

Excellence in Prevention – descriptions of the prevention programs and strategies with the greatest evidence of success

Name of Program/Strategy: I Can Problem Solve (ICPS)

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1. Overview and description

I Can Problem Solve (ICPS) is a universal school-based program that focuses on enhancing the interpersonal cognitive processes and problem-solving skills of children ages 4-12. ICPS is based on the idea that there is a set of these skills that shape how children (as well as adults) behave in interpersonal situations, influencing how they conceptualize their conflicts with others, whether they can think of a variety of solutions to these problems, and whether they can predict the consequences of their own actions. Rather than addressing specific behaviors as right or wrong, ICPS uses games, stories, puppets, illustrations, and role-plays to help children acquire a problem-solving vocabulary, learn to understand their own as well as others' feelings, think of alternative solutions, and think of potential consequences to an act. In turn, ICPS aims to prevent and reduce early high-risk behaviors, such as impulsivity and social withdrawal, and promote pro-social behaviors, such as concern for others and positive peer relationships. A key principle of the program is that the child, not the teacher, must solve the problem at hand. Giving the child this responsibility allows the child to develop the habit of creating solutions to problems, considering the potential consequences of one's actions, and thinking for oneself.

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ICPS consists of three age-specific programs: preschool (containing 59 lessons), kindergarten and primary school (83 lessons), and intermediate elementary school (77 lessons). ICPS lessons are 20 minutes in duration and taught three to five times per week over the course of the academic year. In addition to the lessons, ICPS offers suggestions for integrating problem-solving principles into day-to-day classroom happenings, a technique called "ICPS dialoguing." The studies reviewed for this summary were conducted with children in preschool, kindergarten, and 1st grade.

2. Implementation considerations (if available)

3. Descriptive information

Areas of Interest	Mental health promotion Substance abuse prevention
Outcomes	1: Interpersonal cognitive problem-solving skills 2: Pro-social behavior 3: Problem behaviors 4: School bonding
Outcome Categories	Education Social functioning Violence
Ages	0-5 (Early childhood) 6-12 (Childhood)
Gender	Male Female
Races/Ethnicities	Asian Black or African American Hispanic or Latino White Race/ethnicity unspecified
Settings	School

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Geographic Locations	Urban Rural and/or frontier
Implementation History	ICPS has been in use since 1971, when it was first developed under the name Interpersonal Cognitive Problem Solving; the name I Can Problem Solve was adopted in 1992. ICPS has been implemented in at least 24 States, reaching an estimated 400,000 children at more than 15,000 sites (including school, after-school, and community settings). Multiple studies of ICPS have been conducted by the program developers and independent investigators both in the United States and internationally (Brazil, Greece, India, Israel, South Korea, and Turkey). Results of ICPS evaluations have been presented in six peer-reviewed publications.
NIH Funding/CER Studies	Partially/fully funded by National Institutes of Health: Yes Evaluated in comparative effectiveness research studies: Yes
Adaptations	In addition to the three ICPS programs designed for school use (preschool, kindergarten and primary, intermediate elementary), three books based on ICPS have been developed for parents to use at home: "Raising a Thinking Child," "Raising a Thinking Preteen," and "Thinking Parent, Thinking Child." A workbook, also entitled "Raising a Thinking Child," is available in both English and Spanish and can be used as a stand-alone resource or in conjunction with the parenting books.
Adverse Effects	No adverse effects, concerns, or unintended consequences were identified by the developer.
IOM Prevention Categories	Universal

