development (Spivack & Shure, 1974). Most of the research in interpersonal problem-solving training has been based on the methods of Goldfried and Goldfried (1975) and Spivack and Shure (1974). Goldfried and Goldfried (1975) constructed a problem-solving method for adults consisting of general orientation, decision making, and verification. Spivack and Shure (1974) provided a variation of this model for children involving determining the problem, alternative solutions, alternative consequences, the appropriate solution, and evaluation. To better understand Spivack and Shure's interpersonal cognitive problem-solving system, several areas will be covered including (a) Spivack and Shure's problem-solving
method; (b) Spivack and Shure's problem-solving theory; (c) a mental health program for Kindergarten children; and (d) Spivack and Shure's problem-solving research.

Spivack and Shure's problem-solving method. The common element found in Spivack and Shure's work and other problem-solving training programs is that cognitions play a major role in directing behavior and, thus, the child's maladaptive thinking styles. Unique to Spivack and Shure's system is the inclusion of prerequisite language skills, teaching children how to think and not what to think, and their inclusion of only interpersonal training tasks (as opposed to puzzles, anagrams, etc. which are defined as impersonal).

Since Spivack and Shure discovered that children did not have the necessary language concepts for successful problem-solving, they included prerequisite language skills in their program. Research indicates that many children do not have a real understanding of such words as "and," "or," and "not," even though they use them (Breiter & Engleman, 1966). Consequently, it appeared necessary to ensure their mastery of such words before children received problem-solving training.

Spivack and Shure's emphasis on how a child thinks contrasts with other methods that directly tell the child what to think out loud or what to think to him- or herself (Meichenbaum & Goodman, 1971; Kendall & Finch, 1976; Goodwin & Mahoney, 1975). The fact that behavioral change did not
generalize to other situations as a result of these programs (e.g., Meichenbaum & Gooman, 1971) may be due in part to the program's failure to guide the children in generating their own thoughts in problem situations. Spivack and Shure (1974) state that "It is likely that children of all ages adjust across a range of situations when they acquire tools of thought that are useful and applicable from situation to situation" (p. 27).

Finally Spivack and Shure's choice to base program content on people and interpersonal relations rather than impersonal, academic situations distinguishes their program from the others covered. They believe that their inclusion of interpersonal situations will be more relevant to enhancing social adjustment.

**Spivack and Shure's problem-solving theory.** In essence, Spivack and Shure's theory of problem-solving maintains that there is a group of interpersonal cognitive problem-solving (ICPS) skills that mediate the quality of our social adjustment. The purpose of their research was to identify and measure these skills to demonstrate their relationship to social adjustment, to discover how they are learned, and to develop educational and treatment programs to enhance their operation.

Spivack, Platt, and Shure (1976) maintain that there are multiple ICPS skills rather than a single, unitary problem-solving ability, and the significance of each ICPS skill in determining degrees of social adjustment may
differ with age. Over a series of seven studies, Spivack and Shure found that, independent of general verbal skills, children who were overly impatient or who were withdrawn were particularly more deficient than their adjusted peers in two ICPS skills. These include the ability to generate alternative solutions (as measured on Shure and Spivack's Preschool Interpersonal Problem-Solving Test) and the consequential thinking or ability to foresee alternative actions that might happen next if a child carried out a solution (as measured on Shure and Spivack's What Happens Next? game). Other ICPS skills Spivack and Shure have identified as being important in facilitating behavioral change include the ability to recognize that there is a problem (problem sensitivity); the capacity to articulate the step by step means that may be necessary to carry out the solution (means-ends); and the ability to relate one event to another over time with regard to "why" that might have precipitated the act (causal thinking). Spivack et al. (1976) maintain that it is a deficiency in these mediating thought processes that leads to interpersonal misjudgment and social frustration.

The most important ICPS skill for children, according to Spivack and Shure's research, is alternative thinking. Spivack et al. (1976) state that "Youngsters who improved most in alternative thinking skills as a function of training also improved most in the interpersonal behaviors" (p. 50). The assumption is that alternative solution
thinking works as a mediator of healthy interpersonal functioning.

Spivack and Shure (1974) insist that the use of their program is not limited to children of average or above average intelligence. Spivack and Shure (1974) state, "Although this is a cognitive training program, its utility is not limited to a specific group on the basis of measured impersonal cognitive ability" (p. 106). Throughout Spivack and Shure's work in this field, they have found that their programs have improved children's ICPS skills and behavioral adjustment, independent of measured intelligence. Spivack and Shure (1974) further mention that "as yet we do not know the level of intellectual ability below which the program is ineffective" (p. 106). Their programs have included children with IQ's ranging from 70-120.

In a review of ICPS skills training programs, Spivack et al. (1976) maintained that more intensive intervention may be needed with older elementary children than with younger elementary children to modify desirable behaviors. Other investigators have also mentioned that interpersonal problem-solving training has been more successful with younger children (see Urbain & Kendall, 1980).

A mental health program for kindergarten children. Shure and Spivack's program is an upgraded adaptation of an earlier developed nursery school program (Shure, Spivack, & Gordon, 1972; Spivack & Shure, 1974). The Kindergarten Interpersonal Problem-Solving (KIPS) program is composed
of a carefully sequenced series of lessons in the form of games a teacher can play with a small group. The program takes from about five to twenty minutes each day over a period of two to three months. The program has been used effectively by teachers and teacher's aides. The goal is to improve children's social adjustment. Spivack and Shure (1974) state that:

The most important of these skills are 1) alternative solution thinking, the ability to generate different solutions that might solve an interpersonal problem; and 2) consequential thinking, the ability to foresee different things that might happen next if a solution is carried out. (p. v)

The program's use is facilitated by the fact that it does not require highly specialized training of a special theoretical orientation.

The KIPS lessons are arranged so that children first learn certain language and thinking skills prerequisite to the learning of interpersonal problem-solving skills. These skills include problem-solving word concepts (e.g., or, if-then, same-different, etc.), the ability to identify emotions and recognize that different people may feel and think differently, and the ability to find out what others think and feel.

