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# Effectiveness of Prevention Interventions With Youth at High Risk of Drug Abuse

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A recent report describes three types of prevention programs: universal, selected, and indicated (Institute of Medicine 1994). Universal prevention approaches are those that serve the entire population who share a general risk to the disorder without regard to specific risk status. Selected prevention approaches serve those whose precursors of problem behaviors are elevated but who have not yet manifested the problem behavior to be prevented. Indicated prevention approaches serve those who have initiated the problem behavior to be prevented but have not yet developed a serious or chronic behavior problem and do not warrant at that time a clinical diagnosis of the disorder according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R or DSM-IV).

The effects of universally applied prevention approaches for substance abuse and other problems are well documented in the literature (Hansen et al. 1990; Hawkins et al. 1992; Moskowitz 1989). Less attention has been given to the effects of prevention approaches with selected youth whose specific characteristics put them at higher risk. This chapter first examines several definitions of high-risk youth and chooses one based on youths' exposure to consistently identified, longitudinal correlates or risk factors for substance abuse. This discussion is followed by a selective review of prevention program research studies chosen for their demonstrated effectiveness of program promise for reducing risk among high-risk populations.

## DEFINITIONS AND ISSUES

Many definitions of high-risk youth have been offered over the last 10 years. Several identify as high risk those youth who have

symptoms of problems other than drug abuse. For example, in 1989 the Office of Substance Abuse Prevention (OSAP) defined high-risk youth as those who are abused, neglected, homeless, runaway, economically disadvantaged, physically or mentally challenged, pregnant, school dropouts, children of substance abusers, or latchkey children (OSAP 1989). The Anti-Drug Abuse Act of 1986 as amended in 1988 defined high-risk youth as children of substance abusers; latchkey children; those eligible for Head Start; those not attending school; and those at risk for various problems other than drug abuse, including child abuse and neglect, school dropout, teen parenthood, and unemployment. In a later definition, OSAP (1990) added conduct-disordered children with social deviancy to its list of high-risk youth.

Race also has been used as a defining characteristic of high-risk youth, with minority youth considered to be at high risk. OSAP (1990) suggested this criterion because of the high levels of poverty, difficult environments, and educational problems often experienced by minority groups. Others have also used the racial criterion in defining high-risk youth. Johnson (1990) noted the overrepresentation of minorities in statistical reports of drug abuse and adverse health consequences of drug abuse. In a report on high-risk youth, Dryfoos (1991) noted that African Americans and Hispanic Americans are more likely than European Americans to be exposed to poverty and poor living conditions and to perform poorly academically. Of African Americans and Hispanic Americans, 51 percent and 47 percent respectively are exposed to these factors, compared with 17 percent of European Americans. Dryfoos noted, however, that a greater absolute number of European Americans experience these conditions because of their much larger population size.

Poverty also has been used as a defining characteristic of high-risk youth because of the number of disadvantages associated with living in poverty. For example, the Children's Defense Fund (1994, p. 3) describes the cumulative disadvantages of poverty by estimating that "every year spent in poverty adds two percentage points to the chances that a child will fall behind in school...[further,] family income is a far more powerful correlate of a child's IQ at age 5 than maternal education, ethnicity, and growing up in a single-parent family." Those who live in poverty are also exposed to other adverse conditions, including availability of drugs, lack of legitimate opportunity, alienation and hopelessness (OSAP 1990), and family conflict and domestic violence (Children's Defense Fund 1994).

The list of possible criteria to define high-risk youth is endless. Although these definitions may be useful for many purposes, there is little rational or empirical basis for choosing among them. This chapter proposes a definition of high-risk youth that incorporates knowledge about those factors identified by research as increasing children's likelihood of developing problems with substance use in adolescence. These characteristics are empirically associated with higher rates of substance abuse in adolescence and provide diagnostic as well as intervention-relevant information.

Much work has been done to identify risk factors for substance abuse over the past 30 years, and several summaries exist (Hawkins et al. 1992, 1995; Kandel et al. 1986). Risk factors are characteristics that demonstrate a prospective relationship with the given disorder in multiple studies (Hawkins et al. 1992; Institute of Medicine 1994). They include environmental factors (availability of substances, community laws and norms favorable to use, extreme economic deprivation, high rates of transition and mobility, and community disorganization); family factors (family history of alcoholism, poor family management practices, parental drug use and favorable attitudes toward drug use, and family conflict); school factors (academic failure and low commitment to school); and individual and peer factors (constitutional factors, peer rejection, early and persistent problem behavior, alienation and rebelliousness, friends who use drugs, favorable attitudes toward drug use, and early initiation of drug use) (Hawkins et al. 1992, 1995).

Causality has not yet been established for all of these risk factors. Some may simply be markers, whereas others may be true causes of substance abuse. If the risk factors are causal, then modifying or buffering their effects may reduce the incidence of later adolescent substance abuse. Only experimental manipulation of modifiable risk factors will reveal their status as causal factors. Nevertheless, these identified risk factors provide a current source of promising targets for prevention (Hawkins et al. 1992; Institute of Medicine 1994).