4. Outcomes

Outcome 1: Interpersonal cognitive problem-solving skills

Description of Measures	Interpersonal cognitive problem-solving skills were assessed using: <ul style="list-style-type: none"> • The Preschool Interpersonal Problem-Solving (PIPS) Test. Using pictures and standardized probing techniques, the PIPS Test measures a child's ability to identify a number of relevant, alternative solutions to two problems: (1) how to obtain a toy in the possession of another child and (2) how to keep one's
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	<p>mother from becoming angry after having damaged an object.</p> <ul style="list-style-type: none"> • The What Happens Next Game (WHNG). Using stick figures and pictures, WHNG measures a child's ability to identify multiple consequences to two interpersonal actions: (1) grabbing a toy from a peer and (2) taking an object from an adult without first asking permission.
<p>Key Findings</p>	<p>One study of ICPS followed a single cohort of children over 2 years, starting in nursery school (year 1) and continuing through kindergarten (year 2). The sample consisted of four groups:</p> <ul style="list-style-type: none"> • Children who received ICPS both years (TT group) • Children who received ICPS in nursery school only (TC group) • Children who received ICPS in kindergarten only (CT group) • Children who did not receive ICPS (CC group) <p>Each year, teachers rated children's interpersonal cognitive problem-solving skills immediately before and after the 3-month intervention. Findings included the following:</p> <ul style="list-style-type: none"> • In year 1, children who received ICPS had a significant pre- to posttest increase in interpersonal cognitive problem-solving skills relative to children who did not receive the intervention ($p < .001$ for both the PIPS Test and WHNG), and they remained ahead of their control counterparts at 6- and 12-month follow-ups (i.e., at year 2 pretest, the TT group was still ahead of the CT and CC groups, and at year 2 posttest, the TC group was still ahead of the CC group). • In year 2, children who received ICPS for the first time that year had a significant pre- to posttest increase in interpersonal cognitive problem-solving skills relative to children who did not receive the intervention ($p < .001$ for both the PIPS Test and WHNG). • At year 2 posttest, on the PIPS Test, children who received 2 years of ICPS outscored all other groups, including children who received 1 year of the intervention (either year) and those who did not receive ICPS. Children who received 1 year of ICPS (either year) also outscored children who received no intervention. The overall analysis was significant at $p < .001$.

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	<p>Mean PIPS Test scores were significantly different for each of the four study groups (all p values < .05).</p> <ul style="list-style-type: none"> • At year 2 posttest, on the WHNG, children who received 2 years of ICPS outscored children who received the intervention in year 1 only as well as children who received no intervention. Children who received 1 year of ICPS (either year) also outscored children who received no intervention. • The overall analysis was significant at p < .001. Mean WHNG scores for these three study groups (i.e., children who received the intervention both years, in year 1 or not at all) were significantly different (all p values < .05). There was no significant difference on the WHNG between children who received 2 years of the intervention and those who received it in year 2 only. • By year 2 posttest, ICPS had increased cognitive problem-solving skills in all children who received the intervention, regardless of whether they were initially classified as adjusted, impulsive, or inhibited.
Studies Measuring Outcome	Study 1
Study Designs	Quasi-experimental
Quality of Research Rating	2.5 (0.0-4.0 scale)

Outcome 2: Pro-social behavior

Description of Measures	Pro-social behavior was measured using 4 items from the Preschool Social Behavior Scale (PSBS) and 4 items from the Hahnemann Behavior Rating Scale (HBRS). Each item describes a pro-social behavioral trait (e.g., child is good at sharing and taking turns; child is helpful to peers). For each item, teachers rated children on a scale ranging from 1 (not at all true) to 9 (extremely true).
Key Findings	ICPS was implemented with a single cohort of children over 2 years, starting with kindergarten (year 1) and continuing through 1st grade (year 2). The sample consisted of four groups:

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	<ul style="list-style-type: none"> • Children who received ICPS both years • Children who received ICPS in kindergarten only • Children who received ICPS in 1st grade only • Children who did not receive ICPS <p>Teachers administered the PSBS and HBRS at the beginning and end of each academic year. At year 2 posttest, children who received 2 years of ICPS had higher PSBS and HBRS scores for pro-social behavior compared with children who did not receive the intervention at all ($p < .0001$ for both scales), after baseline levels of pro-social behavior were controlled.</p> <p>Children who received 1 year of ICPS also had higher pro-social behavior scores on the HBRS compared with children who did not receive the intervention ($p < .0001$), but PSBS scores for pro-social behavior did not significantly differ between these groups.</p>
Studies Measuring Outcome	Study 3
Study Designs	Quasi-experimental
Quality of Research Rating	2.5 (0.0-4.0 scale)