After the children have mastered the prerequisite skills, they proceed to the interpersonal cognitive problem-solving section. This part is divided into three sections,
alternative solutions, consequences, and solution-consequence pairing. The goal in the alternative solutions section is to increase the children's abilities to think of as many different solutions as possible to interpersonal problem situations presented to them by eliciting possible solutions and consequences. The goal of the consequence section is to help children think about what might happen next if a solution is carried out. The goal of the solution-consequence pairing section is to stimulate children to offer a solution to a problem, follow it with a consequence, and go back to the original problem for a second solution and its possible consequences for as many solutions as a child can think of.

KIPS has been developed for kindergarten use. However, Shure and Spivack (1978) suggest that the KIPS may also be useful in the primary grades and in the "mainstream" classes.

Spivack and Shure's problem-solving research. Spivack and Shure have conducted three evaluation studies of their training program. The first two programs were preliminary, and the final one was more comprehensive.

In both preliminary studies, the experimental groups (those receiving Spivack and Shure's training program) improved significantly in their alternative solution thinking, causal thinking (cause and effect in human behavior), and consequential thinking. The percentage of children in both studies rated as adjusted significantly increased after training. The number of children rated as adjusted
in the control groups remained at the same level. Spivack and Shure (1974) maintain that the observed improvement in thinking was unrelated to measured intelligence. One of the most important findings in both studies was that the children showing the most behavioral improvement (as measured in a behavioral rating scale) also demonstrated the largest gain in problem-solving skills. According to Spivack and Shure (1974), "A direct link between improved thinking (through training) and improved behavioral adjustment was established" (p. 93).

The final, more comprehensive, evaluation included a larger sample (219 children). As measured by behavioral rating scales, the program led to the improved behavioral adjustment of the trained children. This increased behavioral adjustment was found in normal, inhibited, and impulsive children. Spivack and Shure (1974) found a statistically significant relationship between behavioral improvement (as measured on the behavior rating scale) and enhanced alternative thinking (as measured on the problem-solving test). They also found that consequential thinking reached borderline significance, and causal thinking failed to reach significance. Spivack and Shure (1974) conclude:

The findings confirmed those of preliminary studies, indicating that altering those cognitive problem-solving skills most related to behavioral adjustment improves behavioral adjustment. The evidence supports the notion that the training program improves beha-
vioral adjustment because it enhanced problem-solving ability. (p. 103)

The six-month follow-up results indicate that the behavioral improvement and alterations in thinking that occurred during training were maintained. There was even evidence suggesting that normal children were also helped by training. The training programs appeared to have lowered the chances that a normal child would later become maladjusted.

Spivack, Platt, and Shure (1976) said that the training program had four important effects. These include a significant increase in alternative, consequential, and cause and effect thinking; a significant decrease in irrelevant solutions; an increase in the ability to mention nonforceful as well as forceful solutions; and a significant enhancement of problem-solving ability among those who were rated as needing it most (impulsive and withdrawn children).

Overall, the program has shown that it can improve thinking skills related to adjustment; and more importantly, it can maintain and increase a child's level of behavioral adjustment. Finally, the program has demonstrated generalizability across teachers, training centers, and time.

In summary, the results of Spivack and Shure's programs are encouraging. A problem in their research is the lack of measures of observable behavior. In addition, there needs to be research done in finding which of the ICPS skills might be most responsible for the measured improve-
ment, determining the effects of sex, age, and social economic status on problem-solving training, and evaluating whether their program is effective with children having IQ's below 75.

Spivack (through personal correspondence, 1980) has indicated that he felt the idea of implementing his interpersonal cognitive problem-solving techniques with borderline retarded children would be of great importance. He foresees few problems implementing the program as outlined.

Statement of the Problem

Public Law 94-142 mandates a free and appropriate education in the least restrictive environment to every child (Martin, 1979). However, many investigators have found that Educable Mentally Retarded (EMR) children are placed into restrictive environments—self-contained classrooms—due to their immature and deviant social behaviors (Strain & Carr, 1975; Robinson & Robinson, 1976; Birch, 1974). Hill and Strain (1977) maintain that the inappropriate behaviors of EMR children must be modified before the integration of EMR children into the least restrictive environment (regular classroom) can be successful. One possible solution to the problem of behavioral maladjustment of EMR children is problem-solving training (Spivack & Shure, 1974; D'Zurilla & Goldfried, 1971; Urbain & Kendall, 1980; Elardo & Cooper, 1977). The purpose of this project is to enhance the behavioral adjustment of elementary aged EMR children sufficiently to allow for suc-
cessful integration into the normal classroom. This would be achieved by implementing Shure and Spivack's (1978) interpersonal problem-solving approach.

Many investigators have found significant differences between normal and retarded children in solving problems, including a failure to develop strategies prior to making a response (Robinson & Robinson, 1976; Spitz & Nadler, 1974; Gruen & Korte, 1973). Retarded children have deficits in problem-solving which may account for the inadequate self-control as seen in the classroom. Spivack and Shure (1974) have demonstrated that with non-retarded children, problem-solving is an important mediator of behavioral adjustment. Spivack and Shure (1974) have also found, in studies with non-retarded children, that poor problem-solvers demonstrate inadequate behavioral adjustment. The evidence provided by Spivack and Shure's (1974) work in problem-solving suggests that certain problem-solving abilities facilitate behavioral adjustment. Thus, enhancing these abilities enhances behavioral adjustment. Since normal children, demonstrating interpersonal problem-solving difficulties, can be treated using problem-solving intervention methods (Urbain & Kendall, 1980; Spivack & Shure, 1974; D'Zurilla & Goldfried, 1971; Elardo, 1974) it seems appropriate to study the use of a problem-solving training program with EMR children who demonstrate many of the same problems and deficits.

Spivack and Shure (1974) have developed ways to teach interpersonal cognitive problem-solving skills to non-
retarded children in a school setting. In addition to improving non-retarded children's problem-solving abilities, Spivack and Shure's (1974) program has increased children's behavioral adjustment. There are many other intervention programs designed to improve problem-solving and social skills (see Cartledge & Milburn, 1980). However, they focus on either teaching specific social skills or modifying what one should think or say. Spivack and Shure's (1974) program attempts to help a child develop problem-solving thinking on one's own. This may help in achieving generalization of the treatment effect.

Spivack et al. (1976) also found in their work with non-retarded latency aged children that the "training data...suggest the possibility that more intensive intervention may be needed than with younger children before obstreperous behaviors may be significantly reduced" (p. 79). In addition, they mentioned that the length of training needed for latency aged children to create increases in problem-solving skills has not been established. From the available research, it appears that longer, more intensive training would be needed to facilitate the problem-solving skills and adaptive behavior of latency aged children as compared to younger children.

