

## **Impact of a Preventive Social Problem Solving Intervention on Children's Coping With Middle-School Stressors<sup>1</sup>**

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*Children receiving 1 year or ½ year of a preventive social problem solving program in elementary school were compared with each other and with a no-treatment group upon entry into middle school. One year of training was significantly related to reductions in the severity of a variety of middle-school stressors. Most importantly, a clear mediating role for social problem solving (SPS) skills was found. Children lacking in SPS skills were more likely*

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*to experience intense stressors; however, possessing the skills was not necessarily predictive of adjustment to stressors. The results are discussed in terms of the implications of this asymmetry and the strong support given to the value of social problem solving as a preventive intervention for children.*

There is a continuing controversy concerning the efficacy of interventions designed from an interpersonal cognitive problem-solving (ICPS) framework. The research of Spivack and Shure supports the idea that ICPS skills are an essential component of sound adjustment throughout the life-span (Spivack, Platt, & Shure, 1976). The most central construct in their formulation is means-ends thinking, which they see as important in determining both how individuals choose to interpret and then react to problematic interpersonal situations they encounter. Studies have shown that ICPS skills can be used to discriminate significantly between poorly adjusted and normal preschool children, psychiatric populations and matched controls, and relatively better adjusted children in a residential treatment setting (Higgins & Thies, 1981; Spicack et al., 1976).

However, there has been several instances of failures to replicate Spivack and Shure's findings concerning the relationships of ICPS change to change in adjustment measures with preschool populations (Gillespie, Durlak, & Sherman, 1982; Rickel & Burgio, 1982). These and similar results have led to challenges about the role of means-ends thinking in adjustment (Durlak, 1983). Durlak has suggested a lack of support for Spivack's idea that the process of social adjustment involves individuals' use of a generalized strategy underlying appropriate behavior across situations. He contends that studies in which subjects were trained to use problem solving to reach completion of specific tasks provides the best evidence of the effectiveness of this approach. Finally, Urbain and Kendall (1980) occupy a middle position concerning ICPS. Their comprehensive review of the literature uncovered findings in both negative and positive directions. Unfortunately, many outcomes were ambiguous because of measurement or design flaws, making interpretation of findings difficult. Urbain and Kendall suggested that the ICPS approach showed sufficient promise to warrant further investigations.

This controversy takes on added significance when one considers that the ICPS approach is being recommended as among the most promising formats for preventive intervention (Cowen, 1980; President's Commission on Mental Health, 1978). Additionally, one of the first three Prevention Intervention Research Centers, funded on a longitudinal basis by the Federal government, is devoted to the ICPS approach. A careful examination of the intervention research studies in ICPS and a highly related area, social problem solving (SPS), reveals that they are what Rossi (1978) termed "operator-dependent." By this, Rossi meant that the procedures being undertaken in-

volve a high degree of responsiveness on the part of the implementor to suggestions arising from either individual or group participants in the program. ICPS and SPS interventions are often longitudinal, are often implemented in school settings by teachers, and vary considerably in the instructional design, format, and pacing of intervention units (Elias & Allen, under revision). In such interventions, the largest source of variance between studies, as well as within studies, may well be variance associated with implementation procedures. This argument draws some support from the finding that interventions in ICPS or SPS that are conducted simultaneously in large numbers of settings seem to produce results that are most ambiguous to interpret or contradictory within the sample (Camp, Bash, Hebert, & Von Doorninck, 1977; Elardo & Caldwell, 1979; Weissberg et al., 1981). Several researchers have noted that difficulties are compounded because details of implementation and direct assessment of the accuracy of implementation are rarely attended to or reported systematically (Elias, 1980; Lorion, 1983).

### THE PRESENT STUDY

An SPS program was begun in 1979 with an explicit goal being the detailed monitoring of the implementation process to insure that the intervention was being delivered as planned. Each teacher in the four participating elementary schools was assigned a consultant who conducted periodic observation of SPS lessons and met on a regular basis with the teachers to discuss procedures for upcoming lessons. In addition, teachers' ability to use SPS when handling interpersonal problem situations in the classroom was assessed three times during the school year. Both teachers and students were asked periodically for detailed feedback concerning their reactions to the curriculum and the specific procedures that were employed.

