FAMILY-BASED PREVENTION COUNSELING FOR HIGH-RISK YOUNG ADOLESCENTS: IMMEDIATE OUTCOMES

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Family prevention counseling, which features customized prevention planning for individual families, is a promising approach for preventive intervention with adolescents at high risk for substance abuse and conduct disorder. A randomized study (N = 124) tested the post-intervention efficacy of an indicated, family-based prevention model with a sample of inner-city African-American youths (ages 11–14). Key risk and protective factors associated with the development of drug use and antisocial behavior were targeted in four domains: self-competence, family functioning, school involvement, and peer associations. Compared to controls, participants in family prevention counseling showed gains in global self-worth, family cohesion, and bonding to school, and a decrease

in peer antisocial behavior. The potential utility of family prevention counseling within a unified prevention framework is discussed. © 2002 John Wiley & Sons, Inc.

Family-based programs for preventing the initiation and escalation of drug use and antisocial behavior by adolescents have increased in number and visibility over the past decade (Ashery, Robertson, & Kumpfer, 1998; Hogue & Liddle, 1999). Family-based prevention seeks to promote healthy functioning in children primarily through addressing the risk and protective factors that characterize their parents and families. Parent and family characteristics that pose the greatest risk for antisocial behavior include deficiencies in parental monitoring and discipline (Dishion & McMahon, 1998), high rates of conflict and low rates of communication and problem-solving (Newcomb & Felix-Ortiz, 1992), lack of parental investment in and attachment to their children (Brook, Whiteman, Nomura, Gordon, & Cohen, 1988), and parental history of drug use and antisocial behavior (Hawkins, Catalano, & Miller, 1992). Conversely, positive family socialization processes can exert a protective influence. For example, parenting styles that feature age-appropriate levels of warmth, behavior management, and psychological autonomy granting serve as buffers against behavior problems in adolescence (Baumrind, 1985). Also, strong familial attachments generally heighten resilience against harmful outcomes (Resnick et al., 1997).

Research on the efficacy of family-based prevention models offers credible support for this approach. There is evidence of prevention effects across several family-based intervention models: parenting skills workshops (Kosterman, Hawkins, Spoth, Haggerty, & Zhu, 1997; Spoth, Reyes, Redmond, & Shin, 1999), parent training alone and combined with child skills training (Dishion & Andrews, 1995; Tremblay, Pagani-Kurtz, Masse, Vitaro, & Pihl, 1995), and family skills training (Kumpfer & Alvarado, 1995; Spoth et al., 1999). Moreover, empirically supported family prevention programs have been promoted and disseminated at the national level (National Institute on Drug Abuse, 1997; Substance Abuse and Mental Health Services Administration, 1998). Comprehensive reviews of the family-based prevention approach describe commonalities and distinctions that exist among various models and offer critical analysis of the extant research base (Ashery et al., 1998; Hogue & Liddle, 1999; Kumpfer & Alvarado, 1995).

Like all mental health prevention programs, family-based programs are categorized according to the level of risk evidenced in the targeted population (Institute of Medicine, 1994). *Universal* preventions are thought to be desirable for everyone in the eligible population and are implemented with no assessment of individual risk (e.g., mass media campaigns, school-wide educational curricula). *Selective* preventions target subgroups identified as "at risk" based on biological, psychological, or social risk markers with empirically established links to future disorder (e.g., children of substance abusers, youths residing in high-crime neighborhoods). *Indicated* preventions target persons identified as "at risk" based on specific risk indicators derived from individual assessment of behavioral functioning (e.g., conduct problems, internalizing symptoms, early onset alcohol use). Indicated preventions are intended for individuals with detectable problems or symptoms who do not meet diagnostic criteria for mental disorder.

Contemporary prevention theories favor a stratified, assessment-based strategy for determining the scope and intensity of prevention programs offered to targeted populations. According to this strategy, known as a "unified" or "multiple gating" model of prevention (Brown & Liao, 1999; Dishion, Kavanagh, & Kiesner, 1998), individuals within a target population are screened for the presence of known risk and protective factors salient for the disorder being prevented. Then, individuals with high-risk profiles—a greater number of risk factors, or risk factors of greater severity—are targeted to receive selective or indicated preventions that provide more intensive and multifaceted services. In some cases, prevention programs will initially implement a universal model and then look to implement an additional selective or indicated model for subgroups of participants who demonstrate greater need (Dishion, Andrews, Kavanagh, & Soberman, 1996).

Currently, family-based prevention models that target selective and indicated populations are far less prevalent than those targeting universal populations (Tolan, 1996). This may be due in large part to the greater demands of implementing prevention programs for high-risk youth and families. Recruitment of parents and families, which is a major hurdle for family-based approaches in general, is especially difficult within high-risk populations (Tolan & McKay, 1996). Economically disadvantaged and other high-risk families encounter numerous logistical and financial barriers to participation in prevention programming, and they tend to have less involvement in their children's extrafamilial activities and less confidence in using supportive resources (Prinz & Miller, 1996). Also, the additional complexities involved in coordinating programs for high-risk families are considerable. High-risk families typically experience stressors in multiple social contexts, so that comprehensive and intensive interventions are needed to produce gains (Tolan, Guerra, & Kendall, 1995). Moreover, there is wide diversity in the nature and number of family weaknesses and strengths exhibited, which complicates the task of designing a structured, content-specific curriculum that is relevant to all intended participants (Cunningham, 1996). Finally, high-risk youths frequently present nascent emotional and behavioral issues that require higher-level clinical training and skills on the part of the interventionist (Tolan, 1996).