The two goals of this project are to improve EMR children's problem-solving abilities in the regular school environment and to evaluate the use of Shure and Spivack's program on an EMR population.
Hypotheses

The primary hypothesis is that training in problem-solving will enhance the adaptive behavior of EMR children and consequently allow for more successful integration into the least restrictive environment.

This study will investigate the following sub-hypotheses:

1) The subjects, being presented with the program (regardless of age), will show a significant increase in their problem-solving abilities as measured by the Preschool Interpersonal Problem-Solving Test (Spivack & Shure, 1974) when compared to controls.

2) The subjects, being presented with the program (regardless of age), will show a significant decrease in their posttest Self-Control Rating Scale (Kendall & Wilcox, 1979) as compared to the controls. A decrease in the child's Self-Control Rating Scale indicates an improvement in the child's self-control.

3) The younger subjects (ages 8-9), being presented with the program, will show a significant increase in the Preschool Interpersonal Problem-Solving scores as compared to the older age group (ages 10-14).

4) The younger age group (ages 8-9) will also show a significant decrease in the posttest Self-Control Rating Scale scores as compared to the older age group (ages 10-14).
CHAPTER II

METHOD

Subjects
The subjects in this study were 40 classified Educable Mentally Retarded (EMR) children, eight to fourteen years of age. Four special education teachers from Simpson Elementary School in the Franklin-Simpson school system and from L.C. Curry Elementary School and Parker-Bennett Elementary School in the Bowling Green City school system were asked to participate in the program. All of the teachers agreed to be involved with the project. The schools involved in the project are in a rural area of South Central Kentucky.

A parental consent form which included information explaining the study and asking for the parents' signatures allowing their children to be included in the study was sent home with each child (see Appendix A). The parents were informed that the principle researcher was a graduate student. They were also informed that the purpose of the study was to improve the social skills of their children. Of the 42 parents asked, only two refused to allow their children to participate.

21
This study included 20 children eight to nine years of age and 20 children ten to fourteen years of age. A total of ten students from ages eight to nine years and ten students from ages ten to fourteen years served as experimental subjects. A matched group served as controls. All the students that were recruited had a Full Scale score of between 50-75 on the Wechsler Intelligence Scale for Children-Revised (WISC-R). The experimental subjects were all located in Simpson Elementary School while the control subjects were at L.C. Curry Elementary School and Parker-Bennett Elementary School.

The three schools included were not an equivalent sample since the schools were located in different cities and since the students from Simpson Elementary School were in self-contained classrooms while the students from L.C. Curry and Parker-Bennett Elementary Schools were in a resource room. The children in Simpson Elementary School were selected as experimental subjects because the self-contained classroom allows the problem-solving trainer (teacher) easier access to all the students, as the Spivack and Shure program is best utilized in group situations.

**Instruments Used**

**The Preschool Interpersonal Problem-Solving (PIPS) Test**

This test is designed to measure the child's cognitive ability to solve real-life interpersonal problems. The test is individually administered to each subject. This scale taps each child's ability to name alternative solu-
tions to two life-related types of problems: ways a child might obtain a toy from another child (peer problems) and ways a child might avert his mother’s anger caused by his damaging property (authority problems). For all peer problems, the child has to conceptualize ways one child might obtain a toy from another. The child is presented with a minimum of seven peer-toy situations; but if seven different solutions are given, the experimenter continues until the child has run out of options. For the authority problems, the child has to conceptualize specific ways to avoid his/her mother’s anger for acts of property damage, such as breaking her favorite flowerpot. The child is presented with a minimum of five similar mother-child situations; but if five different solutions are given, the experimenter continues until the child has run out of options. One point is accumulated for each different solution presented, which yields a numerical score (see Appendix B).

Spivack and Shure (1974) found the interscorer reliability of the PIPS Test to be .96. In addition, test-retest reliability over one week yielded a reliability coefficient of .72 and over three months yielded a reliability coefficient of .59.

Spivack and Shure (1974) state that: validity is claimed for the PIPS Test because the measure discriminates between children who differ in the degree of behavioral adjustment exhibited in the classroom, background, and the fact that these
findings are not accounted for by general verbal output during testing of level of intellectual functioning. (p. 9)

Spivack and Shure (1974) found that there was a direct relationship between improvement in behavioral adjustment of both impulsive and inhibited children. This finding further enhances the validity of the PIPS Test.

The interscorer reliability was assessed for this study for this instrument as follows: first the experimenter administered the test; second an unscored copy of the original protocol was given to another person to score; and third the experimenter scored the original protocol. Five children were tested in this manner. Agreement was obtained between the two sets of scores based on this formula:

\[
\frac{2(\text{number of common agreements})}{\text{No. of judgments of } A + \text{No. of judgments of } B}
\]

The interscorer reliability on the PIPS Test for this study was .97.

The Self-Control Rating Scale (SCRS) for Children

The SCRS Scale was designed to assess self-control in children. The scale attempts to tap two components of children's self-control: cognitive (legislative) and behavioral (executive) (see Appendix C). This scale contains 33 items to be rated by the teachers on a 7-point continuum (one word descriptive anchors are provided at the extremes of the continuum). The scale contains 10 items descriptive of self-control (e.g., "Does the child
stick to what he or she is doing until he or she is finished with it?"), 13 items indicative of impulsivity (e.g., "Does the child grab for the belongings of others?"), and 10 items worded to denote both possibilities (e.g., "Does the child interrupt inappropriately in conversations or wait his or her turn to speak?"). For every item, a score of 1 indicates maximum self-control and a score of 7 maximum impulsivity. The numbers filled in for all of the items are added together to attain a numerical score. A total score below 150 is indicative of adequate self-control or behavioral adjustment.

