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Interpersonal Problem-Solving in Young Children: A Cognitive Approach to Prevention¹

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An interpersonal cognitive problem-solving (ICPS) intervention, designed to reduce and prevent impulsive and inhibited behaviors in black low socioeconomic status (SES) 4- and 5-year-olds, was implemented by teachers and evaluated over a 2-year period. In the first year, 113 children were trained and 106 were not. The 131 still-available in kindergarten were divided into four groups: Twice-trained ($n = 39$); Once-trained, Nursery ($n = 30$); Once-trained, Kindergarten ($n = 35$), and Never-trained controls ($n = 27$). Findings showed that (a) ICPS impact on behavior lasted at least 1 full year, (b) training was as effective in kindergarten as in nursery, and (c) for this age and SES group, 1 year of intervention had the same immediate behavior impact as 2. Further, well-adjusted children trained in nursery were less likely to begin showing behavioral difficulties over the 2-year period than were comparable controls, highlighting implications of the ICPS approach for primary prevention.

Two key features that typify primary prevention are (a) preventing dysfunction and (b) promoting health (Cowan, 1980). One way to promote mental health is to help people learn to actively solve typical, everyday interpersonal problems, thus building cognitive strength to cope with daily frustrations and conflict, and diminish the risk of serious interpersonal dysfunction.

¹This research was supported by NIMH grant #20372. In addition to our research assistants, Joan Bryson, Rochelle Newman, and Stan Silver, we also express gratitude to the Department of Psychology, Temple University, for providing us with 14 additional child testers. We are also grateful to Paul Barr, Samuel Mosca, and Lorraine Bittner, Psychological Services, Philadelphia Get Set day care, who administered the IQ tests.

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As early as age 4, it is possible to detect differences in cognitive ability to solve typical interpersonal problems with peers and adults. More importantly, such ability can distinguish normal youngsters who display varying amounts of behavioral difficulties from those who do not. To date, two processes of thought, called Interpersonal Cognitive Problem-Solving (ICPS) skills, have emerged as significant predictors of social adjustment and interpersonal competence as measured in children at this age. The strongest predictors appear to be the abilities to (a) offer alternative solutions to a peer or authority-type problem and (b) anticipate potential consequences to an interpersonal act. Independent of IQ, ICPS-competent children are less likely than ICPS-deficient peers to display impulsivity or inhibition, are better liked by their peers, and show greater awareness and/or concern for someone in distress (Granville & associates, Note 1; Johnson, Roopnarine, & Serlin, Note 2; Spivack & Shure, 1974).

If high ICPS children are better adjusted than low ones, what effect would training these skills have on behavior? A controlled intervention program for black inner-city nursery and kindergarten children was evaluated over a 2-year period to provide beginning answers to questions both theoretical and practical in scope:

1. *Immediate impact.* Can a 3-month ICPS-intervention program improve ICPS skills and behavioral adjustment of low SES nursery and kindergarten children?
2. *Mediating linkages.* To what extent can behavior gains be attributed specifically to gains in the trained ICPS skills?
3. *Holding power.* Do ICPS and/or behavioral effects of training last?
4. *Amount and timing of intervention.* Is first-time training in kindergarten as effective as in nursery, and is training both years more effective than either alone?
5. *Prevention impact.* Can ICPS-intervention prevent behavior difficulties from occurring or recurring later?

This paper builds upon earlier ones that have addressed similar questions (Shure, 1979; Shure & Spivack, 1979; 1980; Spivack, Platt, & Shure, 1976; Spivack & Shure, 1974). It highlights previous findings and presents new data to provide a more complete picture of the entire 2-year project. If evaluating this intervention shows that increased problem-solving skills can enhance and maintain healthy, adaptive functioning, it will provide an approach which exemplifies the competence-building model of primary prevention for children at a very early age.