The project, referred to as the Improving Social Awareness-Social Problem Solving (ISA-SPA) project, uses an SPS framework that is expanded from Spivack and Shure's ICPS approach. The following sets of SPS skills are organized into curriculum units for elementary school-aged children: (a) *interpersonal sensitivity*, which includes focusing on one's feelings in problematic situations, putting those feelings into words while attending to what is going on in a situation, and thinking about one's goal in the situation; (b) *means-ends thinking*, which includes considering alternative ways to reach one's goal and multiple consequences for each alternative; and (c) *planning and anticipation*, which includes developing specific ideas for carrying out one's chosen solution, anticipating possible obstacles and, after attempting to solve the problem, reconsidering what happened for use in future situations. There is also explicit attention given to building children's expectancies that their personal initiative

can assist in producing positive resolution of their problems (see Bandura, 1977). These sets of skills are embodied in an eight-step problem-solving procedure in which explicit instruction in each of eight primary skills is made during the first half of the academic year (instructional phase) and integrating these skills into the children's social and affective realms is the focus of an application phase in the second half of the year. Results to date confirm that children receiving this program acquire and use many of these skills and that teachers who have been trained to use the ISA-SPS program show significant change in the expected direction when asked how they would resolve various student-related problems (Elias, Clabby, Corr, Ubriaco, & Schuyler, 1982).

The impetus for the ISA-SPS project was preventive in nature. Middle school is seen by many parents and educators as a time of great turmoil for themselves and for children (Elias et al., 1982). Moreover, the outcome of the middle-school years is seen as playing a large role in the subsequent adjustment of youth as they move into adolescence and adulthood (Kendall, Lerner, & Craighead, 1984; Sroufe & Rutter, 1984). In the particular community in which the ISA-SPS project was begun, the local Community Mental Health Center was approached with a request to provide some intervention that would ameliorate the stress and difficulty encountered by children as they left their elementary schools in fifth grade and entered middle school in sixth grade. Through discussions with administrators, teachers, and parents, it was agreed that a preventive intervention which would teach children a generalized strategy would be a suitable approach. Such a strategy could be used by children when they encountered the myriad of new situations with which they would be confronted in middle school.

Because of equivocal findings in the ICPS and SPS literature as noted above, it was also thought that an intense 1-year school-based intervention would have some likelihood of producing measurable results to counter the stressful nature of middle-school transition (Elias et al., 1982). Therefore, children were asked to learn to (a) attend to their feelings and those of persons around them in problem situations, (b) think about their goals, generate alternative solutions and consequences, (c) give careful thought to exactly how they would carry out their chosen solution, and (d) develop the expectancy that they could overcome obstacles and that even the best planned solutions sometimes do not lead to problem resolution. Such children should be in a position to experience the stressors of middle school in a more calm, controlled, and less problematic manner than children who were less able to access such a strategy.

The present study was an attempt to measure the impact of training when children faced a stressful life event several months after completing the prevention program. Children receiving three levels of ISA-SPS interven-

tion were compared. These levels included (a) children receiving both instructional and application phases of the curriculum, (b) children receiving the instructional phase only in the second half of the school year, and (c) children entering middle school in the prior year without having received any SPS intervention. We conceptualize the stressfulness of middle school as arising from the many new life tasks children must master as they make the transition from the more contained and secure elementary school environment (Elias, Gara, & Ubriaco, 1985; Felner, Farber, & Primavera, 1983). Thus, stressors were defined as circumstances arising in middle school which disrupt or interfere with adaptive performance of expected academic and interpersonal behaviors. It was hypothesized that there would be a direct relationship between amount of SPS training and children's (a) perception of middle school as a more favorable environment and (b) being able to cope with stressors more adaptively. In addition, it was expected that children's social problem solving skills would mediate children's coping with middle-school stressors. Specifically, a more healthy adjustment would be associated with higher levels of social problem solving skills; these skills would thus be worthy of further investigation as an important link to adjustment in preadolescent children.