Kendall found the internal reliability of the SCRS Scale to be .98. Test-retest reliability over three to four weeks was .84. He also found that scores under 150 have reduced significance. Kendall (1979) states that:

the intercorrelations of the self-control measures indicated that the SCRS was significantly related to both the latency and error measures of the Matching Familiar Figures (cognitive impulsivity), the Porteus Q sort, and the behavioral observation total score (lack of behavioral self-control). (p. 1024)

In addition, the SCRS was not found to be significantly correlated with mental age. Kendall and Wilcox (1979) maintain that, "the SCRS appears to measure teachers' perceptions of both cognitive and behavioral aspects of self-control and apparently does so independently of intelligence" (p. 1074).
Materials Used by Teachers for Implementation

The following materials were used for teacher training and classroom implementation:

1) A 2x3 foot bulletin board
2) Artificial flowers and animal trinkets
3) Alligator, whale, duck, and finger puppets depicting people
4) Farmyard animal cutouts
5) A flannel board with the pictures of My Community, Food and Nutrition, Transportation, Social Development, and Helping and Sharing
6) The moods and Emotions picture set
7) Two storybooks—Will I Have a Friend? by Miriam Cohen (1967) and Around Another Corner by Emily Hearn (1971)
8) Transportation picture set
9) The text—Social Adjustment of Young Children by Spivack and Shure (1974)
10) Families and Friends picture set
11) "Kindergarten Interpersonal Problem-Solving Script" from A Mental Health Program for Kindergarten Children by Shure and Spivack (1978)

These are most of the materials that Spivack and Shure used in implementing their project.

Procedure

The experimenter served as a consultant to the teachers throughout the project. The experimenter instructed the
teachers on how to carry out the program. The only direct contact the experimenter had with the children was during the pre- and post-testing.

This project was divided into four phases.

**Phase 1**

The first meeting with teachers was a brief orientation session lasting approximately one hour. Its purpose was to enlist the interest and positive motivation of the teachers and to explain the basic content and problem-solving goals of the program. During this meeting the teachers were introduced to the idea of a script, the basic word concepts, and the way the script is sequenced. They were told how each lesson led to the next until the final problem-solving lesson was completed.

**Phase 2**

After the initial orientation, the experimenter gave the PIPS Test to each child, and the teachers completed the SCRS Scale on each child.

**Phase 3**

After the testing was completed, the experimenter met with the teachers at Simpson Elementary School for five weekly meetings held at the beginning of five consecutive weeks. Each teacher acted out the lessons to ensure familiarity with the games and dialogues before conducting them with the children. In addition, audio tape recordings of the implementation of the program in the classroom were used as feedback in these meetings. Following each weekly
meeting, the experimenter observed each teacher present one of their daily KIPS lessons. Any discrepancies from the training program script were discussed.

The teachers presented two lessons daily, one in the morning and one in the afternoon. The lessons took from five to twenty minutes to complete. Shure, through personal correspondence (1981), stated that using two to three lessons each day was acceptable. One teacher presented the lessons to a group of ten older subjects (ten to fourteen years of age), and the other teacher presented the lessons to a group of ten younger subjects (eight to nine years of age).

Beginning with the second weekly meeting, any problems a teacher had were discussed, and any suggestions for change in content or method of presentation were implemented, if agreed upon. Script refinement was a continuing process, as outlined by Spivack and Shure (1974). Lessons for the following week were demonstrated and acted out, and excerpts of the tapes from the previous week were heard. Dialogues the teachers could apply informally throughout the day were also described at these meetings. The dialogues were presented each week, consistent with the concepts covered in the formal training lessons at hand.

The experimenter met with the teachers at L.C. Curry and Parker-Bennett Elementary Schools only once after the first orientation meeting. They were instructed to present informal, daily discussions concerning social skills to
the control subjects. The areas that were to be covered were discussed at the beginning of the study. These areas included peer relationships, family relationships, and teacher relationships. There were no other discussions concerning the topics that were to be covered for the control subjects.

**Phase 4**

After the program was completed, the experimenter readministered the PIPS Test to each subject, and the teachers filled out the SCRS Scale on each subject in both the control and the experimental groups.

**Design**

The subjects were equally divided into a control and an experimental group. Each of these groups was further divided into a younger (ages eight to nine years) and an older (ages ten to fourteen years) group. This division into age groups helped control for age effects and allowed an analysis of age effects. In addition, the age division was practical, for the experimental subjects were already split into two classrooms (one for the older children and one for the younger children). The teachers presented the experimental subjects with Shure and Spivack's (1978) KIPS program. The control subjects received daily, informal discussions concerning social skills by their teachers. Each subject was given a pre- and a post-test. The tests used were the PIPS Test and the SCRS Scale.
Statistical Analysis

A 2x2x2 factorial design, with repeated measures on the pre- and post-tests, was utilized for both the PIPS Test and the SCRS Scale. The first factor was the type of training the subjects received (ICPS skills training). The second factor was the age of the subjects (two age groups, a younger and an older group). The third and final factor consisted of the repeated measures. This design was necessary to examine the effects of age and training and the interaction effects of age by training on the measures.
CHAPTER III

RESULTS

The first sub-hypothesis for this study was that the experimental subjects will show an increase in their ability to name alternatives to problem situations (PIPS Test). The analysis of variance conducted with the PIPS Test, a summary of which is shown in Table 1, indicates that there was a significant main effect for the type of training the subjects received (F = 17.14, p < .01). There were also two significant interactions, a two-way interaction between the type of training and pre- versus post-testing (F = 56.11, p < .01) and a three-way interaction between age of subjects, type of training, and pre- versus post-testing (F = 6.60, p < .05). The Newman-Keul's Multiple Range Test was utilized to investigate the significant interactions on the PIPS Test. The Newman-Keul's Multiple Range Test was chosen because it provides a moderate correction for "probability pyramiding." This test reduces the probability of falsely rejecting the null hypothesis when making multiple comparisons between group means. A significant increase in PIPS Test scores from pre- to post-testing was obtained for both the young and old experimental groups (p < .01). Neither
Table 1
Analysis of Variance
Preschool Interpersonal Problem-Solving Test

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td>42.05</td>
<td>6.26*</td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>115.20</td>
<td>17.14**</td>
</tr>
<tr>
<td>Age x Training</td>
<td>1</td>
<td>6.05</td>
<td>1</td>
</tr>
<tr>
<td>Error_d</td>
<td>36</td>
<td>6.72</td>
<td></td>
</tr>
<tr>
<td>Time of Testing</td>
<td>1</td>
<td>61.25</td>
<td>56.11**</td>
</tr>
<tr>
<td>(Pre versus Post)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age x Time of Testing</td>
<td>1</td>
<td>0.00</td>
<td>1</td>
</tr>
<tr>
<td>Time of Testing x Training</td>
<td>1</td>
<td>61.25</td>
<td>56.11**</td>
</tr>
<tr>
<td>Age x Time of Testing x Training</td>
<td>1</td>
<td>7.20</td>
<td>6.60*</td>
</tr>
<tr>
<td>Error_w</td>
<td>36</td>
<td>1.09</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

**p < .01
the young nor old control groups obtained a significant increase in their PIPS Test scores between pre- and post-testing.