THE INTERVENTION

Through a variety of sequenced games, discussion, and group interaction techniques, initial lessons of the nursery program (Shure & Spivack, Note 3,

Spivack & Shure, 1974) focused on listening to and observing others, and on learning that others have thoughts, feelings, and motives in problem situations. After 8 weeks of daily 20-minute lessons to train children in prerequisite skills, those skills were incorporated into the curriculum to help children consider solutions and consequences relevant to hypothetical interpersonal problems. Pictures, puppets, and simple role-playing techniques were used to facilitate those processes. The concepts taught to kindergarten children (Shure & Spivack, Note 4) were essentially the same as those taught in the nursery. To maintain interest of those trained both years, the content was changed for all but the most popular games, and new, more challenging games added. In both years, training time totaled 12 full weeks of formal scripted sessions, implemented by the teachers in groups of six to nine children. In addition to the formal lessons, the teachers were taught an informal style of communication, called "problem solving dialoguing," to provide opportunities for children to exercise their problem-solving skills when actual problems arose outside of formal group-training sessions.

METHOD

Subjects

Subjects were studied over a 2-year period.

In the nursery year, 113 black inner-city children (47 boys, 66 girls) were trained, while 106 (50 boys, 56 girls) served as controls. Training teachers totaled 10, from five federally funded day-care centers (one to three classes each), and control teachers totaled 10, from four different centers (two to three classes each). At pre-nursery, before the first intervention, children ranged in age from 3 years 11 months to 4 years 10 months (\bar{X} age, 4 years 3 months), and in Stanford-Binet IQ from 70 to 147 (\bar{X} = 104). At that time, trained and control children were comparable in sex distribution, age, IQ, ICPS test scores, and behavioral characteristics.

Of the original 113 nursery-trained children, 69 were available throughout the kindergarten year. To evaluate length of training, 39 (15 boys, 24 girls) received intervention in both years, and were called the TT group (Trained nursery—Trained kindergarten). The remaining 30 (12 boys, 18 girls), tested to evaluate 1-year holding power, were called the TC group (Trained nursery—Control kindergarten). Of the original 106 nursery controls, 62 were available throughout. Of these, 35 (15 boys, 20 girls) were first trained in kindergarten, labeled the CT group (Control nursery—Trained kindergarten), while the remaining 27 (12 boys, 15 girls) were never trained; they were called the CC group (Control nursery—Control kindergarten). Training teachers totaled 11 (5

TT, 6 CT)³ from six schools. From six different schools, control teachers were 10 (5 TC, 5 CC). Detailed rationale for child group placement is described in Shure and Spivack (Note 5).

Assessment Measures

Two ICPS skills and teacher-rated classroom behaviors were assessed before and after training in the nursery year, and at comparable times in kindergarten, for a total of four assessments. Each ICPS test, administered individually and on separate days by nine males and eight females (blind to experimental condition) took about 20-30 minutes per child.⁴

Preschool Interpersonal Problem-Solving (PIPS) Test. Using pictures and standardized probing techniques, the PIPS measures a child's ability to name different, relevant alternative solutions to two types of problem: (a) how to obtain a toy another child has and (b) how to avert mother's anger after having damaged an object. One week test-retest reliability in 4-year-olds was .72 ($n = 57$); intercoder percentage agreement for relevant solutions given by 180 children was .96 (Shure & Spivack, Note 6).

What Happens Next Game (WHNG). Using stick figures and pictures, the WHNG measures the child's ability to name multiple consequences to two types of interpersonal act: (a) grabbing a toy from a peer and (b) taking an object from an adult without first asking. Test-retest reliability has not been obtained. Intercoder percentage agreement for relevant consequences reached .96 (Shure & Spivack, Note 5).

Hahnemann Preschool Behavior (HPSB) Scale. The HPSB describes seven teacher-rated interpersonal behaviors, divided into three (intercorrelated) factor clusters. The first factor (impatience) consisted of two items (ragging and demanding of adults; can't wait turn, grabs toys from children). The second factor (emotionality) comprised three items describing anger or distress with peers and adults; and the third (dominance-aggression) was two items, one describing physical aggression (e.g., hits, pushes) and one, verbal dominance (e.g., bosses, threatens).

From an anchor point of 5, representing the "average" child of the same age and sex, descending scale points (4 to 1) were labeled as "less than average," and ascending scale points (6 to 9) as "more than average." Scale points 3 to 5

³ All children in the nursery classes were trained. In TT and CT classes, nonstudy children either received training (analyzed separately in Shure and Spivack, Note 5) or special activities to avoid feelings of exclusion.