One promising strategy for meeting the diverse needs of high-risk families is the individualized counseling approach (Hogue, Liddle, & Becker, in press). Prevention models that are predicated on customized intervention planning appear to be well suited for working with high-risk populations. In contrast with standard psychoeducational models, individually tailored models employ a flexible intervention format that features (a) sessions held primarily in one-to-one (versus group) settings, (b) assessment of the unique profile of intervention needs and goals for every client, and (c) collaborative formulation of the intervention plan. This format has many potential benefits for prevention work with high-risk families: It promotes specification and monitoring of a family-specific prevention agenda, allows each family member to articulate personally relevant goals, and provides opportunity for interaction between intervenor and family around multiple issues.

Only a very few studies have tested the efficacy of a customized family prevention model for high-risk youths. Most notably, Fast Track (Conduct Problems Prevention Research Group, 1999) demonstrated prevention outcomes for a national, ethnically diverse sample of high-risk first-graders. The high-risk sample received, among other interventions, home-based family counseling that included biweekly sessions and weekly phone contacts. In comparison to controls, high-risk families reported improvements in parental functioning (warmth and positive involvement, use of discipline, parenting

self-efficacy and satisfaction, and school involvement) and child functioning (emotional and social coping skills, language skills, peer relations) over one year. At least two family-based prevention counseling models have targeted high-risk adolescents. Catalano and associates (described in Bry, Catalano, Kumpfer, Lochman, & Szapocznik, 1998) developed an intensive counseling prevention for children of substance users that includes a 5-hour family retreat, a 32-session parent training module, and a 9-month home-based case management module. A controlled study revealed several gains for intervention families in parent outcomes (e.g., relapse prevention, family management skills) but few effects in child outcomes, especially with young adolescents. Santisteban et al. (1997) found that brief structural/strategic family counseling (12–16 sessions over 4 to 6 months) reduced early-stage behavior problems and improved global family functioning in a sample of indicated-risk, inner-city African-American and Hispanic young adolescents. However, the strength of these results is uncertain in the absence of a control group.

The current study describes the initial demonstration trial of a family-based prevention counseling model for indicated-risk adolescents, multidimensional family prevention (MDFP; Liddle & Hogue, 2000). The ultimate goal of MDFP is prevention of clinically significant drug use and antisocial behavior in high-risk youth. MDFP attempts to achieve this ultimate goal by means of two intermediate intervention goals for every family: helping adolescents achieve an interdependent attachment bond to parents and family, and helping adolescents forge durable connections with prosocial influences such as schools, prosocial peer groups, and recreational and religious institutions. Regarding bonding to the family, MDFP seeks to help parents and adolescents negotiate a changing but continuing attachment that respects both the autonomy and connectedness needs of adolescents (Silverberg & Gondoli, 1996). Solid parent–adolescent attachment bonds, coupled with age-appropriate parental controls on behavior, provide a secure base from which adolescents can build psychosocial competency and self-reliance (Baumrind, 1991). Evidence suggests that close family relationships are associated with numerous indicators of adolescent well-being and competence (Resnick et al., 1997). Regarding bonding to prosocial influences, it is well known that school disengagement and failure are linked to drug use and delinquency (Steinberg, Fletcher, & Darling, 1994). Social alienation and limited access to meaningful roles in the community are also risk factors for substance use (Steinberg, 1991), and association with antisocial peers is consistently the most powerful precursor of drug use and other behavioral problems (Chassin, Pillow, Curran, Molina, & Barerra, 1993; Tate, Reppucci, & Mulvey, 1995). In contrast, self-competence and positive values (Leffert et al., 1998), academic success and investment in school (Steinberg, Elmen, & Mounts, 1989), involvement in extracurricular activities (Mahoney & Cairns, 1997), and association with prosocial peers (Parker, Rubin, Price, & DeRosier, 1995) are considered developmental assets that insulate adolescents against behavioral problems (see Leffert et al., 1998).

This study is among the first to evaluate a family-based prevention counseling model on a sample of high-risk, inner-city young adolescents. The study sample was recruited from a community-based youth program as part of a pretest–posttest intervention design that included a randomized control group. The ultimate goal of MDFP is prevention or delay of substance abuse and antisocial behavior in middle and late adolescence. As a means to this end, MDFP seeks to reduce risk factors and enhance protective factors in four domains of functioning that represent major mediational influences on the long-term development of adolescent drug and behavioral disorders:

adolescent self-competence, family functioning, adolescent school involvement, and adolescent peer associations. Thus, these mediating influences are the proximal targets of the intervention. It was hypothesized that young adolescents and their families participating in MDFP would show significant post-intervention gains in each of these targeted domains in comparison to control subjects.