Before intervening with high-risk populations, two issues must be addressed. The first is how to target individuals for preventive intervention. Strategies include targeting the high-risk individuals (selective prevention) or targeting entire communities in which a high percentage of the residents are exposed to high levels or multiple risk factors, but which also include low-risk individuals (a type of universal prevention). If high-risk individuals are targeted, care must be taken to avoid potential harm from labeling. This problem may be ameliorated if exposure to the risk factor is a problem in itself. For

example, high levels of family conflict, academic failure, or poor family management practices characterized by abuse and neglect are themselves reasons for intervention.

Selecting high-risk community areas for intervention is another approach to targeting. Universal prevention efforts that have focused sample selection on high-risk community areas have shown positive effects on both low- and high-risk youth (Hawkins et al. 1988, 1992; Kellam and Rebok 1992; O'Donnell et al. 1995; Rotheram 1982*b*). Targeting high- and low-risk individuals together has the advantage of enabling high-risk individuals to observe and learn positive behavioral patterns from their low-risk peers. Several studies have supported this advantage. For example, the St. Louis Conundrum reported on the effects of grouping strategies in their intervention with delinquent adolescents (Feldman and Caplinger 1982). Two approaches were employed for intervention: grouping delinquents separately for intervention and grouping delinquents and nondelinquents together. The results suggested that the latter was the more successful strategy to prevent reoffending, and the nondelinquents appeared to be little affected by exposure to delinquent models.

The second issue is that the risk factors used to define high-risk youth can be employed as the targeting factor only, as the focus of intervention, or as both. There are advantages to employing the definition of high risk as both a targeting factor and as an active focus of the intervention. As mentioned above, the dangers of labeling individuals as high risk for future problems are reduced when children with elevated levels of risk factors are selected, if a high level of the given risk factor constitutes a problem requiring intervention. A second advantage of using the risk factor as both targeting factor and intervention focus is that the targeting factor provides valuable assessment information that can be used to determine the course of preventive intervention. It is unfortunate that prevention programs for high-risk youth often ignore the targeting factors when they design their interventions. For example, a program may target children from low-income families but never take steps to improve the earning potential of the children or their parents, delivering instead the same interventions used with children who are not from low-income families.

This chapter defines high-risk youth as those exposed to multiple risk factors or to a high level of a single risk factor for substance abuse. Using this definition, a comprehensive review of interventions would include any intervention, selected or universal, that focused on

children at elevated risk due to exposure to a broad range of factors—community, family, school, peer, and individual. Because such a breadth of review is beyond the scope of a single chapter, this discussion is limited to research-evaluated interventions targeting children of substance abusers (COSAs), who are exposed to multiple risk factors, and those targeting children with elevated levels of the single risk factors academic failure and early antisocial behavior.

## CHILDREN OF SUBSTANCE ABUSERS

Families play a significant role in either preventing or contributing to their children's involvement in adolescent problem behaviors, including substance abuse (Chassin et al. 1993; Hawkins et al. 1992; Yoshikawa 1994). Research shows that children growing up in families where parents abuse substances are exposed to multiple risk factors for substance abuse as well as other problem behaviors (Catalano et al., in press; Chassin et al. 1993; Goodwin et al. 1977; Sher 1991). Family history of addiction is itself only one risk factor and does not condemn the child to a life of addiction. However, many other risk factors may result from the difficult life circumstances of families in which parents abuse substances. Consequently, compared to general population youth, these children's problem behaviors, including involvement in substance use, school misbehavior, and delinquency, begin earlier and at higher rates (Catalano et al., in press).

Many children of substance abusers live in conditions characterized by extreme economic deprivation, social isolation, multiple entrapment, poor living conditions, and parents in low-status occupations (Kumpfer and DeMarsh 1986). These conditions often result in exposure to numerous risk factors, including high rates of transition and mobility and low neighborhood attachment and community disorganization. Family life characterized by trouble with the law, frequent moves, frequent arguments, illness, drug and alcohol use by household members, and abusive relationships make parenting more difficult (Barnard 1989; Mercer 1990; Sher 1991; Spieker and Booth 1988), often resulting in family management problems and family conflict. Substance-abusing parents spend fewer hours with their children per week, have poorer parenting practices, and have more problems in many areas of their lives (Bauman and Levine 1986; Kolar et al. 1994; Sowder and Burt 1978). Numerous studies have found that family conflict characterizes the homes of active substance abusers (Ackerman 1983; Kolar et al. 1994; Kumpfer and DeMarsh 1986; Moos et al. 1979). Finkelstein (1990) reported that women

substance abusers suffer a higher degree of violence. These families are generally disorganized and have few home management skills, low family cohesion, and high stress; suffer financial troubles (Kumpfer 1987; Kumpfer and DeMarsh 1986); and experience elevated discipline problems (Tarter et al. 1993).

Children of substance abusers often experience the individual risk factors of early antisocial behavior, academic failure in elementary school, lack of commitment to school, alienation and rebelliousness, friends who engage in problem behaviors, and favorable attitudes toward substance abuse. Mothers' problems with pregnancy due to inadequate prenatal care and poor prenatal nutrition may lead to constitutional risk factors for the child. Such risk factors include preterm delivery, low birthweight, small head circumference, minor physical abnormalities, and brain damage (Griffith et al. 1994). Other constitutional risk factors may result from drug use during pregnancy, such as genetic susceptibility to problems with substance use or early temperamental and behavioral difficulty (Berstein et al. 1984). Overall, being the child of an alcoholic is negatively related to experiencing positive events and positively related to experiencing negative events (Roosa et al. 1990). Children may develop mental disorders, including depression, emotional problems, relationship problems, and violence (Bernardi et al. 1989; Kolar et al. 1994; West and Prinz 1987).