Outcome 3: Problem behaviors

Description of Measures	<p>Problem behaviors were measured using the following scales:</p> <ul style="list-style-type: none"> • Hahnemann Preschool Behavior (HPSB) Scale. Teachers rated children's behavior using 7 items on a scale from 1 (very little or none) to 9 (much more than average). The items address three behavioral factors: impatience (nagging and demanding of adults; can't wait turn; grabs toys from children), emotionality (anger or distress with peers and adults), and dominance-aggression (physical aggression, such as hitting and pushing, and verbal dominance, such as being bossy or threatening). Teacher ratings were then used to classify children as adjusted, inhibited, or impulsive. • The Teacher Observation of Classroom Adaptation-Revised (TOCA-R). The Impulsivity, Hyperactivity, and Aggressive/Disruptive Behavior scales of the TOCA-R were
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	<p>used to derive scores on self-regulation.</p> <ul style="list-style-type: none"> • Preschool Social Behavior Scale (PSBS). Teachers rated children's problem behavior using 12 items that measure relational aggression (e.g., when mad at a peer, child keeps that peer from being in the play group) and overt aggression (e.g., pushes or shoves other children; verbally threatens to hit or beat up other children). Teachers were asked to rate student behavior on a scale from 1 (not at all true) to 9 (extremely true). • Hahnemann Behavior Rating Scale (HBRS). Teachers rated children's behavior using 7 items that measure aggression/impulsivity (e.g., hits, pushes, or in other ways hurts children; displays poor emotional control; overreacts to stress) and passivity (e.g., is overly inhibited; gives in or gives up too easily with peers or adults). • Teachers were asked to rate student behavior on a scale from 1 (not at all true) to 9 (extremely true).
<p>Key Findings</p>	<p>One study of ICPS followed a single cohort of children over 2 years, starting in nursery school (year 1) and continuing through kindergarten (year 2). The sample consisted of four groups:</p> <ul style="list-style-type: none"> • Children who received ICPS both years • Children who received ICPS in nursery school only • Children who received ICPS in kindergarten only • Children who did not receive ICPS <p>Each year, teachers rated children's behavior using the HPSB Scale immediately before and after the 3-month intervention. Findings included the following:</p> <ul style="list-style-type: none"> • At year 1 pretest, there was no significant group difference in the percentages of children rated by teachers as being adjusted (36% of children who would receive ICPS that year vs. 47% of children who would not receive the intervention that year). However, at year 1 posttest, 71% of children who received ICPS were rated as adjusted, compared with 54% of children who did not receive the intervention ($p < .01$). • Among children initially rated as impulsive, at year 1 posttest, 50% of those who received ICPS in year 1 were rated as

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	<p>adjusted, compared with only 21% of children who did not receive the intervention ($p < .01$).</p> <ul style="list-style-type: none"> • Among children initially rated as inhibited, at year 1 posttest, 75% of those who received ICPS in year 1 were rated as adjusted, compared with only 35% of children who did not receive the intervention ($p < .01$). <p>At year 2 pretest, there was no significant group difference in the percentages of children rated by teachers as being adjusted (43% of children who had not received ICPS in year 1 but would receive it in year 2 vs. 41% of children who would not receive the intervention). However, by posttest of that year, 83% of children who received the intervention in year 2 only were rated as adjusted, compared with 30% of children who did not receive the intervention ($p < .01$).</p> <p>One year of exposure to ICPS was sufficient for children to reach adequate levels of behavioral adjustment. At year 2 posttest, the percentage of adjusted children was about the same in all three intervention groups, ranging from 77% (for children who received the intervention in year 2 only) to 85% (for children who received 2 years of ICPS), whereas only 30% of children who did not receive the intervention were rated as being adjusted ($p < .01$).</p> <p>In another study, 1st-grade classrooms from 12 rural schools were randomly assigned to receive one of the following: ICPS only, ICPS combined with the full Strengthening Families (ICPS + SF) program, ICPS combined with the partial Strengthening Families program (parent training course only; ICPS + partial SF), or no treatment (control group). Teachers completed the TOCA-R at the beginning and end of the school year. Improvement in self-regulation from baseline to posttest was significantly greater in all three intervention groups relative to the control group (ICPS: $p < .01$; ICPS + SF: $p < .001$; ICPS + partial SF: $p < .001$). ICPS vs. control was associated with a small effect size (Cohen's $d = 0.46$); ICPS + SF vs. control was associated with a medium effect size (Cohen's $d = 0.69$); and ICPS + partial SF vs. control was associated with a large effect size (Cohen's $d = 1.04$).</p> <p>In a third study, ICPS was implemented with a single cohort of children over 2 years, starting with kindergarten (year 1) and</p>
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	<p>continuing through 1st grade (year 2). The sample consisted of four groups:</p> <ul style="list-style-type: none"> • Children who received ICPS both years • Children who received ICPS in kindergarten only • Children who received ICPS in 1st grade only • Children who did not receive ICPS <p>Teachers administered the PSBS and HBRS at the beginning and end of each academic year. At year 2 posttest, children who received 2 years of ICPS instruction had significantly lower PSBS scores for relational aggression ($p = .028$) and overt aggression ($p = .008$), after baseline levels of aggression were controlled, compared with those who did not receive the intervention at all.</p> <p>There were no group differences in HBRS scores for aggression/impulsivity and passivity.</p>
Studies Measuring Outcome	Study 1, Study 2, Study 3
Study Designs	Quasi-experimental
Quality of Research Rating	2.6 (0.0-4.0 scale)