METHOD

Sampling Procedures

Risk Screening. The study sample was selected over a two-year period from all youths who enrolled in a community-based youth enrichment program (CYP) located in an economically disadvantaged, inner-city neighborhood within a large Northeastern city. The CYP was a youth enrichment program that provided tutoring services, sports and club activities, and vocational counseling to community youths in grades 6–9 for up to two hours after every school day. The CYP recruited participants from ten local middle schools through periodic school-based workshops and recruitment campaigns. A 34-item, self-report risk factor screening measure was completed by every adolescent applicant to the CYP as part of the program application packet. Parents, who were required to consent to youths' participation in the CYP, and adolescents were fully informed about the nature of the risk factor screening measure, were advised that information collected by assessment staff would not be revealed to parents or CYP program staff, and were assured that complete confidentiality would be maintained. No parents or adolescents refused to participate; parents were not in the room when youths completed the measure. The measure assessed risk factors for drug use and antisocial behavior in four areas: adolescent drug use behavior and attitudes, and delinquent behavior; peer drug use behavior and attitudes; family drug use history and attitudes, and history of police involvement; and adolescent school attendance, performance, and behavior. Based on analysis of pilot screening data, an applicant was considered to be high-risk under one of two conditions: (a) endorsement of one or more indicated risk items (e.g., chronic school truancy, mostly failing grades, previous marijuana use, frequent alcohol or marijuana use by close friends, history of major delinquent acts [e.g., theft]); (b) endorsement of three or more selective risk items (e.g., intermittent school truancy, previous cigarette and alcohol use, favorable attitude toward alcohol and marijuana use held by adolescent and/or close friends, history of parental drug use or criminal involvement, history of minor delinquent acts [e.g., property damage]). Of 483 adolescents screened over a two-year period, 187 (39%) met study criteria.

Random Matched Assignment. As described above, new applicants to the CYP were screened continuously over a two-year period. Youths found to be high-risk were matched into pairs as soon as a suitable match was available, based on the following criteria: age (one-year window), sex, race, grade level, and family composition (both parents, single parent, grandparent(s), other). One member of the pair was then randomly assigned to either the intervention or control group, with the matched subject assigned to the alternate. If either member subsequently refused to participate in the study during the recruitment phase, that member was dropped from the study roll, and the partner was re-matched and re-randomized. This randomization procedure was used to replenish

severed pairs and thereby maintain a comparable number of subjects in each study group, in anticipation of a higher rate of refusal for the intervention condition.

Study Recruitment and Attrition. All randomized families were targeted for recruitment within two months of enrolling in the CYP; continued attendance at the CYP was not a condition of study participation. Families in both study conditions were recruited using flexibly scripted protocols for engaging high-risk families into prevention and prevention research (for details see Hogue, Johnson-Leckrone, & Liddle, 1999). For the intervention group, recruitment was conducted by the prevention counselors themselves using intensive engagement techniques that included phone contacts followed up by in-home recruitment visits as needed. Intervention group recruitment emphasized counselor flexibility and respectful persistence, attention to the unique circumstances of each family, and allocation of substantial program resources to recruitment efforts. The control group was recruited by assessment staff via phone only. For the intervention group, a total of 114 families were originally randomized and targeted for recruitment, of which 65 (57%) agreed to participate. Of the 49 recruitment failures, 10 families could not be contacted at all, and 39 were contacted but refused to participate for the following most common reasons: they perceived no personal need to attend family counseling (36%); they judged the required time commitment to be prohibitive (26%); or they did not respond to repeated contact efforts following initial contact (26%). For the control group, 65 out of 73 targeted families (89%) agreed to participate. The large between-group difference in recruitment success was expected, given the vastly greater demands for participating in the intervention group (attendance at assessment and multiple counseling sessions) versus the control group (assessment sessions only). Finally, of the 130 families who agreed to participate in the study and thereby completed a pretest assessment, four intervention families (6%) and two controls (3%) did not complete a posttest assessment. Because attrition between pretest and posttest was negligible, attriters were simply deleted from all analyses.

Description of Study Sample. Participants in the study sample were 124 adolescents and their families: 61 intervention cases, 63 controls. The mean age of the adolescents at intake was 12.5 years ($SD = .90$, range 11–14), and 92% attended grades 6–8. There were 55 boys (44%) and 69 girls (56%) in the sample. A total of 97% identified themselves as African American, 1% Hispanic, and 2% other. Families reported the following caretaking arrangements: single biological parent (50%), one biological and one stepparent (15%), grandparent(s) (12%), two biological parents (12%), and other (11%). Educational achievement of the primary caretaker was as follows: 26% did not complete high school, 38% completed high school only, 29% attended college, and 6% graduated college. Fifty-seven percent of families reported an annual family income of less than $15,000, and 53% received some form of public assistance. Randomization checks revealed no differences between study groups on any of these demographic indicators.