The second sub-hypothesis was that the experimental subjects will demonstrate a decrease in their scores on the behavioral rating scale (SCRS Scale). The analysis of variance performed with the SCRS Scale, a summary of which is shown in Table 2, indicates that there was only a significant main effect for pre- versus post-testing ($F = 3.64, p < .10$). Both the experimental and control subjects obtained a decrease in their SCRS scores. There were no other significant main or interaction effects.

The third sub-hypothesis was that of the experimental subjects, the younger children will produce a greater increase in naming alternatives for problems than the older children (PIPS Test). The analysis of variance conducted with the PIPS Test, a summary of which is shown in Table 1, indicates that there was a significant main effect for the age of the subjects ($F = 6.26, p < .05$). A $t$-test was conducted to determine if there was a significant difference obtained between the gains made by the older experimental subjects and the younger experimental subjects on the PIPS Test. The older experimental subjects evidenced a significantly greater increase of alternatives given from pre- to post-test than the younger experimental subjects ($p < .10$).
Table 2  
Analysis of Variance  
Self-Control Rating Scale

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td>2163.20</td>
<td>1</td>
</tr>
<tr>
<td>Training</td>
<td>1</td>
<td>9548.45</td>
<td>1</td>
</tr>
<tr>
<td>Age x Training</td>
<td>1</td>
<td>4.05</td>
<td>1</td>
</tr>
<tr>
<td>Error(_b)</td>
<td>36</td>
<td>373393.11</td>
<td></td>
</tr>
<tr>
<td>Time of Testing (Pre versus Post)</td>
<td>1</td>
<td>3808.80</td>
<td>3.64*</td>
</tr>
<tr>
<td>Age x Time of Testing</td>
<td>1</td>
<td>3.20</td>
<td>1</td>
</tr>
<tr>
<td>Time of Testing x Training</td>
<td>1</td>
<td>361.25</td>
<td>1</td>
</tr>
<tr>
<td>Age x Time of Testing x Training</td>
<td>1</td>
<td>14.45</td>
<td>1</td>
</tr>
<tr>
<td>Error(_w)</td>
<td>36</td>
<td>1047.06</td>
<td></td>
</tr>
</tbody>
</table>

*p < .10
The fourth sub-hypothesis was that of the experimental group, the younger aged children will show a significantly greater decrease in their posttest SCRS scores when compared to the older aged children. A t-test was performed to examine whether there was a significant difference between the average reduction of scores between pre- and post-tests for the younger and older children. The difference between the average reduction in scores for the younger and older children was not significant.
CHAPTER IV

DISCUSSION

Analyses of Data

In Figure 1 are data for the mean scores on the PIPS Test from pre- to post-testing for each group. The data show the interaction effects that occurred in the analysis of the PIPS Test scores. An analysis of the interaction effects demonstrate that, as predicted, the experimental subjects showed significant improvement whereas the control subjects did not. Regarding changes in problem-solving ability, as measured by the PIPS Test, 19 of the 20 experimental subjects increased their ability to give relevant solutions to real-life problems. An increase in this ability occurred for only five of the 20 control subjects. The average increase in alternatives given on the PIPS Test was 3.5 for the experimental subjects and 0 for the control subjects. Spivack and Shure (1974) also found similar results with the PIPS Test for their program using younger, non-retarded children. The results of this project indicate that Shure and Spivack's (1978) KIPS program enhanced specific interpersonal thinking skills, naming alternative solution thinking for the defined EMR.
population. Alternative solution thinking, according to Spivack and Shure (1974), is the most significant mediator of behavioral adjustment in children.

The graph of the mean SCRS scores for each group from pre- to post-testing is shown in Figure 2. The data show that, as predicted, the experimental subjects achieved a decrease on the behavior rating scale, SCRS. Of the experimental subjects, 80% showed a decrease in the SCRS score. They went from an average score of 151.5 to an average score of 142.3. This decrease indicates that as a result of training the experimental subjects exhibited improved self-control as measured by changes in observed behavior. These results are consistent with Spivack and Shure's (1974) work with non-retarded children where they found that the program appeared to improve the behavioral adjustment of children as measured in the Devereux Child Behavior Rating Scale.

Contrary to the predictions concerning the experimental group, the older children demonstrated a significantly larger increase in the number of alternatives given on the PIPS Test as compared to the younger children. The average increase in the number of alternatives given by the older group was 4.1 and by the younger group 2.9. This finding indicates that the KIPS program was more effective in enhancing the problem-solving skills of older EMR children than younger EMR children. It appears that the older EMR children were at a level of social and mental
maturity that allowed them to benefit more from the program.

On the SCRS Scale, both the younger and older children in the experimental group demonstrated improvement. The younger children showed a decrease of 9.1 points, going from an average score of 157.0 (indicating inadequate self-control) to an average score of 147.9 (indicating adequate self-control). The older children demonstrated a decrease of 10 points, going from an average score of 146.6 to an average score of 136.6. For both age groups it appears that the KIPS program is equally effective in improving the behavioral adjustment of EMR children. However, the average difference obtained between pre- and post-tests for the younger children is difficult to compare to the average difference obtained by the older children because both pre- and post-test scores for the older children are under 150. As stated earlier, scores under 150 on the SCRS have reduced significance.