On the other hand, research with populations exposed to multiple risks has identified subgroups of individuals who negotiate risk exposure successfully. This research has identified factors that protect against risk factors, especially among children of substance abusers (Bennett et al. 1988; Chassin et al. 1993; Garmezy 1985; Hussong and Chassin 1994; Werner 1989). Hussong and Chassin found that children of alcoholics whose families also had high levels of family organization had drug use levels as low as children from nonalcoholic families. Other factors that appear to protect against the risk of drug abuse are attachments to positive adults (Brook et al. 1990; Werner 1989), positive temperament in the early years (Garmezy 1985; Tarter et al. 1993), being female (Chassin et al. 1993), and positive social orientation (Rutter 1985; Werner and Smith 1982).

Prevention programs that attempt to reduce or buffer these children's exposure to specific risk factors while strengthening protective factors hold promise for preventing substance abuse among children of substance-abusing parents. Many programs of this type exist, but few have been evaluated. Examples of unevaluated programs are

Connections, developed and distributed by the U.S. Department of Education, and Kids Like Us Everywhere (KLUE), distributed by the Seattle/King County Public Health Department. Two selection options have been used to work with this population: working with families who have parents in treatment and working with the children of substance abusers only. However, little research has been completed on the effectiveness of programs that intervene with the parents or their children (Falco 1992; Gross and McCaul 1992; Sher 1991). The four interventions reviewed below are among those that have been evaluated and show evidence of short-term success in reducing risks while enhancing protection against substance abuse. Due to the existence of few studies of this nature, some studies have been included despite design weaknesses.

Catalano and associates (in press, under review) report on Focus on Families, a program designed to address the family-influenced risk factors of poor family management, parental drug use and positive attitudes toward use, early antisocial behavior, friends who use drugs, favorable attitudes toward drugs, and early first use. It also addressed the school risk factors of academic failure and low commitment to school. The intervention included behavioral skills training sessions and case-management services. The behavioral skills program consisted of a 5-hour family retreat and 32 twice-weekly, 90-minute sessions (16 weeks) of parent training. Children attended 12 of the sessions to provide families the opportunity to practice skills together in a controlled environment. Training sessions followed a structured curriculum with a cognitive-behavioral approach. The family retreat assisted parents and children to set family goals together, set norms for the group, and complete group bonding activities. The program sessions taught parents skills in preventing and coping with relapse; refusing unwanted drug offers; solving problems; controlling anger; managing their families, including setting limits, monitoring, and imposing consequences on children's behavior; and supporting their children's success at school. Each session provided a review of skills from previous sessions and progress toward family goals. New skills were introduced and then practiced using role-plays, which were videotaped, viewed, and discussed in the group. Home practice assignments were given at the end of each session. The program was delivered by master's-level therapists in a group setting at the methadone clinics with 8 to 10 families per group. Case managers provided home-based services to families to help them maintain and generalize the skills they had learned, assist in crises, and provide other services. Referrals to other services were made if necessary. Case managers conducted a comprehensive needs assessment with families and spent 5 to 10 hours each month per family for 8 months,

including the 4 months during the parenting group and 4 months after group completion. They encouraged families to use program tools such as holding family meetings, increasing opportunities for each member's family involvement, and increasing opportunities for children to be involved in prosocial activities outside the family.

Parents were recruited from two methadone treatment programs in Seattle, Washington. Of those who were identified as eligible and invited to participate, 78 percent consented and completed baseline interviews. These parents were randomly assigned into one of two conditions: either the methadone treatment program plus the supplemental parenting program (N = 82), or the standard methadone treatment alone (N = 62). At posttest, 135 (94 percent) families were interviewed (77 experimental and 58 control); 9 were unavailable (5 experimental and 4 control). At immediate posttest, approximately 1 to 4 weeks after the conclusion of the skills training group, parents in the experimental group showed significant reductions in family risk factors compared to those in the control group, including an increase in parent-child involvement in family meetings to plan fun activities and a reduction in frequency of parental opiate use. Parents' opiate use was verified on a 25 percent random sample of experimental and control subjects selected for urine analysis. There were no differences between groups in truthful reporting of drug use in this subsample. The impact on parent risk factors is promising, but full assessment of the impact of the program on child risk factors and drug use awaits analysis of 6-month followup data still in progress.

Kumpfer and DeMarsh (1986) and Kumpfer (1987) reported on the Strengthening Families Program, which addressed the family risk factors of family management problems, family conflict, alienation/rebelliousness, and antisocial behavior. Parents in mental health and methadone treatment and their children participated in the study, although the program did not explicitly address parents' drug use. Participants focused on identifying and reducing their children's problem behaviors and increasing the number of positive interactions with their children. The full intervention consisted of 14 parent training sessions using a structured curriculum, parent manuals, and homework exercises. Children attended the last four sessions, and during this time parents developed and began to implement a behavioral change program with their children.