Intervention Procedures

Intervention Model. The intervention model, multidimensional family prevention (MDFP; Liddle & Hogue, 2000), is a developmental-ecological, family-based intervention for indicated-risk adolescents that seeks to influence within-family interactions as well as interactions between the family and relevant social systems (Tolan et al., 1996). MDFP

is a home-based model (counselors hold sessions in the home, clinic office, or occasionally at community sites such as schools and churches) that provides all services in a one-to-one setting. Session composition varies on a case-by-case and session-by-session basis, and counselors regularly spend time working individually with family members to accomplish family-wide goals. A total of 15–25 sessions are held over a 3-to-4-month period, depending on the nature and severity of issues presented by the family. The initial few sessions are dedicated to assessment of adolescent and family functioning in seven risk/protection domains: family relations, school performance, prosocial activities, peer relations, attitudes about and experiences with drugs, racial and cultural themes, and adolescent health and sexuality. The counselor and family review the risk profile that emerges and construct a counseling agenda for addressing the most significant themes.

The counseling overall is organized according to four interdependent prevention modules. The *Adolescent* module focuses on the adolescent's status regarding normative developmental milestones, problem-solving skills, involvement in prosocial institutions, and behavior problems associated with drug use and delinquency. Issues related to racial and cultural identity are addressed, and youths are helped to establish an independent voice in family sessions. The *Parent* module fosters competency in parenting practices by supporting consistency in limit-setting and discipline and regular monitoring of school attendance and adolescent behavior outside the home. This module also aids parents in managing personal stressors that compromise parenting effectiveness. The *Interactional* module provide a context in which family members can achieve the motivation, skills, and practice to interact in new ways. In-session conversations among family members are shaped in an effort to increase family cohesion, problem-solving skills, and clarity of communication and roles. Also, extended family members who have a substantial mentoring role for the adolescent are recruited for sessions to create a stronger protective network. The *Extrafamilial* module seeks to develop collaboration among all social systems to which the adolescent belongs (e.g., schools, recreational activities). Counselors and families meet directly with key members of these systems to forge more durable familial-extrafamilial system links. This module also addresses issues related to parental knowledge about the adolescent's peer and romantic activities as well as the impact of urban stressors in the everyday life of the adolescent.

Counselors and Adherence Monitoring. Four male counselors participated in the study: two African American, one European American, and one Asian American. Their mean age was 31 years. Three had a masters degree and one had a doctorate, and they averaged two years of experience as family counselors prior to training. Counselors received extensive training in the model from the study authors consisting of 50 hours of didactic seminars on risk prevention, family-based intervention, and review of the MDFP intervention manual; 30 hours reviewing videotapes of family-based counseling sessions along with the MDFP supervisor; and completion of at least two pilot cases during which every session was supervised live or by videotape. Training lasted approximately four months. Following training, counselors received three hours of supervision per week from one study author (D. Becker). Supervision, as well as on-site sessions, occurred at the project's clinic office, which was located on the campus of a state university within the host community. Supervision included case review, videotape review of selected sessions for active cases, and live supervision of selected on-site sessions.

Assessment Design

Assessment batteries were administered by trained assessors (masters students in psychology) in the location most convenient for participants, almost always in their homes or at the clinic office. Adolescents and caregivers (one per family) were interviewed separately. Multiple instruments were used to assess each of the four proximal targets of the intervention: self-competence, family, school, and peer functioning. Instruments were typically read aloud by assessors, although some self-report scales were completed silently if requested by the participant. To encourage completion of assessments, youths and caregivers received $15 apiece for the pretest and $25 for the posttest.

Measures

Substance Use. Adolescent alcohol and marijuana use was assessed using a drug frequency scale adapted from the National Drug Abuse High School Survey (Johnston, O'Malley, & Bachman, 1992). It summarizes the frequency of use for nine categories of legal and illegal drugs, including alcohol and marijuana. Frequency of use over the previous six months was rated on a scale ranging from 1 (*Never*) to 12 (*7 or more times per week 12*). Data on frequency of cigarette use over the past year were taken from the risk screening assessment; therefore no posttest data were collected. Due to low baseline rates, individual scores for each substance were collapsed into a dichotomous score: No Use versus Any Use.

Behavioral Symptoms. Adolescent behavioral symptomatology was assessed in two ways. First, parents and adolescents completed the Diagnostic Interview Schedule for Children 2nd Edition (DISC-2; Jensen et al., 1995). The DISC-2 was developed by the National Institute of Mental Health for clinical epidemiological research and elicits DSM-III-R (American Psychiatric Association, 1987) diagnoses. We administered the following modules: major depression, dysthymia, attention deficit-hyperactivity disorder, oppositional defiant disorder, conduct disorder, generalized anxiety disorder, and overanxious disorder. The DISC-2 has acceptable interrater reliability for diagnostic categories and test-retest reliability of symptom scores for both parent and child report (Jensen et al., 1995). Individual diagnoses were supported if either the parent or the adolescent report met diagnostic criteria. Second, parents completed the Revised Child Behavior Checklist (CBCL; Achenbach, 1991a) and adolescents the Youth Self-Report (YSR; Achenbach, 1991b), which measure an array of child and adolescent behavioral problems and social competencies. These measures each yield nationally and clinically normed scores for behavioral problems along two global dimensions: *externalizing* and *internalizing*. The measures have excellent reliability and validity properties.