⁴ Two other measures of ICPS, ability to consider causes of interpersonal behaviors and cognitive sensitivity to the interpersonal nature of problems, were also measured, but not reported here due to lack of evidence as significant behavioral mediators (see Shure & Spivack, 1980, Note 5).

were within the adjusted behavior range, as average or less than average amounts were judged to represent positive social adjustment. However, points 1 and 2 were specially labeled as "inhibited," the rationale being that behaviors manifest so rarely (never or almost never) may signify excessive control of behavior or of feelings, or too much timidity to display even normal amounts of aggression. Children whose ratings were 1 or 2 on all items within one or more factor(s) were classified as *inhibited*. This criterion, determined in early pilot work, was based on a clinical judgment that regardless of other ratings, children who, for example, almost *never* express feelings or desires, were behaviorally different from those whose patterns excluded inhibition as defined.

Children whose total score for all seven items equaled or exceeded 38 (and not otherwise classified as inhibited) were identified as *impulsive*. This cutoff, determined arbitrarily, represents the midpoint between 35 (if all ratings were a 5) and 42 (if all ratings were a 6). While somewhat less than average amounts of impatience, etc., may be judged as adjusted, somewhat more than average begins to define behavioral aberrance. The latter is reasonable to assume in that the "average" child is not statistically derived, but rather is nominally defined for the teacher.

With rare exception, all noninhibited children whose scores totaled 37 or less were classified as *adjusted*. Exceptions were those who had ratings of 1 or 2 scattered on individual items across factors and ratings of 6 or more on the remaining items. Although such ratings could total 37 or less, children could not be classified as adjusted if all or most of their item scores fall outside of the 3- to 5-point range. In such cases, behavior group placement was based on how the majority of items were rated.⁵

Rater reliability from teachers and their aides was .83 or more on all items in both years of this study. When overall ratings were coded into behavior categories, the protocols of teachers and aides overlapped in 93% or more of the cases in each year. (The scale, further criteria for behavioral classification, and complete instructions for its use are detailed in Shure & Spivack, Note 5.)

RESULTS

Results are presented in five sections, corresponding to the study questions posed above. Since pretest analyses showed that there were no sex differences in ICPS scores or in relationships between them and behavior, later analyses combined boys and girls. ICPS skill levels before and after training are shown by

⁵ Because of the nonlinear nature of the scale, mean scores of impulsivity could not be meaningfully derived. However, the equated experimental group pretest percentages, the similar ICPS scores shown in Table 1, and the large sample sizes make it unlikely that systematic group mean differences occurred at that time.

Table I. Immediate Impact of Two ICPS Skills in Nursery Children by Initial (Pretreating) Behavior Group

Skill	Initial behavior group-nursery school					
	Adjusted		Impulsive		Inhibited	
	Pre	Post	Pre	Post	Pre	Post
PIPS-solutions						
Trained						
\bar{X}^a	7.37	10.83	3.66	9.68	2.61	9.46
<i>SD</i>	2.31	2.62	1.51	3.58	1.89	2.43
<i>n</i>	41	41	44	44	28	28
Control						
\bar{X}^a	7.10	7.06	4.36	5.80	2.41	3.94
<i>SD</i>	1.83	2.46	2.17	2.69	1.46	2.41
<i>n</i>	50	50	39	39	17	17
WHNG-consequences						
Trained						
\bar{X}^a	5.59	6.88	4.80	7.05	3.43	6.71
<i>SD</i>	2.12	2.23	2.05	2.22	2.15	1.96
<i>n</i>	41	41	44	44	28	28
Control						
\bar{X}^a	6.04	5.92	5.00	5.62	3.71	4.12
<i>SD</i>	2.10	2.15	2.38	2.06	2.26	2.12
<i>n</i>	50	50	39	39	17	17

^aNo ceiling; based on total of two problems (PIPS); two interpersonal acts (WHNG).

initial behavior group in Table I (nursery) and Table II (kindergarten). Table III presents immediate pre-post ICPS and behavior in nursery, and follow-up data 6 months and 1 year after nursery training ended. The data in Table IV show ICPS and behavior at the end of kindergarten, comparing children trained twice with those trained once (in nursery or in kindergarten), and with those who were controls throughout the 2-year period.