Using a quasi-experimental dismantling design, the investigators conducted three intervention groups: (1) the full Strengthening Families Program, (2) a group with 14 sessions of parent skills training only, and (3) a group with parent and child training offered

independently during the same period of time. Fifty-eight families were recruited into the study and assigned to the three conditions. A battery of family assessment measures were administered before and after the 14-week intervention. The instruments included a parent questionnaire, a child questionnaire, the Achenbach Child Behavior Checklist (Achenbach and Edelbrock 1983), and the Moos Family Environment Scale (Moos 1974). The authors stated that the Strengthening Families Program was the most effective of the three conditions; however, there is no published report explicitly comparing the outcomes across the three conditions. Comparisons made between baseline and immediate postprogram within the Strengthening Families Program group showed significant improvements in the clarity of family rules, increased knowledge of child behavior management principles, and increased family communication of problems. Parent reports of child behaviors also showed significant changes, with less impulsive behavior and fewer behavior problems at home. Children reported improved peer relations and a decrease in intention to smoke and drink. These findings are promising, although they are based on change within the Strengthening Families Program condition only (DeMarsh and Kumpfer 1985). This study has several methodological problems, which include the lack of comparisons between conditions, small sample size (fewer than 20 in each condition), unknown equivalence between conditions, and lack of longitudinal followup data.

Roosa and colleagues (1989, 1990) evaluated the Stress Management and Alcohol Awareness Program (SMAAP). The intervention was based on the stress process model, which posits that high-stress environments contribute to mental health problems. This program taught children of untreated alcoholics skills and strategies for dealing with stress and how to buffer the effects of living with a drug-using parent. The risk factors addressed included parental drug use and positive attitudes toward use, and early first drug use.

The study was conducted in three low-income elementary schools with a high percentage of Hispanic students. Reporting on subject recruitment is somewhat unclear, although the method appears to be self-referral. The film *Lots of Kids Like Us* was shown at the schools for interested students in fourth, fifth, and sixth grades. Those who expressed an interest were invited to a second meeting later the same day. Approximately two-thirds of the students who viewed the film attended the followup meeting, and about one-third of these children (N = 81) obtained parental permission and were randomly assigned to the intervention (N = 26) or the control (N = 55) condition.

Sessions were conducted 1 hour a week for 8 weeks at the school site, with six to eight students led by two group leaders. One group leader was a graduate student member of the research team and one was a teacher or social worker from the host school. Specific coping, self-esteem, and social support skills were taught using didactic presentation, group discussion, class exercises, videotape demonstration, role play, and homework assignments. Children at one of the schools (N = 10) also received services from a “personal trainer.” Personal trainers were undergraduate students who had received intensive training. They spent 3 to 4 hours a week helping each child develop a skill of the child’s own choosing.

A self-report pretest assessment was conducted 1 week before the intervention, and a posttest assessment was completed 3 weeks after the intervention. Teachers also provided a brief report on children’s classroom behaviors. Children involved in the program reported a greater increase in positive coping strategies taught by the curriculum, compared with students in the control condition. There was a trend-level difference in help-seeking behavior and a significant difference in the use of problem-focused and emotion-focused coping strategies. Teachers reported a trend toward less moodiness among experimental subjects. There was also a trend toward decreased depression for those involved with the SMAAP curriculum. The results are promising but should be interpreted with caution, because followup data and specific risk factor and drug use outcome data are lacking. A more rigorous test of an enhanced curriculum is currently being conducted with over 200 children in 13 schools (Roosa et al. 1990).

Gross and McCaul (1992) reported on the COSAs risk reduction intervention, which was provided to a group of urban, primarily minority public school children aged 11 to 18 whose parents were substance abusers. The program consisted of 13 weekly 1-hour sessions to provide social support and enhance drug resistance skills. All sessions were led by professional counselors. The support component included group and individual support, and the resistance skills training utilized Botvin’s Life Skills Training curriculum, adapted for African American low-income students.

The quasi-experimental research design assigned 75 children with a family history of alcoholism to the intervention group and 33 youth at risk for dropout who reported no parental substance abuse to the control group. Data were collected at baseline, immediately after the group sessions, and 1 year after program completion. Primary outcomes measured were depression, self-esteem, and self-reports of drug abuse. Only 35 (22 program, 13 controls) of the initial sample

of 108 students participated in the followup data collection activities. There were no changes at posttest nor at 1-year followup on any of the measures. The study suffers from many methodological problems, including small sample size, large and differential attrition, measurement problems, nonrandom assignment, and comparison group differences on parent substance abuse.

In summary, prevention interventions for children of substance-abusing parents hold promise, but more studies are needed that employ rigorous research designs to evaluate the outcomes of such prevention programs. The four prevention program evaluations reviewed above illustrate the need for stronger experimental designs. Only one study (Catalano et al., under review) offered an experimental demonstration of effectiveness in reducing risk factors, and this study has so far examined only immediate posttreatment effects on parent risk factors. Most evaluations were plagued by multiple methodological problems, including nonrandom assignment to study groups without demonstrating equivalence at baseline, small sample sizes, lack of long-term followup assessments, and followup attrition. The paucity of research on preventive interventions with COSAs is disturbing, given the substantial risks these children face.