Adolescent Self-Competence. The Self-Perception Profile for Adolescents (SPPA; Harter, 1988) assesses an adolescent's sense of competence in five areas: scholastic competence, athletic competence, physical appearance, social acceptance, and behavioral self-worth. The measure also includes a five-item *global perception of self-competence* (sample Cronbach's α = .68). The SPPA has good test-retest reliability and high internal consistency as well as solid convergent, construct, and discriminant validity. The SPPA has been used in numerous studies of young adolescent development (e.g.,

Cairns, McWhirter, Duffy, & Barry, 1990), including those with predominately low-income African American participants (e.g., Cauce, 1987). Adolescent *drug use attitudes* were assessed using a measure based on the work of Hawkins and colleagues (Hawkins et al., 1992). The measure contains nine items ($\alpha = .73$) that assess adolescent beliefs about the harmfulness and acceptability of cigarette, alcohol, and marijuana use (e.g., "Do you think it hurts people if they smoke marijuana regularly?"; "Do you think it's OK for someone your age to smoke cigarettes?"). Responses range from 1 (*definitely yes*) to 4 (*definitely no*).

Family Functioning. Two aspects of family functioning, family cohesion and parental monitoring, were assessed using measures developed by the Chicago Youth Development Study (Gorman-Smith, Tolan, Zelli, & Huesmann, 1996; Tolan, Gorman-Smith, Huesmann, & Zelli, 1997), a longitudinal study of risk and protective factors in the development of antisocial behavior among inner-city minority adolescents. Both measures generate family-level scores by aggregating across parent and adolescent reports. The *family cohesion* scale is a latent variable derived by combining parent and child reports of family-level functioning across four individual subscales: emotional cohesion, communication, support, and organization (α's ranged from .57 to .80). The *parental monitoring* scale is a latent variable derived from parent and child reports of positive parenting and extent of parental involvement (α's ranged from .78 to .85). These scales have been used in studies linking family relationship characteristics and parenting practices to comorbidity of antisocial behavior and depression (Tolan et al., 1997) and delinquency (Gorman-Smith et al., 1996) in inner-city minority young adolescents.

Adolescent School Involvement. Adolescent school involvement was assessed with three measures. A *school bonding* measure was taken from Steinberg and colleagues (Fletcher, Darling, Steinberg, & Dornbusch, 1995; Steinberg et al., 1994), who used it to examine the relation between school involvement and delinquent behavior in a national sample of high school adolescents. The measure contains 11 Likert-type items ($\alpha = .73$) on a 4-point scale (ranging from "Strongly agree" to "Strongly disagree") and includes subscales for bonding to teachers (sample item: "My teachers care about how I'm doing") and orientation to school (sample item: "Most of my classes are boring"). *School antisocial behavior* was measured with a 10-item scale ($\alpha = .62$) assessing the frequency of behaviors such as cheating, tardiness, copying homework, aggression toward peers and teachers, and destruction of school property. Responses were anchored on a 4-point scale ranging from "never" to "often." Versions of this scale have been used in studies with older adolescents to measure school deviance (Steinberg et al., 1994). *School grades* were taken from official school records obtained from the central office of the public school system in which the study took place. For the few students who attended private or parochial schools, the schools were contacted directly. Records were obtained at the end of every school semester. Grade point averages were calculated using a 5-point scale ("A" = 4 and "F" = 0) from the average of all grades reported for a given marking period.

Adolescent Peer Associations. Prosocial peer associations were indexed using a checklist of five items ($\alpha = .42$) measuring degree of participation in the following peer-centered extrafamilial activities: sports, lessons in the arts, youth clubs, religious activities, and romantic associations. The measure asks adolescents to estimate how many hours per

week are spent on each activity, with responses anchored on a 6-point scale ranging from "None" to "20 hours or more." A measure of *peer antisocial behavior* was adapted from an Oregon Social Learning Center questionnaire (Patterson, Dishion, Reid, Capaldi, & Forgatch, 1984) designed to survey peer deviance in early and middle adolescence. Adolescents are asked how many of their friends have participated in various delinquent activities over the past year, including cheating at school, unprovoked aggression, property damage, theft, and substance use. The measure contains 11 items ($\alpha = .79$) on a 5-point scale ranging from "None of them" to "All of them." This measure has been used to examine the effects of delinquent peer influences on adolescent behavior (Patterson & Stouthamer-Loeber, 1984).