Immediate Impact

ICPS. An unequal *n* repeated measures ANOVA based on changes in the nursery year showed significant Group X Time interactions for both the PIPS and the WHNG: $F(1, 213) = 106.90, p < .001$; $F(1, 213) = 23.80, p < .001$, respectively. As can be seen from the total group means in Table III, those differences were due to gains by trained children. The absence of three-way interactions in these analyses suggests that change patterns were similar for all children. Separate planned comparisons (based on the ANOVA within-group error term) on both measures showed that all three (adjustment type) trained

Table II. Immediate Impact of Two ICPS Skills in Kindergarten Children by Initial (Pretreating) Behavior Group

Skill	Initial behavior group-kindergarten			
	Adjusted		Impulsive and inhibited ^a	
	Pre	Post	Pre	Post
PIPS-solutions				
Control nursery - Trained kindergarten				
\bar{X}^b	8.60	12.67	6.90	12.10
<i>SD</i>	1.68	2.64	2.29	2.88
<i>n</i>	15	15	20	20
Control nursery - Control kindergarten				
\bar{X}^b	9.09	9.00	7.44	7.88
<i>SD</i>	2.47	2.05	2.03	2.03
<i>n</i>	11	11	16	16
WHNG-consequences				
Control nursery - Trained kindergarten				
\bar{X}^b	6.40	9.53	6.50	9.90
<i>SD</i>	1.50	1.55	1.70	2.40
<i>n</i>	15	15	19	19
Control nursery - Control kindergarten				
\bar{X}^b	7.27	7.09	6.13	6.25
<i>SD</i>	2.15	1.76	2.45	1.69
<i>n</i>	11	11	15	15

^aCombined because only 7 (4 CT, 3 CC) were now inhibited, 3 of whom were rated so at prenursery; of the remaining 14 inhibited children at prenursery, 4 became adjusted, 2 impulsive, and 8 left school.

^bNo ceiling; based on total of two problems (PIPS); two interpersonal acts (WHNG).

groups gained significantly more than their corresponding controls (all $F_s, p < .001$). These analyses, along with the means in Table I, show that training increased cognitive problem-solving skills in adjusted children as well as impulsive and inhibited children. With no significant experimental group pretest differences in IQ, and IQ gain having been about the same in each behavior group (3 to 4 points), the results cannot be explained by general intellectual functioning as measured.

Table III. Immediate Impact and Follow-Up Holding Power of Nursery Training

Measures	Immediate impact of nursery training				Follow-up holding power of nursery training ^a							
	Trained		Control		6 months				1 year			
	Pre	Post	Pre	Post	Trained		Control		TC ^d		CC ^d	
					Post	Follow-up	Post	Follow-up	Post	Follow-up	Post	Follow-up
PIPS solutions												
\bar{X}^b	4.74	10.04	5.34	6.09	9.96	9.69	6.18	7.70	11.27	11.53	6.16	8.33
SD	2.79	3.03	2.61	2.75	2.93	3.05	2.49	2.15	2.32	3.13	2.51	2.08
n	113	113	106	106	80	80	65	65	30	30	27	27
WHNG-consequences												
\bar{X}^b	4.74	6.90	5.28	5.52	6.99	7.99	5.61	6.24	8.07	9.03	5.59	6.59
SD	2.24	2.15	2.37	2.18	2.25	2.16	2.10	1.82	1.98	2.43	1.97	1.74
n	113	113	106	106	79 ^c	79	64 ^c	64	30 ^c	30	26	26
Adjusted behavior												
Possible n	113	113	106	106	80	80	65	65	30	30	27	27
Obtained n	41	80	50	57	58	57	35	27	25	23	11	8
Percentage	36	71	47	54	73	71	54	42	83	77	41	30

^aSix-month data are based on all nursery children available prior to kindergarten training; 1-year data on still-available nursery children not trained in kindergarten.