An unexpected finding was that the control subjects also demonstrated a decrease in their SCRS scores from pre- to post-test. They went from an average score of 134.2 on the pretest to an average score of 116.2 on the posttest. There are many factors which may have accounted for this decrease. First, the informal social skills lessons presented by the teachers may have been effective. It is difficult to determine if the informal social skills lessons were influential in the decrease in SCRS scores because the lessons were not monitored by the experimenter.
Second, the control subjects were mainstemmed whereas the experimental subjects were in self-contained classrooms. Birch (1974) said that mainstemming has a potential positive effect on the behavioral adjustment of children. Thus, mainstemming may have been partly responsible for the decrease in SCRS scores. Third, the teachers may have put forth extra effort in trying to improve the behavioral adjustment of their students. Fourth, the teachers may have given their students lower SCRS scores on the posttest because they knew they were involved in an experiment. Thereby they could have believed that their students should have improved over time. In addition, it is possible that this decrease on the SCRS may not be significant because both the average pre- and post-test scores were under 150 which represents the cut off score for behavioral adjustment.

In summary, this study provides evidence that for elementary aged EMR children, the KIPS program leads to an increased capacity to think in terms of solutions to interpersonal problems and that this increase in problem-solving ability may lead to improved behavioral adjustment. The data support Spivack and Shure's (1974) theory that "certain problem-solving abilities mediate behavioral adjustment and that enhancing these abilities enhances behavioral adjustment to the extent they are implicated" (p. 106). In addition, the results of this project have provided a reply to Spivack and Shure's (1974) comment. They stated that "As yet we do not know the level of in-
tellecultural ability below which the program is ineffective (mental subnormality)" (p. 106). From the results of the project, one can possibly conclude that the program appears to be effective for elementary aged EMR children.

Other Factors

An encouraging finding is that the program was effectively carried out using a consultation model (Caplan, 1970). Spivack and Shure (1974), in their work with developing problem-solving abilities of children, also found the consultation model to be effective. In the present project, the teachers did all of the training with the children. This arrangement saves time for the experimenter. He spent only about two to three hours a week implementing the project. This time was devoted to teacher training. Beside being cost efficient, this arrangement allows the mental health worker the ability to reach many more children than would otherwise be possible. The consultation model used also allows the experimenter to utilize one of the most important and often overlooked resources, the teacher.

A beneficial by-product of the project was a change in the teachers' problem-solving styles. The teachers, by instructing the children in problem-solving techniques, also learned a new approach in solving problems themselves. It would appear that a change in the teachers' attitudes toward classroom problems would enhance the generalization of the treatment effects for the children. The teachers can also use this approach with other classes.
Two key assets of this program include the overall length and the daily presentation time. The program lasted only about five and one-half weeks and took from 10 to 40 minutes each day to present.

According to Spivack, Platt, and Shure (1976), changes in behavior lag behind changes in problem-solving abilities. Thus, the behavioral improvements demonstrated by the experimental subjects (as measured by the SCRS) should continue to emerge after the end of this program.

**Limitations of the Study**

The first limitation of this study was the lack of a matched sample. As mentioned earlier, the experimental subjects were in self-contained classrooms, and the control subjects were mainstreamed. In addition, the subjects were not matched according to SES or IQ. Due to the non-consideration of these factors, there may be need to qualify the results of the comparisons done between the control and experimental subjects.

The second limitation was the restricted sample population. Since only students from rural areas were included, it is difficult to conclude what implications the program has for EMR children in urban areas. However, it seems reasonable to assume that the program would be effective with elementary aged EMR children in urban areas since Spivack and Shure's (1974) program was effective with non-retarded children from urban areas.
The third limitation was the short length of time of this study. Due to this time limitation, it was not possible to verify the primary hypothesis of this study which was that problem-solving training can enhance the adaptive behavior of EMR children and allow for successful integration into the least restrictive environment.

Summary and Suggestions for Future Research

The results of this study are encouraging. It appears that Shure and Spivack's (1978) KIPS program is effective with rural elementary aged EMR children. The program has not only produced cognitive changes (as measured by the PIPS Test), but it has also produced behavioral changes (as measured by the SCRS Scale). This study's results appear to support D'Zurilla and Goldfried's (1971) and Spivack and Shure's (1974) interpersonal problem-solving theories which are that interpersonal cognitive problem-solving skills play a major role in directing behavior.

As mentioned earlier, many EMR children tend to be placed in the self-contained classroom because of inadequate self-control (Birch, 1971). It is anticipated that the improvement in self-control exhibited by the experimental subjects during this study will be sufficient to allow them to be integrated into the regular classroom.

The success of this study, combined with the success of Spivack and Shure's work in problem-solving training, has opened up many areas for future research. Five suggestions are presented below that will allow further in-
vestigation of the role of problem-solving in behavioral adjustment and also may permit the creation of more effective problem-solving training programs and evaluation measures for these programs.

First, it is important to investigate whether Shure and Spivack's (1976) KIPS program is effective with verbal children having IQ's below 50. This is considered important because Shure and Spivack's program was shown to be effective with children having IQ's between 50-75. We have still not provided an answer to Spivack and Shure's comment that they do not know at what lower IQ level the program is ineffective. It also seems to be important to find out at what age levels Shure and Spivack's KIPS program is not effective. In this study, Shure and Spivack's KIPS program was found to be successful with children as old as 14. Another study might investigate the effectiveness of Shure and Spivack's program with children over 14 years of age.

Second, as Urbain and Kendall (1980) have suggested in their review of problem-solving studies, multiple measures need to be used in studying the effectiveness of problem-solving approaches. The multiple measures would allow one to examine the influence of problem-solving programs on various ICPS skills and possibly obtain more accurate behavioral adjustment estimates. Spivack and Shure (1974) have mentioned several ICPS skills that they consider important in improving behavioral
adjustment. One ICPS skills is consequential thinking, which is the ability to foresee alternative actions that might happen next after a person has carried out a solution to a problem. A test to measure consequential thinking is Shure and Spivack's What Happens Next? game. Another ICPS skill Spivack and Shure mentioned was causal thinking which is the ability to relate one event to another over time with regard to why the first event might have precipitated the action. Spivack, Platt, and Shure (1976) in their book *The Problem-Solving Approach to Adjustment* suggest different tests to measure causal thinking.

Another ICPS skill judged by Spivack and Shure to be important in problem-solving is means-ends thinking which is the ability to state the step by step means that may be necessary to carry out a solution. Spivack and Shure describe a Means-Ends Problem-Solving Test in their book *Social Adjustment of Young Children* which can be used to measure means-ends thinking.