## EARLY ANTISOCIAL BEHAVIOR

Both universal and selective interventions have shown effects on high-risk youth defined by high levels of the risk factor early antisocial behavior. They include individual, parent, and comprehensive (school/family/individual) interventions. Most of these studies have selected children with conduct disorders as their subjects.

Lochman and Curry (1986) reported a study that targeted the risk factors of early antisocial behavior, peer rejection, and academic failure. This study looked at the impact of two cognitive behavioral treatments on these risk factors. One treatment consisted of an 18-session anger-coping intervention that included a 12-session anger-coping program followed by 6 sessions on interpersonal problemsolving. The other treatment consisted of 6 sessions from Kendall's self-instruction training program (Padawer et al. 1980) on interpersonal problemsolving and academic tasks, followed by the 12 anger-coping sessions.

Fourth- and fifth-grade teachers at four different schools identified the most aggressive and disruptive boys in their classrooms. Using a

comparison group design, the 20 boys selected were assigned to the two intervention groups; boys at two of the schools were assigned to one treatment, whereas boys at the other two schools were assigned the other treatment. The subjects included 10 African American boys and 10 European American boys with average achievement scores on the California Achievement Test (CAT) at the 50th percentile, indicating that they also had elevated levels of the risk factor academic failure. Subjects in the two conditions were not significantly different on their CAT total score or on their Cognitive Abilities Test Verbal IQ score. Data were collected 2 weeks prior to the beginning of the intervention and again during the 3 weeks following completion of the intervention. In both conditions, parents reported a decrease in their children's aggressive, disruptive behavior. However, parent data rating aggression were incomplete, limiting this finding. An increase in classroom on-task behavior and a small increase in social competence were also reported. No academic gains were reported, possibly due to the short followup period and small sample size reported in this study. The internal validity is also compromised by the lack of random assignment to both conditions.

Rotheram (1982a) reported on a universal program intended to reduce the risk factors of antisocial behavior and peer rejection by increasing children's assertiveness and enhancing positive social contacts. The intervention demonstrated effects with high-risk groups defined by high levels of early antisocial behavior and underachievement. All fourth- and fifth-grade students (N = 343) were randomly assigned by classroom to experimental (assertiveness training) and no-treatment control conditions. The 24-session assertiveness training focused on problemsolving skills, impulse control, and social skills and utilized both didactic and role-play exercises. Immediately following the intervention there were significant increases in assertiveness among experimentals compared with controls based on teacher and objective observer ratings. There were no significant differences between experimental and control subjects in terms of self-reported measures of self-esteem and peer ratings of popularity. The program also had significant effects on academic performance, including improvements in grades and in achievement ratings by teachers. Extended analyses (Rotheram 1982b) showed that the intervention was successful in reducing risk among high-risk groups, including increasing peer popularity among underachievers and increased academic achievement among disruptive students. The program was also successful in reducing antisocial behavior among both underachievers and disruptive students. The evaluation was limited by examining only immediate posttest

outcomes. Further, random assignment was at the classroom level, whereas the outcome analyses focused on individuals.

Several selective prevention interventions for reducing antisocial behavior have focused on the family or parents. Webster-Stratton's early work (1984) showed promise in teaching parents to reduce early antisocial behavior in their children. Families with conduct-disordered children were randomly assigned to one of three conditions: individual therapy (N = 11), group therapy with videotape modeling (N = 13), or a wait list control group (N = 11). Both experimental interventions sought to increase parents', primarily mothers', family management skills and positive parent-child patterns of interaction and to reduce antisocial behavior among the children. The content of the two experimental conditions was similar. Both included family management training, e.g., limit setting, nonviolent discipline, and positive reinforcement; lessons in parental self-control; and parent-child involvement in play. The two conditions differed primarily in their use of individual versus group therapy and in the group's use of videotaped vignettes demonstrating positive and negative interactions between parent and child. Although the sample was small (N = 35), both experimental conditions showed short-term (1-month followup) changes compared to the wait list controls, and the experimental groups had maintained these changes at 1-year followup. These included changes in parental attitudes and behaviors as well as reductions in antisocial behaviors among the children. Webster-Stratton concluded that both the individual and the group approaches were effective, but that the cost of the group-led video condition was much less than individual treatment.

More recently, Webster-Stratton (1992) experimented with an individually administered videotape modeling parent training program for parents with conduct-disordered children. In this program no therapists were involved. Parents (N = 100) were randomly assigned to view videotapes or to a wait list control group. At immediate postintervention, experimental parents reported using less physical discipline and observing less antisocial behavior among their children than did control parents. Furthermore, home observations revealed more positive parent-child interactions. Self-report and objective data were collected only from experimental subjects at 1-year followup. Changes in parenting practices were maintained, and children's behavioral problems continued to improve. Although there was no comparison group assessment at the 1-year followup, the maintenance of effects by experimental subjects suggests the promise of videotaped training as a cost-effective technique for training parents of children with conduct disorders. Full assessment of the

efficacy of the intervention at 1-year followup would require the use of a comparison or control group not receiving the intervention.