^bNo ceiling; based on total of two problems (PIPS); two interpersonal acts (WHNG).

^cOne child in each group left school before WHNG testing.

^dTC = Trained nursery- Control kindergarten; CC = Control nursery- Control kindergarten.

In kindergarten, significant Group X Pre-post time interactions also occurred, with total group gains (Shure & Spivack, 1980) favoring the trained (CT) children, $F(1, 58) = 35.11, p < .001$ (PIPS); $F(1, 57) = 24.44, p < .001$ (WHNG). As with the nursery group the absence of three-way interactions, and the means in Table II indicate that both adjusted and aberrant youngsters benefited from the training.

Behavior. At prenursery, Table III shows that 41 of 113 (36%) children to be trained and 50 of 106 (47%) controls were rated adjusted (no significant difference). At postnursery, 80 (71%) of the trained were rated adjusted, and only 57 (54%) of the controls. The Z value of 2.60, obtained at postnursery by a difference-of-proportions test, was significant at the .01 level. Behavior of children who began the program as impulsive or as inhibited improved. Twenty-two of 44 (50%) initially impulsive trained children became adjusted, significantly more than 8 of 39 (21%) controls, $Z = 2.79, p < .01$. Similarly, 21 of 28 (75%) initially inhibited trained children became adjusted, compared to 6 of 17 (35%) controls, $Z = 2.64, p < .01$.

At prekindergarten, 15 of 35 (43%) CTs were adjusted, not significantly different from the 11 of 27 (41%) CC controls. By postkindergarten, 29 of 35 (83%) CTs were adjusted, and only 8 of 27 (30%) of the CC controls, $Z = 4.24, p < .01$. Fourteen of 20 (70%) initially aberrant CTs became adjusted; only one of 16 CCs did the same.

Mediating Linkages

Having shown that training results both in ICPS and behavior gains for nursery and kindergarten children, a key question is the extent to which trained skills mediated behavior change. It is possible that children learned to problem solve because they were taught how, and that behavior improved for different reasons.

To test whether behavior change was mediated by trained ICPS skills versus other factors as more teacher attention, ICPS gain was compared for trained children who moved from aberrant behavior to adjusted versus those whose behavior remained aberrant. Because the success of training left too few inhibited subjects at the end of nursery, and because there were too few inhibited controls remaining at kindergarten, these linkage analyses combined the two initially aberrant behavior groups.

For the nursery group, PIPS gain scores of the 43 children whose behavior improved averaged 7.83 ($SD = 2.14$), compared to 4.14 ($SD = 2.46$) of the 29 children whose behavior did not, $t(70) = 6.78, p < .01$. For the kindergarten group, the corresponding gain scores were 6.36 ($SD = 2.87, n = 14$) and 2.51 ($SD = 1.64, n = 6$), respectively, $t(18) = 3.05, p < .01$. There was less change on the WHNG, and on that measure linkage was stronger for the kindergarten-trained

group, $t(17) = 2.54, p < .05$, than for the nursery-trained, $t(70) = 1.61, p < .06$ (one-tailed). Those findings, which were shown to be independent of initial IQ or IQ change, support the view that ICPS skills mediated improved adjustment. In other words, a significant amount of the behavior gains observed seemed to be due to children's acquisition of new cognitive skills.

Holdng Power

The 6-month post- to follow-up analyses of trained children involved only the 80 nursery-trained children still available before additional kindergarten training started, and the 65 nursery controls before some of them started the training in kindergarten. The 1-year post- to follow-up of the (now) TCs involved only the 30 children trained in nursery and the 27 controls who were never trained at all (CC).