## METHOD

### *Participants and Setting*

The study was conducted in a community of 15,000 in central New Jersey. It is a primarily blue-collar, multiethnic town which has been particularly hard hit by economic recession and marital disruption. There are four elementary schools, one middle school, and one high school in the district, a modal configuration in the Northeast. The children involved were 158 fifth-grade students in all four elementary schools for whom parental permission was obtained, about 98% of the possible sample. There were 80 boys and 78 girls. Academically, they averaged approximately 1 year above grade level on standardized academic tests. All fifth-grade teachers were involved in carrying out the program under a delayed control design. Within the larger project, it was agreed that sufficient quality control could not be maintained while beginning implementation in all fifth-grade classrooms simultaneously. It was decided to begin with the instructional phase in two schools and use the two other schools as a delayed comparison group, while simultaneously meeting the concerns of parents that their children receive a high quality program before entering middle school. To examine the nature of adjustment among

children who received no SPS training, a control group consisting of children entering middle school during the prior year was used. Thus, there were three quasi-experimental conditions: (a) no training (1978-1979), (b) full training (instructional phase October to December 1979, application phase January to May 1980), and (c) partial training (instructional phase only, January to May 1980).

### *Procedures*

The instructional phase consisted of 20 lessons averaging approximately 40 minutes each, conducted twice per week to the extent that school scheduling would allow. The first two lessons concerned establishing rules for discussion and familiarizing the children with what a problem situation was and how it would be helpful for them to learn ways of handling such situations more easily. The next 16 lessons consisted of two lessons each on the eight problem-solving skill areas, conveyed to the children as problem-solving "steps." The final two lessons allowed children to integrate all eight steps around specific problem situations. Teachers used a scripted curriculum (Elias et al., 1982) with the following general format: (a) group sharing of any occurrences or feelings they would like to bring to the attention of their teacher or classmates, (b) brief presentation of the skill to be covered in the lesson, (c) presentation of a sample situation in which to learn about the skill through either a story read to the children, story read by the children, or videotaped vignette, (d) dialoguing-based discussion of the situation and the skill, (e) role play, and (f) summary and review. This format incorporates a number of instructional design features directed towards promoting maintenance, generalization, and transfer of learning (Elias & Maher, 1983; Gagne, 1974).

The application phase consisted of two main parts. First, teachers were instructed in the technique of life space intervention, in which they attempted to mediate conflicts between individual students or larger groups by facilitating children's problem-solving thinking rather than stepping in and providing their own solutions to the problem (Long, 1966; Shure & Spivack, 1978). Second, teachers were provided with specific activities designed to bring problem solving into the regular classroom routine. For example, teachers were shown how to develop a class problem-solving chart in which students recorded problem situations they encountered, the skills that were helpful to them, and how the situation turned out. These charts were then used as the subject for class meetings in which the group served as a "consultant" to specific children in helping them to resolve their problem. Children were also shown how to develop personal problem-solving notebooks to record their use of problem solving and to allow them to be able to review what was most and least successful for them. Also, lessons were conducted around how

to appreciate similarities and differences among their classmates and how to use problem solving to make children's compositions more creative and interesting. Formal application phase lessons were held approximately once per week and teachers were encouraged to use life space intervention as often as warranted; our data indicate that such interventions were used approximately three times per week by the majority of teachers.

One consultant was assigned for each of two elementary schools. The consultants were predoctoral students in clinical and school psychology, but they worked within and were supervised by a multidisciplinary team consisting of a doctoral level educator-clinician from a community mental health center, a university psychology department faculty member, and a principal from the elementary school. The role of the consultant was to work with teachers to ensure their understanding of upcoming lessons, model appropriate teaching in the classroom as new teaching skills were being introduced, and monitor and provide feedback to teachers about the performance of the lessons. Explicit attention was paid to minimizing control teachers' knowledge about SPS or specific lesson procedures until after assessment was made of all children and teachers following the conclusion of the instructional phase in the experimental schools. This choice of risking what Cook and Campbell (1979) referred to as resentful demoralization was made because of the potentially far greater damage of having an infusion of the treatment into the control group in an uncontrolled manner. Data from teacher assessment in Elias et al. (1982) suggest that separation of the control teachers from the intervention was accomplished successfully.

### *Assessment*

For the purpose of this study, two primary assessments were made. The first involved assessment of children's transition to middle school. The instrument used, the Survey of Middle School Stressors, contained several parts. The first part involved four direct questions about how much they liked middle school, how difficult children felt it was to adjust to middle school, how long it took them, and how well they felt they are adjusting. The second part consisted of a series of 15 bipolar adjectives drawn from research and descriptive studies about secondary schools; children were asked to rate their middle school on a seven-point scale for each set of adjectives (e.g., interesting-boring; afraid-unafraid; dangerous-safe; friendly-unfriendly). Measures of this kind exhibit excellent reliability and a psychometric structure that remains stable despite shifts in the particular adjectives used (Wiggins, 1973).