Strayhorn and Weidman (1991) evaluated a different approach to training parents with preschool children who had exhibited emotional or behavior problems. Their approach included both the children and parents in the program, attempting to increase family management skills and decrease children's antisocial behavior. The curriculum included four or five 2-hour group sessions that addressed reinforcing children's behavior with positive and negative consequences as well as problemsolving responses to problem behavior. Children and parents also had practice play sessions to enable parents to apply the skills they had learned. Ninety-eight low-income families (105 children) were randomly assigned to treatment or a minimal treatment intervention. Parent ratings of approximately 80 (76 percent) children available at 1-year followup showed little difference between the experimental and control group. However, a subsample of the older children in school (N = 56) were also rated by teachers who were blind to experimental condition. Controlling for baseline levels of the same behavior, teachers rated experimental subjects as having lower levels of hyperactivity, attention deficits, and antisocial behavior. The intervention's failure to change parents' behavior or their perceptions of their children's problem behavior is disappointing, but may partially be explained by low parent involvement in the program. For instance, 12.5 percent of the parents did not attend a single session, and 35 percent did not complete the training exercises. The results were also compromised by the high attrition rate and lack of attrition-by-condition comparison. The teachers' more promising reports were based on a select subsample not randomly assigned to condition and must be interpreted with caution.

Hughes and Wilson (1988) also focused on parents of conduct-disordered children. Forty-two parents were randomly assigned to receive contingency management or communication/problemsolving skills training or to a wait list control condition. Within each treatment condition, half of the children were assigned to participate directly in the program. The contingency management condition was designed to increase monitoring and reinforcement by parents. The communication/problemsolving skills training incorporated role-play techniques to teach basic communication skills as well as problemsolving skills requiring consideration of both the parent's and the child's perspective. The analysis consisted of a 2 (contingency management versus communication skills training) x 2 (children present versus absent) x 2 (pretreatment versus posttreatment) repeated measures design. Immediate posttreatment comparisons

showed significant reductions in antisocial behavior among subjects in both treatment groups compared to the control group. Although the contingency management group had the greatest reduction in problem behavior, there was little discernible difference in outcomes between the contingency management and the communication skills group, and no statistically significant differences were reported between conditions that included children and those that did not. The power of this intervention to produce statistically significant differences between groups with a very small N is promising. However, further evaluation of long-term followup and objective measures of parent and children's behavior are needed. Given the small sample size and lack of replication, it seems premature to suggest that contingency management is equivalent to communication skills training or to reject the utility of including children in the intervention.

Dadds and colleagues (1987) report on a family-focused intervention that attempted to decrease antisocial behavior among conduct-disordered children. This program focused on the role of marital discord in treatment outcomes. Parents (N = 24) with and without marital problems were assigned to contingency management training or contingency management training plus a relationship-building (parent-parent and parent-child) component. Risk factors addressed included antisocial behavior, family management, and family conflict. The contingency management training consisted of instruction in the use of praise and consequences in response to five behaviors including aggression and defiance. The relationship-building component consisted of marital conflict resolution, communication, and problemsolving skills. All groups improved from pre- to posttest on children's antisocial behavior, parent-child involvement, and marital satisfaction, but there were few differences between groups. Parents having marital discord problems at baseline were least likely to respond positively to treatment as defined by a 50 percent reduction in deviant child behavior and maternal aversiveness since baseline, and the relationship-building component of the intervention did little to overcome marital discord. However, the small sample size provides power to detect large effects only and may mask small or moderate effects.

Tremblay and colleagues (1992) evaluated a selective prevention program that combined parent training with children's social skills training to prevent disruptive children from becoming involved in antisocial behaviors. Specifically, the program sought to address the following risk factors: poor family management, peer rejection, academic failure, and early antisocial behavior. Boys identified as being disruptive in kindergarten were randomly assigned to treatment

(N = 46), attention but no actual treatment (N = 84), or an observation-only control condition (N = 42). Children assigned to the treatment condition received school-based social skills and self-control training and a home-based program that trained them to recognize aggression and make nonaggressive choices. For parents, the intervention offered parent training in family management techniques including monitoring, positive reinforcement, appropriate punishment, and how to manage family crises. The results at 1-year followup showed lower levels of academic failure, less delinquency initiation, and evidence of reduced aggression among the children in the treatment condition. There was no apparent impact on parents' monitoring of children's behavior or on parents' disciplinary behaviors. This may be partially explained by the lack of parental participation in the program. Although a maximum of 46 parent training sessions were offered over 2 years, families attended an average of only 17 sessions. Another limitation of the program was the lack of objective measures of parents' and children's behavior. However, the program is a promising approach to protecting disruptive boys from problem behaviors.

Kellam and Rebok (1992) reported on a comprehensive program evaluation that took a universal preventive approach focused on elementary school students. Although the program did not focus solely on high-risk youth, it was effective with youth who had elevated levels of early aggressive behaviors. The study matched 19 schools and randomly assigned them to the experimental and control conditions. The program sought to address academic failure and early aggressive behavior. First grade students in the experimental schools received a "mastery learning intervention" and a "good behavior game intervention." The mastery learning intervention was a group approach to learning in which at least 80 percent of the students had to meet the criteria before the class moved on to a new topic in each subject. The good behavior game intervention was a team-based behavior management strategy in which individual good behavior was cumulated for the group as a whole, and the group was rewarded when it reached threshold levels of good behavior. The program was successful in reducing aggression among the experimental subjects compared to controls. When aggressive children were examined separately, the largest decreases in aggression were found for children in the experimental group, who were rated as most aggressive by teachers and peers at baseline. Furthermore, academic benefits on CAT reading scores were significantly improved for low-achieving boys in the experimental group compared to low-achieving boys in the control group (Dolan et al. 1993). These results are promising. However, a methodological shortcoming is that random assignment

was made at the school level, whereas the group differences were analyzed at the individual level. Tests of this type of intervention without this methodological shortcoming are warranted.