ICPS. With one exception, unequal n repeated measures ANOVAS showed no significant Group X Time interactions from postnursery to 6-month or 1-year follow-up. Thus, over time, one group did not change more than the other; trained children, ahead of controls at postnursery, remained ahead at both follow-up periods. The exception, PIPS-solutions at 6 months [$F(1, 143) = 15.05, p < .001$], as can be seen from the means presented in Table III, was that follow-up ICPS gain was made only by controls. A question that finding raises is whether the 80 remaining trained children, whose PIPS scores were higher than the 65 controls at postnursery, $F(1, 143) = 26.88, p < .001$, lost that advantage over time. At 6 months, an ANOVA simple-effects analysis showed no significant decrease in the trained group and that its mean remained significantly higher than controls, $F(1, 143) = 7.41, p < .01$. Whatever natural developmental gains may have occurred, controls, behind at postnursery, did not catch up to trained subjects on the PIPS or the WHNG at 6 months and 1 year later.

Behavior. Table III shows that 73% of the 80 6-month follow-up children were rated as adjusted at postnursery. This percentage, tested by difference-of-proportions, was significantly greater than 54% of the 65 controls, $Z = 2.25, p < .05$. At 6 months, 71% of the trained, compared to 42% of the controls, were adjusted, $Z = 3.48, p < .01$. Table III also shows that the 30 CTs, ahead of the 27 CCs at postnursery, were still ahead 1 full year later (77% vs. 30%, respectively), $Z = 3.57, p < .01$. With the percentage of adjusted controls tending to decrease by the end of the 2-year period, it is possible that an immediate impact of ICPS intervention can reverse that trend.

Amount and Timing of Training

If both nursery and kindergarten children benefited from one exposure to a 3-month intervention, a next question was whether training for 2 years would

be even more beneficial. Given no significant ICPS or behavior group differences at pre-nursery, a one-way analysis of variance together with Newman-Keuls for group effects compared all four experimental groups at the end of kindergarten; a chi-square analysis compared behavior at that time. Doing those permitted evaluation both of differential amounts of training, and whether at postkindergarten there were differences between youngsters trained in kindergarten and in nursery.

The data summarized in Table IV show that for PIPS-solutions, children trained twice (TT) did significantly better than those trained once, and that in all cases, one exposure in either year was significantly better than none. At post-kindergarten, Table IV also shows that the percentage of adjusted children was about the same in all three trained groups, ranging from 85% (TT) to 77% (TC), while the 30% CCs were significantly below them all. To reach the goal of adequate behavioral adjustment, one exposure to the program, whether in nursery or in kindergarten, was sufficient.

Prevention Impact

The most direct question for primary prevention is whether ICPS training could prevent later behavioral difficulties from occurring. Of particular interest

Table IV. Means and Standard Deviations for Two ICPS Skills and Percentage Adjusted for Four Groups at the End of Kindergarten

Measure ^b	Group ^d				df	F
	TT	TC	CT	CC		
PIPS-solutions						
\bar{X} <i>sd</i>	16.46 _{xy}	11.53 _x	12.34 _y	8.33 _{xy}	3, 127	31.79
SD	4.66	3.13	2.75	2.08		$p < .001$
<i>n</i>	39	30	35	27		
WHNG-consequences						
\bar{X} <i>sd</i>	10.74 _x	9.03 _x	9.74 _y	6.59 _{xy}	3, 125	18.79
SD	2.58	2.43	2.06	1.74		$p < .001$
<i>n</i>	39	30	34	26		
Adjusted behavior						
Possible <i>n</i>	39	30	35	27	$\chi^2 = 28.81$	
Obtained <i>n</i>	33	23	29	8	<i>df</i> = 3	
Percentage	85	77	83	30	$p < .01$	

^aTT = Trained nursery-Trained kindergarten; TC = Trained nursery-Control kindergarten; CT = Control nursery-Trained kindergarten; CC = Control nursery-Control kindergarten.

^bNo significant differences at Pre-nursery on any measure.

^cNo ceiling: Based on two problems (PIPS); two interpersonal acts (WHNG).

^dWithin each row, means with the same subscript are significantly different ($p < .05$) by Newman-Keuls.

was the question whether youngsters who were judged to be adjusted from the start would maintain those behaviors throughout nursery and as they moved into a new and in many ways different (Kindergarten) setting.