The final section consisted of 28 commonly occurring situations in middle school identified through behavioral analytic procedures as leading to dif-

faculty, distress, or upset feelings (Goldfried & D'Zurilla, 1969). Examples of these stressor situations range from logistical concerns such as forgetting one's locker combination and learning one's way around a larger new building, to mastering new academic routines (having many different teachers, more homework, greater academic pressures) and new relationships with peers (being teased or asked to do things one does not want to do, being approached to smoke or drink, not being part of a desired group, undressing in a locker room). For each stressor, children were asked to rate either that it was not a problem, a small problem, a medium problem, or a large problem for them since coming to middle school. In addition to patterns of response on the 28 stressors, summary indices included Problem Frequency (number of stressors rated as a small, medium, or large problem) and Problem Intensity (number of stressors rated as a large problem). A similar measure, developed independently by Lewis, Siegel, and Lewis (1984), uncovered many of the same stressors and showed sound psychometric properties. The present measure has an internal consistency coefficient greater than .90 across different samples and has been predictive of Piers-Harris Self-Concept scores, school attendance, and teacher ratings of school adjustment using the AML (Elias et al., 1985; Elias, Gara, Ubriaco, & Rothbaum, in preparation). In October of their first year in the sixth grade, all children who received social problem solving were administered the Survey. The preceding year, a comparison cohort entering the same middle school received the Survey.

The second primary assessment involved children's social problem solving skills. The instrument used, the Group Social Problem Solving Assessment (GSPSA), contains two parts. Children are asked a series of short-answer questions to determine their knowledge about principles of social problem solving. Subscales include Problem Analysis and Action (including items such as, "name a problem and two solutions," "what is a goal," and "what do we do when we have a problem") and Interpersonal Sensitivity ("how can you tell how someone is feeling," "name good, bad feelings") and items are scored on a two- or three-point scale. Children are also presented with vignettes of two common problem situations, being excluded by peers and being subjected to peer pressures. Specificity of Planning is derived from questions about (a) consequences they would expect if a non-prosocial solution were tried (e.g., yelling at the other children), and (b) how they would plan to put a prosocial solution into effect. Children were also asked how they would respond to two different obstacles to solutions they might try (e.g., "What if you went up to them and asked and they said, 'No, we don't want you?'").

Two reliable total scores have been derived through replicated factor and multitrait-multimethod analyses across several cohorts: Primary Social Problem Solving (Problem Analysis and Action, Specificity of Planning, In-



terpersonal Sensitivity) and Obstacle Social Problem Solving (expectancies, alternatives, and planning in response to obstacles) (Elias, Rothbaum, & Gara, in press). Coefficient alphas for the total score were .75 and .74; scores for subscales were slightly lower. Scores from the GSPSA have discriminated behaviorally and emotionally disordered middle-school children from other subgroups in their school and are not affected by a child's academic abilities (Elias et al., in press; see Elias, 1982, for detailed scoring manual). The GSPSA was given only to those children who received social problem solving training.

## RESULTS

The following sets of findings are presented: (a) equivalence of the schools before training, (b) planned comparisons involving all three experimental conditions, (c) comparison of the full and partial training conditions, and (d) role of children's social problems solving skills in mediating their response to stressors.

### *Equivalence of Schools Before Training*

To test the hypothesis that children from different elementary schools had similar responses to middle-school stressors before training, a discriminant analysis was used. Discriminant analysis is equivalent to multivariate analysis of variance and involves determining the power of multiple indices to distinguish groups from each other while providing a multivariate significance test and protected alpha levels (Nunnally, 1967).<sup>3</sup> Specifically, scores on the Survey of Middle School Stressors were compared for children from all four elementary schools for the cohort that did not receive any problem-solving training. No significant differences were found among the four schools. When the schools were combined to form pairs of schools corresponding to the pairs of schools that were to receive full or partial social problem solving training, the results were the same, multivariate  $\chi^2(22) = 25.93$ , ns.

<sup>3</sup>All of the analyses reported for the Survey of Middle School Stressors were performed with the bipolar adjective scales. No systematic effects were found. Not unexpectedly, well over 90% of the variance in the scores was accounted for by a good-bad dimension. Because the focal referent, "middle school" was so general, the measure as constructed was inadequate to allow children to express a differentiated response to the environment as they could on the stressors survey. Subsequent studies should present specific aspects of middle school corresponding to stressors domains, such as attitudes toward peers or academic requirements, to be rated by the children.