In summary, a variety of program strategies to reduce risk factors for substance abuse among high-risk youth defined by elevated levels of antisocial behavior have shown promise, including individual, family-focused, and comprehensive programs. A number of methodological limitations appear throughout the evaluations, tempering their findings and indicating the need for replication without the design flaws noted. However, taken as a whole, the evidence is much stronger and the methodological problems far fewer for these interventions compared to prevention interventions with children of substance abusers.

#### ACADEMIC FAILURE

Both universal and selective interventions have shown risk-reduction effects on high-risk youth defined by high levels of the risk factor academic failure. Academic failure is frequently accompanied by low socioeconomic status, adding to the risk that low-achieving students will ultimately develop problems. Following is a summary of promising selective and universal interventions.

Coie and Krehbiel (1984) reported on an intervention designed to target selected students who were experiencing academic failure and peer rejection. Forty African American third grade students who were identified by their classroom teachers as socially and academically troubled were chosen to participate in the project from seven different schools in a large urban center in the South. These students had also scored as socially rejected on a sociometric test given to all students and had scored at or below the 36th percentile on the CATs in reading or math.

The students (29 boys and 11 girls) were assigned to one of four groups: (1) academic skills training (AS), (2) social skills training (SS), (3) a combined academic and social skills training, or (4) a no-treatment control condition. Before the intervention began, each child was observed in the classroom for two 30-minute intervals at least 2 days apart. Children were observed by trained observers for on-task and off-task behavior and social interactions. The reported observer rate of agreement ranged from 0.88 to 0.99.

The two intervention groups that included academic skills consisted of 45-minute tutoring sessions with individual tutors, twice a week, from October to April. Tutoring was designed to promote self-efficacy and self-confidence, as well as academic skills. The social skills training was conducted by advanced undergraduates trained in methods identified by Oden and Asher (1977). Six weekly sessions emphasized participation, cooperation, communication, and validation. During these sessions, a target child was paired with another child from the classroom and coached in positive behavior before and after the sessions. After these six weekly sessions, students were divided into four same-sex groups which met after school for 6 weeks. One of the individual trainers and a clinical psychology graduate student were paired up as leaders for each group. Using group games and videotape, different components of group interaction were observed and discussed every week.

Postintervention and 1-year followup data were collected to evaluate the effectiveness of the intervention. The analysis strategy examined the dependent variables at both timepoints using a 2 x 2 (academic skills x social skills) analysis of covariance. At postintervention there were significant effects in reading comprehension and mathematics computation for the academic skills group and marginal effects for reading vocabulary and mathematics application. The academic skills group showed improvement in social standing and were observed to increase individual on-task behavior in the classroom. Immediately after the intervention, the social skills group showed significant effects in reading comprehension only. At the 1-year followup, the academic skills group maintained gains in reading vocabulary, reading comprehension, and social status, whereas there were no main effects detectable for the social skills group. No additional effect was observed when the academic and social skills programs were combined. This study was limited because of its small sample size, which may have masked moderate to small effects. In addition, only 28 of the 40 students were available for achievement tests, and 32 for sociometric data, at the 1-year followup, further limiting conclusions from this study.

Comer (1988) evaluated the Yale-New Haven Primary Prevention Project, which involved two elementary schools (N = 350 and 300) in New Haven in an intervention program designed to empower all of the people involved in the educational process to improve the academic and social competence of students. Although the intervention reported was universal, this study targeted entire schools at risk, much like the selected interventions reviewed above. The schools selected had the worst attendance rates, and their students

ranked lowest in the district for reading and math on standardized tests. Risk factors addressed included academic failure and early antisocial behavior.

The intervention brought parents, teachers, students, and mental health leaders together through the use of several key components. First, a school advisory council worked as a team to manage problems pertaining to school social climate, the academic curriculum, and staff development. The second component, parent participation, was encouraged through parent representation on the school advisory council, part-time employment opportunities at school, and volunteer activities. In the third key component, mental health teams were developed to provide assessment and treatment planning for children referred for academic or behavior problems. Finally, an academic curriculum and staff development program were developed based on actual student achievement and concerns from school staff and parents. The program was evaluated by comparing these schools to the district average and determining if children's scores were at grade level on standardized tests. Results indicated that children's reading and math scores improved from 18 to 19 months behind grade level to on par with grade level on the Iowa Test of Basic Skills. Limitations of the study include lack of random assignment to a control group, baseline differences between study and comparison groups, and no reporting of attrition.

Hawkins and colleagues (1988) reported the effects of the Seattle Social Development Project, a comprehensive, universal, school-based intervention on a subgroup of high-risk seventh grade children. The main study included five middle schools; students and teachers within three schools were randomly assigned to either control or experimental classrooms and all of the students and teachers in the other two schools were assigned to either the control or experimental condition. After assignment, the total sample included 513 experimental students and 653 control students.