Among the still-available trained children, 25 of 29 (86%) initially rated adjusted maintained that adjustment through nursery and at 6-month follow-up, compared by the difference-of-proportions test to 18 of 31 (58%) comparable controls, $Z = 2.42, p < .05$. At 1 year, 8 of 9 TCs, compared to 4 of 10 CCs, remained adjusted at each of the four assessments through the end of Kindergarten, $Z = 2.21, p < .05$.

Since no children had been diagnosed as psychiatrically or emotionally disturbed, it was equally important to look at the later courses of children initially rated as aberrant. Of the 51 still-available trained children judged aberrant at the start, only 14 (27%) remained so throughout nursery and at 6 months, compared to 22 of 34 (65%) of the controls, $Z = 3.41, p < .01$. Of the TCs, only 2 of 21 (10%) remained consistently aberrant from pre-nursery through the end of kindergarten, compared to 12 of 17 (71%) CC controls, $Z = 3.88, p < .01$. Thus, aberrant behaviors were less likely to persist among trained compared to nontrained children. These data support ICPS as a viable approach both for adjusted youngsters and for those with varying degrees of early behavioral difficulties in preschool.

DISCUSSION

Helping inner-city black 4- and 5-year-olds learn to think through and solve interpersonal problems reduced aberrant impulsive and inhibited behaviors, maintained those improvements over time, and prevented behavior problems from occurring in already adjusted children before they entered the more demanding classroom constraints of the primary grades. For this age and SES group, ICPS, especially alternative solution skills, were most enhanced by two exposures to a 3-month intervention, even though one exposure was enough to enhance social adjustment and interpersonal competence.

Within a wide IQ range, ICPS gains were made by both aberrant and adjusted youngsters; and for children not trained in nursery, kindergarten was not too late.

The holding power for the total groups and the prevention data for individual children lend further credence to the benefits of early ICPS training, especially so in the light of Spivack and Swift's (1977) earlier finding of increased maladjustment as inner-city children move through the early grades. The need for early intervention has been documented by Zax and Cowen (1976), who report that more seriously disturbed youngsters, left untreated, "did poorly in the first several years and were already quite impaired by third grade" (p. 531).

Although ICPS training guides children to think about what they do and to try another way if their first attempt fails, the availability of multiple options does not imply that one needs a limitless repertoire. Before training, three to four solutions per problem were typical of children judged to be adjusted. Further, the significantly greater ICPS gains of twice-trained children had no greater impact on behavior than those of once-trained. Perhaps increasing solution skills in already adjusted children can prevent later behavior problems because a style of cognitive flexibility is perpetuated.

The impact of ICPS training on behavior may be restricted if it is done only through formal, isolated lessons. The importance of problem-solving dialoging when real problems arise is supported by other studies of preschool children. The ICPS program script, when combined with dialoging, appears to significantly affect behavior (Allen, 1978; Wolkstein, Note 7); the use of formal scripted lessons alone may not (Durlak & Sherman, Note 8; Sharp, Note 9). Although the Durlak and Sharp studies demonstrated significant ICPS cognitive gains, and other factors may account for their failure to find behavior change, dialoging introduces an *in vivo* quality by encouraging children to exercise their ICPS skills so as to bring about more effective use of ICPS thought when faced with real problems of their own. Removing children from the classroom for training as has been done in some studies (e.g., Sharp) may have the advantage of strengthening research methodology by having teacher behavior raters blind to the child's training experience, but it presents the serious disadvantage of restricting incorporation of dialoging.

Given the above, the use of independent child behavior raters might have strengthened the present design. However, concern about teacher rater bias was allayed by the follow-up research. The consistency of ratings by different teachers, who functioned as completely independent observers who did not know the children in nursery, provided built-in validity controls. Further, children trained at home by their mothers were, compared to controls, also rated better adjusted by their teachers who had no knowledge of the training or its goals (Shure & Spivack, 1978).

Although the most impressive gains occurred for behavior control problems, other child characteristics were examined as well. Of four teacher-rated interpersonal competencies, trained children, compared to controls, were also more concerned about others in distress and were better liked by their peers, especially when measured immediately after training (Shure and Spivack, Note 5; Spivack & Shure, 1974). Further research on these and other positive social competencies would broaden our knowledge of how ICPS skills effect behavior of young inner-city children.