In addition to the ICPS skills, there are several methods which can be used to evaluate problem-solving programs by examining the behavioral adjustment of children. One method that is usually omitted in many of the problem-solving studies is behavioral measurements. A possible method of quantifying classroom misbehavior could include counting the number of times a child was sent to the principal's office for disruptive behavior. Other methods for evaluating the children's behavior could include self-
report (having the child rate himself), peer ratings (having the children rate their classmates), and parents' ratings of their children's behaviors. These procedures may allow one to examine different facets of behavioral adjustment.

A third suggestion is that of determining whether modification of Shure and Spivack's (1978) KIPS program can increase the program's effectiveness. One way to modify the program is to add other problem-solving techniques used by various researchers in the area of problem-solving. For example, one could add role-playing exercises, communication skills training (e.g., helping children express what is upsetting them), and assertiveness training. In addition, many behavioral techniques can be utilized to increase the effort put forth by children during the program and to help motivate the children to apply what they have learned to areas outside the classroom. Kendall and Hollon (1979) have covered many of these behavioral strategies in their book *Cognitive-Behavioral Interventions: Theory, Research, and Procedures*. Another modification to the KIPS program could include having the advanced students serve as leaders in the program.

Fourth, the informal use of Shure and Spivack's program is considered important (Shure & Spivack, 1978). It would seem essential to monitor the teacher's informal use of the training program. One possible method could be to establish a list of objectives concerning the informal use of
the program for each lesson. The objectives can include exercises that a teacher can use during the school day that allow the children opportunities to practice their newly learned skills. To help insure that the teachers are meeting the objectives, they could be provided with daily checklists including the objectives to be met each day.

Fifth, in addition to focusing the attention on changes occurring with the children, one could measure changes in attitudes of the teachers presenting the program. A possible measure would be to develop a questionnaire on classroom management. This could be given to the teachers at specified times during the program. One might look at the changes in teachers' attitudes concerning classroom management as a function of presenting the program. These areas would seem to be essential because the teachers' attitudes toward classroom management will probably have an important effect on the success of the problem-solving program with the children.
Figure Caption

Figure 1. Mean number of alternatives given on the Preschool Interpersonal Problem-Solving Test (PIPS) before and after the training program (E = experimental group; C = control group).
PRE- AND POST-TESTING

![Graph showing mean number of alternatives pre and post testing for different groups.](image)

- Solid line with stars: Older group (E)
- Dashed line with stars: Older group (C)
- Solid line with xs: Younger group (E)
- Dashed line with xs: Younger group (C)
Figure Caption

Figure 2. Mean score on the Self-Control Rating Scale (SCRS) before and after the training program (E = experimental group; C = control group).
PRE- AND POST-TESTING

Mean SRS scores

- Older group (E)
- Younger group (E)
- Older group (C)
- Younger group (C)
APPENDICES
Appendix A

Parental Consent Form

Dear Parent/Guardian:

Your child has been selected to participate in a research project at school. The purpose of the project is to develop the social skills of children. The project will not interfere with or take away from your child’s educational training. All information and materials will be strictly confidential, and the results will not be used in any placement decision.

The project will be conducted by Dr. Pfohl, Professor of Psychology at Western Kentucky University. Any questions concerning the project may be directed to either of the researchers involved.

Sincerely,

Principal

Child's Name __________________________
I agree to let my child participate in the project.
_________________________________ Signature
I do not agree to let my child participate in the project.
_________________________________ Signature
Appendix B

Preschool Interpersonal Problem-Solving Test

Peer Problem

1) Truck (Doll)

Here's A (e.g., Johnny).

Read name written on picture and place picture upright against carrying case.

This is B (e.g., Jimmy.)

Place picture next to the "A" character.

Can you tell me what this toy is?

Let child respond, and correctly identify toy if need be.

Yes, a truck (doll).

Place the toy picture so it overlaps that of the "A" character.

Now, A has been playing with this truck (doll) for a long time and B wants a chance to play with it. But A keeps on playing with it.

Memory Cue: Who's been playing with the truck (doll) for a long time? You can point. Let child respond. That's right. A [point to A]. Who wants to play with it? Let child respond. That's right, B [point to B].

Question:

What can B [point to B] do so he (she) can have a chance to play with the truck (doll)? Point to toy. (See Manual for probing techniques [do, say, etc.])
2) Shovel

Here's C.

Read name written on picture and place picture upright against carrying case.

And here's D.

Place picture next to the "C" character.

And what is this toy?

Let child respond, and correctly identify toy if need be.

Good, a shovel.

Place the shovel so it overlaps the picture of the "C" character.

Now, C has been playing with this shovel all morning and D wants to have a chance to play with this shovel. But C keeps on playing with it.

Memory Cue: Who's been playing with the shovel all morning? You can point. Let child respond. That's right, C. [point to C.] Who wants to play with it? Let child respond. That's right, D [point to D].

The memory cue might be shortened to Who has it? (Child points.) Who wants it? (Child points.)

Question

What can D [point to D] do so he (she) can have a chance to play with the shovel? Point to shovel.

Probe according to child's response as illustrated in Manual.
3) Kite

Present the pictures in the same manner as in previous stories.

This is E and this is F. This toy is a ______. Let child respond and correctly identify the toy if need be. Yes, a kite. In this story E has been playing with this kite for a long time, all morning, and F wants to play with this kite. E keeps on playing with it.

Memory Cue - Judge need for use (see stories 1 and 2)

Question:

What can F [point to F] do so he (she) can get a chance to play with the kite? Point to kite.

4) Swing

Present the pictures in the same manner as in previous stories.

Here is G and here's H. Can you tell me what this is? Let child respond. Good, a swing. Now G has been playing on this swing and H wants a chance on the swing. G keeps playing with it.

Memory Cue - Judge need for use

Question:

What can H [point to H] do so he (she) can have a chance to play on the swing? Point to swing.
5) Drum

Present the pictures in the same manner as in previous stories.

Here is J and this is K. And what is this toy? Let child respond. Good, a drum. J keeps on playing with this drum and K would like to have a chance to play with this drum.

Memory Cue - Judge need for use

Question:

What can K [point to K] think of to do so he (she) can have a chance to play with the drum? Point to drum.

6) Boat

Present the pictures in the same manner as in previous stories.

This is L and this is M. And this toy is a . Let child respond. Yes, a boat. L keeps on playing with this boat and M wants a chance to play with it.