Outcome 4: School bonding

Description of Measures	The school bonding construct was derived using the Attitude Toward School and Teacher scales of the Behavioral Assessment for Children, the Parent Report on School Climate, and the Parent and Teacher Involvement Questionnaire.
Key Findings	First-grade classrooms from 12 rural schools were randomly assigned to receive one of the following: ICPS only, ICPS combined with the full Strengthening Families program (ICPS + SF), ICPS combined with the partial Strengthening Families program (parent training course only), or no treatment (control group). Parents, children, and teachers completed surveys at the beginning and end of the school year. Improvement in school bonding from baseline to posttest was significantly greater in both the ICPS-only group ($p < .001$) and the ICPS + SF group ($p < .01$) relative to the control group. ICPS vs. control was associated with a large effect size

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	(Cohen's d = 1.32), as was ICPS vs. ICPS + SF (Cohen's d = 1.26).
Studies Measuring Outcome	Study 2
Study Designs	Experimental
Quality of Research Rating	2.6 (0.0-4.0 scale)

5. **Cost effectiveness report (Washington State Institute of Public Policy – if available)**
6. **Washington State results (from Performance Based Prevention System (PBPS) – if available)**
7. **Who is using this program/strategy**

Washington Counties	Oregon Counties

8. Study populations

The following populations were identified in the studies reviewed for Quality of Research.

Study	Age	Gender	Race/Ethnicity
Study 1	0-5 (Early childhood)	55.7% Female 44.3% Male	100% Black or African American
Study 2	6-12 (Childhood)	53% Female 47% Male	87% White 7.6% Hispanic or Latino 5.4% Race/ethnicity unspecified

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Study 3	6-12 (Childhood)	54.4% Female 45.6% Male	85% Hispanic or Latino 6.2% Black or African American 5.3% White 3.5% Asian
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9. Quality of studies

The documents below were reviewed for Quality of Research. The research point of contact can provide information regarding the studies reviewed and the availability of additional materials, including those from more recent studies that may have been conducted.

Study 1

Shure, M. B., & Spivack, G. (1980). Interpersonal problem solving as a mediator of behavioral adjustment in preschool and kindergarten children. *Journal of Applied Developmental Psychology*, 1, 29-44.

Shure, M. B., & Spivack, G. (1982). Interpersonal problem-solving in young children: A cognitive approach to prevention. *American Journal of Community Psychology*, 10(3), 341-356.

Study 2

Kumpfer, K. L., Alvarado, R., Tait, C., & Turner, C. (2002). Effectiveness of school-based family and children's skills training for substance abuse prevention among 6-8-year-old rural children. *Psychology of Addictive Behaviors*, 16(4 Suppl.), S65-S71.

Study 3

Boyle, D., & Hassett-Walker, C. (2008). Reducing overt and relational aggression among young children: The results from a two-year outcome evaluation. *Journal of School Violence*, 7(1), 27-42.

Supplementary Materials

Johnson, J. E., Roopnarine, J. L., & Serlin, R. E. (1980). Relations of social problem solving, referential communication, and intelligence test scores with peer status and social behavior within a mixed-age classroom. Unpublished manuscript.

Quality of Research Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the Quality of Research for an intervention's reported results using six criteria:

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1. Reliability of measures
2. Validity of measures
3. Intervention fidelity
4. Missing data and attrition
5. Potential confounding variables
6. Appropriateness of analysis

For more information about these criteria and the meaning of the ratings, see Quality of Research.

Outcome	Reliability of Measures	Validity of Measures	Fidelity	Missing Data/Attrition	Confounding Variables	Data Analysis	Overall Rating
1: Interpersonal cognitive problem-solving skills	2.4	3.0	2.1	2.1	2.3	3.3	2.5
2: Pro-social behavior	3.0	2.5	2.0	1.9	1.9	3.5	2.5
3: Problem behaviors	2.9	2.5	2.3	2.1	2.4	3.4	2.6
4: School bonding	1.8	2.5	3.0	2.5	3.0	3.0	2.6

Study Strengths

The instruments used to measure outcomes generally had adequate reliability; all had at least face validity. Considerable resources (including teacher observations; manualized, scripted sessions; and initial and booster trainings) were dedicated to ensure reasonably high levels of implementation fidelity and quality. In one study, fidelity was rated and found to be high, and teachers indicated a high level of satisfaction with the program. In all three studies, the data analyses were thorough and appropriate to the study questions and hypotheses.