The efficacy of ICPS training for other populations is both important and intriguing. In middle-class preschoolers, PPS-solution skills (consequences were not measured) were associated with ego-resiliency (Arendt, Gove, & Sroufe,

1979; Schuller, 1978), defined by Block and Block (Note 10) as a tendency to behave flexibly, persistently, and resourcefully in interpersonal problem situations. Consistent with this, Wolkanech (Note 7) found that in contrast to a modeling group, given suggestions and/or explanations for a "good" solution, ICPS-trained children were likely to try more than one way to solve a problem, not give up too quickly, and apply solutions in ways likely to have a positive effect on others. Krasnor and Rubin (1981) note that one significance of problem-solving skills lies in the very flexibility that a child is willing (and able) to exercise. Thus, a child who (within reason) does not retreat after failure, and whose predominant behavioral strategies have a positive effect on others, is in their view, as in ours, showing important social competencies.

In older children, the impact of ICPS training on adjustment has not as yet been firmly established. Early studies with urban or mixed SES school age children showed clear ICPS cognitive change, but with the exception of Harado and Caldwell (1979), behavior gains were generally elusive (Allen, Chinsky, Larcen, Lochman, & Selinger, 1976; Weissberg, Gesten, Rapkin, Cowen, Davidson, Flores de Apodaca, & McKim, 1981b). Encouragingly, behavior change is now emerging in other studies (Weissberg, Gesten, Carnrike, Toro, Rapkin, Davidson, & Cowen, 1981a) which attribute this, at least in part, to more closely monitored training and consultation efforts, to an expanded curriculum, and to a more systematic incorporation of informal dialoguing during the day. In a separate study, this research team (Gesten, Rains, Rapkin, Weissberg, Flores de Apodaca, Cowen, & Bowen, 1982) found that 1 year after an intervention, trained suburban second- and third-graders began to show adjustment gains, gains that surpassed those of comparable controls.

Although optimism about behavior gains may be tempered by relatively weak ICPS/behavior linkages (Gesten *et al.*, 1982), it is possible that these linkages may be due in part to subtleties in the measuring instruments (Shure, Note 11). Given that ICPS and behavior are correlated phenomena in school-age children (McKim, Weissberg, Cowen, Gesten, & Raphin, 1982; Richard & Dodge, Note 12), it is also possible that it may take more than a single program exposure before older children associate newly acquired ICPS skills directly with what they do and how they behave.

In conclusion, the present research shows that ICPS training successfully fosters positive mental health by building coping strategies in high-risk, but relatively normal children. The intervention goes beyond helping the trainer merely understand children, in the hope that such understanding will lead to more effective communication. Instead, it is intervention that actively engages the child to learn ICPS skills and how to use them. The program is easy for a trainer to learn, feasible to implement, and is mass-targeted for children in school. To the extent that ICPS intervention can stimulate continued use of problem-solving skills and can reduce the probability of later behavioral dys-

function, it offers a promising cognitive approach to primary prevention in mental health. The remaining questions are how much, and for whom.

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Stress Management Training for Women on Public Assistance¹

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A life-coping skills training package for women supported by public assistance was designed to enhance self-esteem and teach life planning and stress management strategies. Ten weeks of training resulted in significant changes in scores on measures reflective of psychological distress, depression, anxiety, inadequacy, self-confidence, and ego strength. A rationale for the impact of the training is suggested.

Community studies consistently find twice as many women as men reporting symptoms of psychological distress (Helfeld, 1977; Stole, Langner, Michael, Opler, & Rennie, 1961). Experiencing stressful life events, particularly those perceived in terms of personal loss and change, has been shown to be related to symptoms of poor mental health (Brown & Harris, 1978; Langner & Michael, 1963). Recent studies also suggest that psychological distress is much greater when life conditions are characterized by significant ongoing stressors (Belle, 1979; Helfeld, 1977).

Pearlin and Schooler's (1978) research on stress and coping showed that women and low-income groups characteristically use coping responses that

¹The authors wish to thank William Redmon, Philip Chamberlain, and the anonymous reviewer(s) for invaluable assistance in developing this article.

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