RESULTS

Intervention Fidelity

MDFP Parameters. During the study all counselors worked full-time with a caseload of 7–10 families. Across all 61 intervention cases, families received an average of 13.5 counseling sessions ($SD = 9.0$; median $= 13$, mode $= 19$) over 16.6 weeks ($SD = 7.4$). A total of 45% of sessions were held in the home, 45% at the clinic, and 10% in another location. There were 10 cases (16% of the intervention group) deemed "failure to engage" because they received only 0–3 sessions, 23 cases (38%) deemed "partial dose" because they received 4–14 sessions, and 28 cases (46%) deemed "full dose" because they received 15 or more sessions. The 28 full-dose cases had these implementation parameters: number of sessions $M = 21.5$ ($SD = 6.0$); case length $M = 21.4$ weeks ($SD = 6.4$); number of case contacts (i.e., sessions, phone calls, off-site consults) $M = 75$ ($SD = 27$); and number of hours spent in case contact $M = 22$ ($SD = 7$). In general, these parameters for the full-dose cases are congruent with model delivery recommendations prescribed in the MDFP intervention manual (see Liddle & Hogue, 2000).

MDFP Adherence. The fidelity of the intervention was examined using adherence process evaluation procedures (Hogue, Liddle, & Rowe, 1996). The fidelity evaluation compared interventions utilized in MDFP sessions to those utilized in two empirically based treatments for adolescent substance abuse: multidimensional family therapy (MDFT; Liddle & Hogue, in press) and cognitive-behavioral therapy (CBT; Turner, 1992). The goal was to determine whether the prevention counselors emphasized signature family-based intervention techniques prescribed by MDFP and avoided individual-based cognitive-behavioral techniques proscribed by MDFP, in comparison to two psychotherapy models with established intervention fidelity (Hogue et al., 1998). The MDFT and CBT models were implemented in the same urban community as the MDFP model. However, in accord with their status as drug abuse treatment (versus prevention) models, MDFT and CBT were used with a sample that was older ($M = 15.2$ years), more male (72%), and evidenced more severe behavioral symptoms (all had substance abuse or dependence diagnoses and 53% were on juvenile court probation).
    Every available MDFP case was included in the fidelity evaluation (14 of the 61 cases were unavailable because the family attended no sessions or refused to be videotaped). MDFT and CBT cases were then selected for inclusion so that the cases offered a matched profile to MDFP with regard to the number of sessions available for

videotape review within three different intervention phases: Phase 1 (sessions 1–5), Phase 2 (sessions 6–12), and Phase 3 (sessions 13 and higher). However, due to resource limitations, a smaller number of MDFT and CBT cases were selected. Then, one session was randomly chosen for videotape review from each available intervention phase for each selected case. Overall, 41% of sessions selected for review were in Phase 1, 35% in Phase 2, and 24% in Phase 3. The final pool included 110 MDFP sessions from 51 cases, 57 MDFT sessions from 28 cases, and 32 CBT sessions from 16 cases (averaging two sessions per case for all three models).

Sessions were coded using the *Therapist Behavior Rating Scale–2nd Version* (TBRS-2: Hogue, Johnson-Leckrone, Hahn, & Liddle, 1997), an observational adherence measure designed to identify model-specific intervention techniques associated with the three models. Sessions were rated according to the thoroughness and frequency with which intervenors used each technique throughout the entire session, with each item anchored on a 7-point Likert scale ranging from 1 (*Never*) to 7 (*Extensively*). The TBRS-2 contains a 5-item CBT technique scale (e.g., utilizes behavioral reward systems and structured protocols, incorporates homework into sessions, helps client recognize and amend specific cognitions) and a 5-item Family technique scale (e.g., coaches multiparticipant interactions, attempts to enhance family communication, encourages the expression of affect). Analyses of TBRS-2 data revealed that the intervention scales demonstrated acceptable internal consistency (Cronbach's α = .76 for CBT scale and .62 for Family scale) and interrater reliability (ICC$_{(1,2)}$ = .82 for CBT scale and .79 for Family scale). As expected, MDFP counselors utilized CBT interventions to a significantly lesser degree than did CBT therapists (MDFP: M = 1.51, SD = 0.43; CBT: M = 3.40, SD = 1.17; $t(33)$ = −8.97, p < .001). In contrast, there was no significant difference between MDFP and MDFT intervenors in use of Family interventions (MDFP: M = 2.91, SD = 0.92; MDFT: M = 3.08, SD = 0.81; $t(165)$ = −1.20, p = .23). These results attest to the basic fidelity of the MDFP intervention: MDFP counselors emphasized core family-based techniques and eschewed individual-based cognitive-behavioral interventions.