### *Comparison of Full and Partial Training Conditions*

To determine more closely the incremental effects of adding the application phase to the instructional phase, the cohort of students that received full or partial training was examined. The two schools receiving full training were compared with the two schools receiving partial training. Most generally, expected differences were found in Problem Frequency and Problem Intensity. A more detailed picture was obtained by using discriminant analysis on all 28 stressors. A significant difference was found between full and partial training conditions, multivariate  $F(28, 107) = 1.62, p < .04, R^2 = .30$ . For 24 of the 28 stressors, the children receiving only the instruction phase reported the variable in question to be more of a problem than did children receiving both instruction and application phases. Eleven of these differences were significant when compared with univariate  $F$  tests,  $p < .05$ . Logistics of adjusting to middle school, adjusting to academic requirements, and coping with peer pressure were found to differentiate the full and partial training groups. (Similar findings were found when Problem Frequency and Problem Intensity were examined,  $F(1, 150) = 4.45, p < .04$  and  $F(1, 150) = 11.10, p < .001$ , respectively.)

### *Planned Comparisons, Involving All Three Conditions*

Because specific hypotheses about the experimental conditions were made a priori, a series of regression analyses with planned orthogonal contrasts was used (Cohen & Cohen, 1975). It was expected that children who received at least some social problem solving would report fewer or less severe difficulties than children with no training; similarly, the full training group would have lower scores than the partial training group. Analyses were performed on the two summary scores, Problem Frequency and Problem Intensity. Significant differences were found on Problem Frequency and Intensity at  $p < .05$ . Subsequent analyses of individual stressor items showed that 14 were also significant at  $p < .05$ . The overall pattern of differences indicated that full training was superior to partial training and both conditions were associated with a significant reduction in children's self-reported level of difficulty with commonly occurring stressors in middle school, when compared to controls.

Given this differential response to stressors, direct questions about adjustment to middle school were examined. In both full and partial training groups, over 94% of the children agreed that changing from elementary to middle school was not highly difficult, that they do not greatly dislike middle school, and that they get used to middle school within 1 month. However, only 61.38% of the children at the time of assessment indicated they were

comfortably used to middle school. On this dimension, a significant group difference was found, as 65.88% of children receiving full training reported being completely used to middle school and *no* children said they were not used to the school. Data for the partial training group were 55.10 and 10.20%, respectively. Interestingly, both Problem Frequency and Problem Intensity were significantly correlated with low scores on the various direct questions about adjustment to middle school,  $r(155) = .27, p < .01$ ; they were unrelated to degree of liking of middle school.<sup>4</sup>

### *Summary*

Overall, it appears that the 1-year prevention program was most effective for reducing difficulties in coping with stressors upon entry to middle school, when compared with similar cohorts entering middle school with partial or no training.

### **Social Problem Solving As a Mediator of Improved Response to Stressors**

It is important to establish the specific role of social problem solving skills in mediating children's responses to troublesome aspects of middle school. To determine the main dimensions tapped by the 28 stressors, a principal factors analysis with varimax rotation was performed. To reduce the influence of idiosyncratic findings and emphasize commonality among factors, squared multiple correlations were used in the diagonal of the correlation matrix. Three factors were found, accounting for nearly 80% of the variance. We labeled the first factor Substance Abuse, as it consisted of three primary items: smoking, drugs, and drinking alcohol. The second factor seemed to be a combination of Verbal Peer Pressure and Exclusion (e.g., kids trying to make you do things you don't want to do, being teased, not being a part of the "in group"). Finally, Factor 3 contained items such as being sent to the vice principal, arguing with teachers, getting into fights and hav-

<sup>4</sup>Although similar findings were anticipated for the children's perception of middle school on the bipolar scales, these did not emerge. Our analyses suggest that the children did not make a clearly differentiated perception of their school environment. They basically felt the setting was either good or bad. It was revealing that children's ratings of how much they like middle school was unrelated to scores for Problem Intensity or Frequency. We suspect that children are strongly socialized into liking or being wary of middle school prior to the first day of classes. This perception probably persists well into the first few months of the year. As children overcome logistical and other difficulties and face a wave of new or intensifying stressors (Elias et al., 1985), it appears likely that their specific experience exceeds their generalized expectancies as more salient in governing their perceptions of the school environment (Bandura, 1977; Rotter, 1954). Thus, attempts to tap perceptions of the actual middle-school environment probably should not be attempted until perhaps 5 months after the transition.

ing things stolen, and having problems bringing the correct books and coping with all of the different teachers. We called this dimension, Coping With School Conflicts. Three factor scores were generated and all were highly reliable ( $\alpha = .93, .83, .85$ , respectively), with moderate item-total correlations.