Memory Cue - Judge need for use

Question:

What can M [point to M] do so he (she) can have a chance to play with the boat? Point to boat.
7) Top

Present the pictures in the same manner as in previous stories.

Here is N and this is O. And what is this toy? Let child respond. This is a spinning top. Now N keeps on playing with this top and O would like a chance to play with it. But N keeps on playing with it.

Memory Cue – Judge need for use

Question:

What can O [point to O] do so he (she) can get to play with the top? Point to top.

---

Extra Stories

Use only if 7 different solutions are given. Allow the usual 3 probes but stop at the first toy for which no new solution is given.

8) Piano -

9) Teddy Bear -

10) Telephone -
Mother Problem (minimum of five)

Now we're going to change the story. We're going to make up some stories about children and their mommies. These are just pretend (make-believe) stories, O.K.? Here's the first one.

1) Broken Flower Pot

Here's P.

Place picture upright against carrying case.

This is P's mommy.

Place picture upright next to the "P" character.

(Very dramatically) Let's pretend that P just broke his (her) mommy's favorite flower pot and he (she) is afraid his (her) mommy might be mad at him (her).


Question:
What can P do so his (her) mommy will not be mad?

2) Scratch on Table

Present pictures in the same manner as in story 1.

Now let's pretend that Q scratched his (her) mother's wooden table and (very dramatically, simulating motion) it made a big scratch or mark on the table. His (her) mommy might be mad about that.

Memory Cue - Judge need for use

Question:
What can Q do so his (her) mommy will not be mad at him (her) because he scratched her table?
3) Burned Hole in Dress

Present pictures in the same manner as in previous stories.

Now let's say it's this way. R burned a hole in his (her) mother's best dress and he (she) is afraid his (her) mother might be mad at him (her).

Memory Cue - Judge need for use

**Question:**

What can R do so his (her) mommy will not be mad at him (her)?

4) Torn Page in Book

Present pictures in the same manner as in previous stories.

One day S tore some pages in his (her) mother's favorite book and he (she) was afraid his (her) mother might be mad.

Memory Cue - Judge need for use

**Question:**

What can S do so his (her) mommy won't be mad?
5) Broken Window

Present pictures in the same manner as in previous stories.

T was playing ball. The ball hit a window, and the window broke. Let child say broke. Yes, the window broke. He (she) was afraid his (her) mommy might be mad.

Question:

What can T do so his (her) mommy will not be mad at him (her)?

Extra Stories

Only if 5 different solutions are given. Allow the usual 3 probes but stop as soon as the child misses.

It is all right to start over with child character "A". The child may say "I saw him already." Just say: "I know, you're giving so many ideas we have to start all over with these pictures of children." The child will accept this explanation.

6) Broken Dish -

7) Knocked over and broke an ashtray -

8) Broke a Drinking Glass -
**Appendix C**

**SELF-CONTROL RATING SCALE**

Phillip C. Kendall and Lance E. Wilcox (1979) University of Minnesota

Please rate this child according to the descriptions below by filling in the appropriate number. The underlined 4 in the center of the row represents where the average child would fall on this item. Please do not hesitate to use the entire range of possible ratings.

Child's Name ______________________________________________________

<table>
<thead>
<tr>
<th>Item Rating Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Self-Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Self-Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maximum Impulsivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. When the child promises to do something, can you count on him or her to do it? ______
2. Does the child butt into games or activities even when he or she hasn't been invited? ______
3. Can the child deliberately calm down when he or she is excited or all wound up? ______
4. Is the quality of the child's work all about the same or does it vary a lot? ______
5. Does the child work for long-range goals? ______
6. When the child asks a question, does he or she wait for an answer, or jump to something else (e.g., a new question) before waiting for an answer? ______
7. Does the child interrupt inappropriately in conversations with peers, or wait his or her turn to speak? ______
8. Does the child stick to what he or she is doing until he or she is finished with it? ______
9. Does the child follow the instructions of responsible adults? ______
10. Does the child have to have everything right away? ______
11. When the child has to wait in line, does he or she do so patiently? ______
12. Does the child sit still? ______
13. Can the child follow suggestions of others in group projects, or does he or she insist on imposing his or her own ideas? ______
14. Does the child have to be reminded several times to do something before he or she does it? ______
15. When reprimanded, does the child answer back inappropriately? ______
16. Is the child accident prone? ______
17. Does the child neglect or forget regular chores or tasks? ______
18. Are there days when the child seems incapable of settling down to work? ______
19. Would the child more likely grab a smaller toy today or wait for a larger toy tomorrow, if given the choice? ______
20. Does the child grab for the belongings of others? ______
21. Does the child bother others when they're trying to do things? ______
22. Does the child break basic rules? ______
23. Does the child watch where he or she is going? ______
24. In answering questions, does the child give one thoughtful answer, or blurt out several answers all at once? ______
25. Is the child easily distracted from his or her work or chores? ______
26. Would you describe this child more as careful or careless? ______
27. Does the child play well with peers (follows rules, waits turn, cooperates)? ______
28. Does the child jump or switch from activity to activity rather than sticking to one thing at a time? ______
29. If a task is at first too difficult for the child, will he or she get frustrated and quit, or first seek help with the problem? ______
30. Does the child disrupt games? ______
31. Does the child think before he or she acts? ______
32. If the child paid more attention to his or her work, do you think he or she would do much better at present? ______
33. Does the child do too many things at once, or does he or she concentrate on one thing at a time? ______
Reference Notes

References


Chandler, M., Greenspan, S., & Barenboim, C. Assessment and training of role-taking and referential communication skills in institutionalized emotionally disturbed children. *Developmental Psychology*, 1974, 10, 546-553.


Hill, A. D., & Strain, P. S. The effects of teacher-delivered social reinforcement on the task persistent


Meichenbaum, D., & Goodman, J. Training impulsive children to talk to themselves: A means of developing self-


Shure, M. B., & Spivack, G. The PIPS Test manual. Philadelphia, Pa.: Community Mental Health/Mental Retardation Center, Department of Mental Health Sciences, Hahnemann Medical College and Hospital, 1974.

Shure, M. B., & Spivack, G. A mental health program for kindergarten children: A cognitive approach to solving interpersonal problems (Rev. ed.). Philadelphia, Pa.: Community Mental Health/Mental Retardation Center, Department of Mental Health Sciences, Hahnemann Medical College and Hospital, 1978.