Behavioral Symptomatology

Pretest and posttest levels of adolescent substance use and behavioral symptomatology—the ultimate targets of the preventive intervention—are presented in Table 1. The table presents data combined across both groups. In general, the levels of symptoms reported in Table 1 are in the expected range for an at-risk, non-clinical sample. That is, the prevalence of clinical-level disorder in this sample is generally higher than prevalence estimates for the population (see Mash & Terdal, 1997). Note that for both parent and adolescent reports of behavioral symptoms, a T-score of 50 is average and 65–70 is considered in the clinical range (Achenbach, 1991a, 1991b). Chi-square analyses (any substance use, endorsed diagnostic categories) and mean comparisons (behavioral symptoms) found only one significant difference between groups at pretest: The intervention group had less parent-reported internalizing symptomatology (M = 47.4, SD = 9.5) than did the controls (M = 51.2, SD = 10.1; $t(119)$ = 2.07, p < .05). Also, chi-square analysis (substance use) and repeated measures analysis of variance (behavioral symptoms) revealed significant within-group change from pretest to posttest on two variables. There was a time effect across both groups, with adolescents reporting a significant decline in both externalizing symptoms (Wilks' Λ = .06, p < .001)

Table 1. Total Sample Behavioral Symptomatology at Pretest and Posttest[a]

Symptom	Pretest	Posttest
Substance Use		
Cigarette use past 12 months[b]	13%	—
Alcohol use past 6 months	6%	4%
Marijuana use past 6 months	2%	1%
Diagnostic Category[c,d,e]		
Overanxious Disorder	16%	—
Oppositional Defiant Disorder	14%	—
Attention Deficit-Hyperactivity Disorder	13%	—
Conduct Disorder	9%	—
Dysthymia	7%	—
Generalized Anxiety Disorder	6%	—
Major Depression	2%	—
Behavioral Symptoms[f]		
Parent report: Externalizing Behavior	$M = 53.0$, $SD = 10.2$	$M = 53.7$, $SD = 10.8$
Parent report: Internalizing Behavior	$M = 49.3$, $SD = 10.0$	$M = 49.0$, $SD = 10.2$
Youth report: Externalizing Behavior	$M = 49.3$, $SD = 10.6$	$M = 47.5$, $SD = 11.0$
Youth report: Internalizing Behavior	$M = 49.6$, $SD = 10.0$	$M = 46.0$, $SD = 10.1$

[a]Participant numbers vary slightly across instruments due to randomly missing data: $N = 124$ for substance use; $N = 122$ for diagnostic categories; $N = 121$ at pretest and 120 at posttest for parent-report behavioral symptoms; $N = 123$ at pretest and 122 at posttest for adolescent-report behavioral symptoms. [b]Data on cigarette use were collected at pretest only. [c]Because the average time interval between pretest and posttest was only 4 months, no structured diagnostic interviews were administered at posttest. [d]Diagnoses were based on DSM-III-R taxonomy. [e]An individual diagnosis was supported if diagnostic criteria were met according to either parent or adolescent interview. [f]These data represent standardized *T*-scores ($M = 50$, $SD = 10$) intended for comparisons to clinical populations.

and internalizing symptoms (Wilks' $\Lambda = .05$, $p < .001$). There were no differences between groups in change over time on any drug or behavioral symptom measure.

Preliminary Analyses of Immediate Outcome Variables

Preliminary inspection of pretest data revealed that three of the nine immediate outcome variables had non-normal distributions (skew > 1.0 and kurtosis > 2.0). These variables were subjected to standard data transformation procedures (Tabachnick & Fidell, 1996), which brought each to within normal parameters: drug use attitudes (inverse transformation), school antisocial behavior (log), and peer antisocial behavior (inverse). Randomization checks were then completed for each variable to examine group comparability at baseline. Mean comparisons found that the intervention and control groups differed significantly on three measures: global self-concept, $t(114) = 2.19$, $p < .05$; family cohesion, $t(122) = 2.48$, $p < .05$; and school bonding, $t(122) = 3.07$, $p < .01$. For all three variables, intervention cases showed poorer functioning than controls.

Intercorrelations among all nine proximal variables are presented in Table 2. The magnitudes of the Pearson's *r* coefficients range from .01 to .39. Overall, the pattern of intercorrelations corresponds with the multimeasure, multidomain structure of the assessment design: Outcome measures within the same domain tend to be significantly correlated, but no bivariate relation is strong enough to suggest that any measures are redundant. Of particular note is the multidomain profile of family cohesion. In

Table 2. Correlations at Baseline Among Immediate Outcome Variables (N = 112) [a]

Measure	1	2	3	4	5	6	7	8	9
1. Global self-concept	—								
2. Drug use attitudes	−.11	—							
3. Family cohesion	.15	.07	—						
4. Parental monitoring	.10	−.10	.37**	—					
5. School bonding	.26**	.02	.27**	.15	—				
6. School grades	.15	−.06	.15	.22*	.39**	—			
7. School antisocial	−.18	−.11	−.28**	−.09	−.30**	−.34**	—		
8. Prosocial activities	.01	.02	.23*	.20*	.16	.16	.18	—	
9. Peer antisocial	−.32**	−.16	−.33**	−.14	−.38**	−.27**	.31**	−.17	—

[a]All depicted values are Pearson's *r* coefficients.
*$p < .05$; **$p < .01$.

addition to parental monitoring ($r = .37$), cohesion is significantly related to multiple indices of school involvement (bonding: $r = .27$; antisocial: $r = −.28$) and peer associations (prosocial: $r = .23$; antisocial: $r = −.33$).