Canonical correlation was used to compare the three stressors dimensions with Primary and Obstacle Social Problem Solving subscale scores for children receiving at least some training. Primary Social Problem Solving was a significant predictor, multivariate  $F(9, 326) = 2.00, p < .04, R_c^2 = .10$ . The relationship was mainly between Interpersonal Sensitivity and Problem Analysis and Action and the two stressors factors concerned with Peers and Coping. The greater the children's problem-solving skills, the less they reported difficulty with the two sets of stressors indicated. A closer look at the findings was obtained by conducting a separate multiple regression analysis using each factor score as a sole dependent variable. As expected, overall findings for the Peers and Coping factors were significant,  $p < .05$ . Problem Analysis and Action was predictive of both dimensions, with significant additional variance in Coping accounted for by Specificity of Planning.

When the summary scores Problem Frequency and Intensity were examined in multiple regressions with Primary and Obstacle Social Problem Solving subscale scores as independent variables, several interesting findings emerged. Problem Frequency was not associated with any social problem solving variable. Problem Analysis and Action,  $F(1, 153) = 6.52, p < .01$ , was found to have an inverse relationship with the degree of intensity of stressors reported by children.

The relationship of social problem solving to Problem Frequency and Intensity was also examined for a possible nonlinear trend. Children were grouped according to whether they reported zero (58.2%), one to three (24.7%), or four or more intense stressors (17.1%). Discriminant analysis was performed with Problem Analysis and Action, Specificity of Planning, Interpersonal Sensitivity, and the Obstacle Social Problem Solving summary score as dependent variables. One significant discriminant function was found, multivariate  $F(8, 302) = 2.23, p < .03, R_c^2 = .10$ . Children reporting four or more intense stressors were differentiated clearly from the other two groups, and Problem Analysis and Action was the most salient predictor.

An examination of patterns of within-group variance and the classification table generated by the discriminant function strongly suggested the existence of an asymmetrical relationship between children's experience of stressors and their social problem solving skills. Specifically, poor problem solvers are very likely to experience many intense stressors, while good problem solvers may experience a high or low intensity of stressors. Deficiencies in social problem solving skills seem to be associated with coping

difficulties. For children with adequate social problem solving skills, other unmeasured factors apparently mediate the extent to which they experience intense stressors. As before, however, no relationship was observed between social problem solving and Problem Frequency.

An additional, more direct test of the mediating effect of social problem solving on response to stressors was also conducted.<sup>5</sup> It was noted earlier that the full and partial training groups could be reliably discriminated based on their pattern of response to all 28 stressors, as well as on their Problem Frequency and Problem Analysis summary scores. A highly stringent test of the impact of social problem solving would involve partialling out children's social problem solving scores from their stressors scores and then reexamining the extent to which the full and partial training groups could be significantly discriminated.<sup>6</sup> As the partialling has the effect of equalizing both groups on social problem solving, the assumption is that if social problem solving skills mediated the differences observed initially, those differences would no longer exist. That is, once equated for problem solving, the groups would no longer be distinguishable.

The reanalysis revealed that the full and partial training groups were no longer significantly different on their pattern of response to the 28 stressors or on their Problem Frequency summary score. Problem Intensity scores continued to discriminate the full and partial training groups,  $F(1, 148) = 9.28$ ,  $p < .05$ . However, this is complementary to the results suggested by the asymmetrical relationship found earlier involving Problem Intensity and social problem solving. That is, particularly where children's responses to intense stressors are concerned, increased social problem solving abilities are but one of several effects created by a full-scale social problem solving and social awareness curriculum program.

## DISCUSSION

The present study reflects an attempt to follow Lorion's (1983) dictum that preventive interventions be tested against realistic criteria. Specifically, children receiving different levels of social problem solving training administered by school personnel were compared after entry to middle school. The results indicate that there is a positive association between level of training

<sup>5</sup>We acknowledge one of our anonymous reviewers for suggesting this analysis.