Study Weaknesses

Some instruments did not have acceptable levels of reliability. Although teacher observations were conducted in all three studies to monitor implementation fidelity, not all studies included formal observation checklists, and the fidelity instruments that were used have unknown psychometric properties. Data were not provided on dosage or adherence to the curriculum. In all three studies, the teachers themselves, not independent observers, rated children's behavior. In one study, there were indications that variations in teachers' enthusiasm for the curriculum affected how frequently and how well teachers administered the program. In two studies, missing data were a problem, and systematic

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analyses addressing the potential effects of differential attrition were not conducted. Potential confounding factors were present in all three studies. In one study, the attempt to match schools on basic demographics was undermined because two control schools declined to remain in the study.

10. Readiness for Dissemination

The materials below were reviewed for Readiness for Dissemination. The implementation point of contact can provide information regarding implementation of the intervention and the availability of additional, updated, or new materials.

Dissemination Materials

- Quality assurance materials:
- Administrator's Guide
- Fidelity Checklist
- Observation and Consultation Form
- Satisfaction Questionnaire
- Teacher Self-Survey
- Trainer Feedback Form

Shure, M. B. (2000). ICPS--I Can Problem Solve: An interpersonal cognitive problem-solving program (preschool) (2nd Ed.). Champaign, IL: Research Press.

Shure, M. B. (2001). ICPS--I Can Problem Solve: An interpersonal cognitive problem-solving program (kindergarten and primary) (2nd Ed.). Champaign, IL: Research Press.

Shure, M. B. (n.d.). I Can Problem Solve (ICPS): A social-emotional learning curriculum [PowerPoint slides]. Shure, M. B., & Prevention First. (2009). I Can Problem Solve (ICPS) facilitator training guide.

Readiness for Dissemination Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the intervention's Readiness for Dissemination using three criteria:

1. Availability of implementation materials
2. Availability of training and support resources
3. Availability of quality assurance procedures

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For more information about these criteria and the meaning of the ratings, see Readiness for Dissemination.

Implementation Materials	Training and Support Resources	Quality Assurance Procedures	Overall Rating
3.4	3.4	3.3	3.3

Dissemination Strengths

Implementation materials are comprehensive and age appropriate and appear easy to integrate into most classroom settings across grade levels. Training, which is required prior to implementation, addresses organizational readiness, integrating the ICPS model into the classroom, and identifying the roles and responsibilities of program staff. The Facilitator Training Guide is extensive and well organized; it includes alternative activities, training aids, and administrator guides and addresses how to handle problem situations should they arise during implementation. A variety of quality assurance instruments are provided, giving facilitators many tools to deliver the program with fidelity. The developer is available to assist in interpreting the data collected with the quality assurance tools.

Dissemination Weaknesses

There is some ambiguity about how and when organizations determine whether they are ready to proceed with implementation (i.e., which aspects of readiness must be addressed prior to training and which can be addressed through the process of training). It is unclear whether any other forms of implementation support are available to sites apart from training. Although the developer will provide assistance to sites in interpreting quality assurance data, there is little written guidance on how to use the data to strengthen the program and improve implementation.

11. Costs (if available)

The cost information below was provided by the developer. Although this cost information may have been updated by the developer since the time of review, it may not reflect the current costs or availability of items (including newly developed or discontinued items). The implementation point of contact can provide current information and discuss implementation requirements.

Item Description	Cost	Required by Program Developer
ICPS I Can Problem Solve: An Interpersonal Cognitive Problem-Solving Program (Preschool)	\$41.95 each	Yes

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[Training Manual]		
ICPS I Can Problem Solve: An Interpersonal Cognitive Problem-Solving Program (Kindergarten and Primary) [Training Manual]	\$41.95 each	Yes
ICPS Facilitator Training Guide (includes all required quality assurance materials)	Included in the cost of the train-the-trainer workshop	Yes
On-site training prior to implementation - 2 days (recommended) or 1 day	\$1,500 per day plus travel expenses	Yes
Train-the-trainer workshop	\$740 per individual plus travel expenses	No
On-site technical assistance	\$1,000 per day plus travel expenses	No
Technical assistance by telephone, email, and Webinar	Free	No

12. Contacts

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