The intervention included three instructional methods implemented in all experimental classrooms aimed at addressing the risk factors for academic failure, commitment to school, and antisocial behavior. The three instructional interventions included proactive classroom management, designed to increase learning time and reduce classroom disruptions; interactive teaching, designed to foster student motivation and involvement; and cooperative learning, designed to foster learning through enhanced social skills and cooperation in teams on academic tasks. Experimental teachers received training in the three methods before the school year began and in three booster

sessions during the school year. In addition, experimental teachers each month received coaching in the three instructional methods. During the year, both experimental and control classrooms were observed using a minute-by-minute system to record implementation of instructional methods and student behavior.

To examine the effects of this program on low achievers, a subsample of students who scored in the lower three stanines on the CAT was constituted. The subsample included 77 experimental students and 83 control students. Results indicated no differences on achievement, but experimental students increased their commitment to school, had higher expectations for future education, and reduced their antisocial behavior as indicated by school suspensions. Findings have some limitations due to assignment at the classroom and school level and analysis completed at the individual level.

Slavin and colleagues (1990) reported on Success for All, a universal school-based intervention that addressed academic achievement. This study was implemented in grades K-3 in an inner-city elementary school, and a neighboring school with similar demographics was used as a control/comparison school. It is not clear how schools were chosen or assigned to treatment and control status. The approximately 300 students in the intervention school target grades received the multicomponent program, including reading tutors to provide one-on-one help for students, reading aids to assist teachers in the classroom, cooperative learning groups with children at the same ability level, and parent education-support teams to encourage parents to get involved in their child's education. At 1-year followup, combined results for grades K-3 indicated reading performance was higher among the intervention students compared with the control students, with an average effect size of +0.50. Separate analyses for those who were academically in the lowest 25 percent indicated that, for reading, these students improved more than the overall population, achieving an average effect size of +0.65. No information on attrition was presented. An additional flaw to the internal validity of the design is the nonrandom assignment to intervention and control conditions.

In summary, there are a number of models of successful interventions targeting children at high risk for substance abuse due to elevated levels of the risk factor academic failure. Both selective and universal types of interventions were reviewed and showed promise to reduce risk among high-risk youth. Further research to replicate findings is indicated due to several methodological flaws in the studies.

## CONCLUSIONS

This chapter sought to review the impact of prevention programs on youth at high risk for substance abuse. To do this, definitions of high-risk youth were reviewed and a definition of high-risk youth was proposed for use: exposure to multiple identified risk factors or to an elevated level of one such risk factor. This definition has a distinct advantage over other definitions. It is based on factors that have consistently shown empirical relationships to increased levels of substance abuse in longitudinal studies, and it provides diagnostic- and intervention-relevant information.

This approach not only provides a useful definition of high-risk youth, it also broadens the number of interventions that have the potential to reduce the risk of substance abuse. Because of this, volumes would be needed for a thorough review. This chapter was limited to three groups of studies, each examining the risk-reduction effects of preventive interventions on a different group of high-risk youth: children of substance abusers who are exposed to multiple risk factors, youth with high levels of the single risk factor early antisocial behavior, and youth with high levels of the risk factor academic failure.

The reviewed studies demonstrate the promise of prevention programs for youth at high risk of substance abuse. In each of the three areas, programs have been evaluated with experimental or quasi-experimental designs. Results have shown at least short-term reductions in risk factors. Risk reduction effects on high-risk youth have been demonstrated by prevention approaches that select for intervention only those at high risk and by prevention interventions universally applied. Interventions that have shown effects have focused on individuals, families, and comprehensive approaches including individuals, families, and school personnel in intervention delivery.

Of importance is that the preventive interventions reviewed here do reduce risk to problem behaviors. With one exception, the existing studies have not examined substance use by children who are the subjects of study. This often results from short followup periods in studies with young subjects as well as from addressing risk factors without an explicit focus on substance abuse outcome. The risk reduction approach broadens the potential to examine an array of preventive interventions to influence multiple problem behaviors among high-risk youth. However, investigators should be encouraged

to measure multiple problem behavior outcomes as well, including substance use, in order to fulfill the potential of such an approach. If results are demonstrated on risk factors, studies must be sustained to track subjects and collect long-term followup data in late adolescence and early adulthood. This is necessary in order to investigate effects on substance abuse that are not likely to occur until these later years for large proportions of high-risk populations.

Most of the evaluations of prevention programs have some type of methodological flaw. The most serious are lack of random assignment, short followup periods, and analysis of data at a level different from subject treatment condition assignment. These flaws need to be addressed by both investigators and funding agencies, who must demand high design standards and longer followup periods for preventive interventions that demonstrate their promise through short- and medium-term risk reduction.

Finally, comprehensive efforts to review interventions for youth exposed to multiple risk factors or high levels of a single risk factor are needed. These efforts will be aided by reviews conducted in other substantive areas, since risk factors for substance abuse touch many other areas of investigation, including normal adolescent development, school dropout, teenage pregnancy, delinquency, and youth violence. Such reviews will assist the field in choosing effective risk-reduction approaches to investigate further for their effectiveness in reducing substance use and abuse.

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