<sup>6</sup>We say "stringent" because such an analysis emphasizes the contribution of individuals social problem solving skills to the observed group differences. Of course, a social problem solving curriculum program is far more complex and its impact represents the confluence of many more skills than are assessed, dyadic and group interactions with peers and adults and aspect of the social climate of the classroom.

and children's reports of coping with stressors and adjusting to middle school, and that social problem solving is an important aspect of this shared variance. These results cannot be accounted for by preexisting differences related to the children's elementary schools nor to marked differences in the degree of stressors encountered by students from one year to the next. Empirical support was found to suggest that a consistent mediating factor in children's responding to stressors was their social problem solving skills—most specifically, Problem Analysis and Action.

These findings were obtained approximately 4 months after the conclusion of any formal training, including an intervening summer. None of the cues traditionally associated with the maintenance of an intervention (e.g., physical environment, prompts by a trained teacher, continued contact with the group within which training occurred) were available to the children. Furthermore, they were subjected to a transitional life event—middle school entry—with well-documented destabilizing influences on a “normal” population (Elias et al., 1985; Lipsitz, 1977; Toepfer & Marani, 1980). Thus, the intervention effect was found using a criterion measure with clear relevance to mental health outcomes (Felner et al., 1983).

Durlak (1983) called for more detailed study of how specific social problem solving skills contribute to adjustment and prevention. The present results suggest that a decrement in a specific set of skills (Problem Analysis and Action and, to a lesser extent, planning and consequential thinking) is associated with a higher intensity of stressors, particularly in the domains of Peers and General Coping. That these effects were not noted for Problem Frequency fits well with Felner et al.'s (1983) view that transitional life events that are significant for adjustment subject nearly everyone involved to a series of specific stressors. However, individuals' skills at coping with these stressors determine, to a meaningful extent, how intense and problematic these events continue to be.

The problem-solving skills suggested as mediators of responses to stressors can perhaps be considered as building blocks needed to develop appropriate schema for appraising the kinds of problems one might encounter, what one would like to see happen, how one can go about solving them, and the outcomes one anticipates (Elias, *in press*; Landau & Goldfried, 1981; Lazarus & Folkman, 1984). Nevertheless, children who possess these skills may also encounter significant coping difficulties. Both Moos (1984) and Lazarus and Folkman (1984) suggest other variables, such as social support resources, that might further mediate adjustment to middle school. However, the significant role of social problem solving in that mediating process is supported by several different types of analyses conducted here.

Possible alternate explanations for the results obtained should be considered. Several of these, such as resentful demoralization of the delayed con-

trol group or quality control around the intervention, have already been discussed. The mixture of children from all four elementary schools within each middle-school homeroom and then in further recombinations within subject area classes makes any hidden group effects unlikely. Previous studies have already documented that children receiving the intervention display improved social-cognitive problem-solving skills (Elias et al., 1982). Here, the focus was extended to the mediating impact of these skills on differential levels of coping with stressors and on overall response to training.

Perhaps the area most in need of replication and extension is the use of the self-report Survey of Middle School Stressors as the main criterion measure. Nevertheless, there is evidence that self-reports of stressors are reasonably accurate (Felner et al., 1983). Further, Lazarus and Folkman (1984) state that self-report measures allow for an assessment of an individual's appraisal of the impact of various life events, a construct found empirically at the core of stress and coping processes. Future studies can strengthen the present findings, however, by obtaining ratings of coping from complementary sources, such as school detention records, social behavior ratings on report cards, or peer nominations. Efforts are currently under way to provide just such an extension.

The present findings add to the existing literature in that a social problem solving program was associated with improved coping during a well-documented, stressful life transition. As the program was extended beyond basic instruction in problem solving to include explicit extensive efforts to create maintenance and generalization, its impact was correspondingly strengthened. Even if the effects were found not to persist beyond this initial period, the preventive impact probably justifies the intervention because the middle-school transition has been shown to have a deleterious impact on previously asymptomatic children (Elias et al., 1985; Pumfrey & Ward, 1976; Simmons, Blythe, Van Cleave, & Bush, 1979; Toepfer & Marani, 1980). Further, preliminary evidence links particular aspects of social problem solving to reduced risk for coping difficulties: putting problems into words, selecting goals, thinking that problems can be solved in a variety of ways, and realistically anticipating possible and likely consequences. Taken together, the present results constitute one of the strongest findings to date of the potential preventive value of social problem solving programs, while also suggesting directions to explore for more fully delineating salient program elements.

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