Immediate Outcome Effects in Four Domains

Intervention effects were examined for nine targeted variables within four domains of functioning: self-competence, family functioning, school involvement, and peer associations. Pretest, posttest, and intervention effects data are summarized in Table 3.

Table 3. Intervention Effects for Intermediate Outcomes Within Four Targeted Domains (N = 124) [a]

	MDFP		Control		
Measure	Pretest M (SD)	Posttest M (SD)	Pretest M (SD)	Posttest M (SD)	Group × Time RM ANOVA·$F(\eta^2)$ [b]
Self-Competence					
Global self-concept	3.07 (.69)	3.45 (.54)	3.35 (.59)	3.40 (.64)	6.44 (.05)*
Drug use attitudes	0.82 (.18)	0.86 (.14)	0.82 (.15)	0.85 (.15)	0.44 (*ns*)
Family Functioning					
Family cohesion	5.74 (.64)	5.82 (.64)	6.01 (.55)	5.94 (.54)	3.21 (.03)†
Parental monitoring	7.18 (.80)	7.14 (.73)	7.31 (.75)	7.20 (.70)	0.37 (*ns*)
School Involvement					
School bonding	3.07 (.41)	3.11 (.41)	3.29 (.40)	3.15 (.44)	5.60 (.04)*
School grades	2.08 (.78)	1.94 (.92)	2.31 (.74)	2.17 (.82)	0.01 (*ns*)
School antisocial behavior	0.15 (.08)	0.13 (.10)	0.15 (.09)	0.11 (.08)	1.32 (*ns*)
Peer Associations					
Prosocial activities	2.24 (.75)	2.05 (.79)	2.32 (.65)	2.36 (.75)	2.68 (*ns*)
Peer antisocial behavior	1.20 (.19)	1.15 (.16)	1.18 (.18)	1.20 (.19)	7.29 (.06)**

[a]Due to randomly missing data resulting from incomplete or incorrectly completed measures, participant numbers are slightly lower for the following: global self-worth ($N = 114$), drug use attitudes ($N = 122$), parental monitoring ($N = 121$), and school grades ($N = 123$). [b]Partial η^2 is the univariate effect size estimate for repeated measures ANOVA.
*$p < .05$; **$p < .01$; †$p < .10$.

Outcome analyses were conducted using 2 (Group: intervention, control) by 2 (Time: pretest, posttest) univariate repeated measures analyses of variance with a single dependent variable.[1] Outcome analyses proceeded in two stages. First, changes from pretest to posttest for the whole sample (combining across groups) were evaluated by testing the within-subjects main effect term for each variable. Collectively, study participants showed significant improvement in three areas: self-concept (Pretest $M = 3.22$, $SD = .65$; Posttest $M = 3.43$, $SD = .59$; $F(1,112) = 10.96$, $p < .001$), drug use attitudes (Pretest $M = 0.82$, $SD = .16$; Posttest $M = 0.86$, $SD = .14$; $F(1,120) = 4.12$, $p < .05$), and school antisocial behavior (Pretest $M = 0.15$, $SD = .09$; Posttest $M = .12$, $SD = .09$; $F(1,122) = 23.61$, $p < .001$). Conversely, participants showed an overall decline in school grades (Pretest $M = 2.20$, $SD = .77$; Posttest $M = 2.05$, $SD = .88$; $F(1,121) = 6.52$, $p < .05$).

Second, the immediate efficacy of MDFP was investigated by analyzing the within subjects interaction (Group × Time) term. Testing of the interaction term indicates whether there is a significant difference between groups in change over time on the dependent variable. It was predicted that the intervention group would demonstrate greater improvement than the control group within each targeted domain. Results are depicted in Table 3. Intervention cases showed greater gains than controls on four outcomes, one outcome apiece within each of the four domains: increased self-concept ($F(1,112) = 6.44$, $p < .05$), a trend toward increased family cohesion ($F(1,122) = 3.21$, $p < .10$), increased bonding to school ($F(1,122) = 5.60$, $p < .05$), and decreased antisocial behaviors by peers ($F(1,122) = 7.29$, $p < .01$). Effect size estimates for these improvements by intervention participants were in the small to medium range ($\eta^2 = .03-.06$; Cohen, 1988).

Dose Effects and Moderators of Intervention Outcome

Two steps were taken to explore potentially important influences on MDFP outcome effects. First, because of wide variance in the number of counseling sessions received by families in the experimental group, two subsamples were created: a "full dose" subsample consisting of all families who received 15 or more sessions ($n = 28$), along with their matched control families; and a "partial dose" subsample containing families receiving 4–14 sessions ($n = 23$) and their matched controls. All main outcome analyses were then reconducted for each subsample. In both cases, the pattern of results was essentially identical to that found for the sample as a whole. These results suggest that intervention effects did not differ substantially across intervention dosage level. Second, three potential moderators of intervention outcome were examined: adolescent's sex, age at intake, and risk severity at intake (indexed by parent reports of externalizing symptoms). Moderating effects were examined by adding the moderator variable as a covariate in the repeated measures ANOVA and testing the three-way interaction term for significance: Group × Time × Covariate. With three moderators across nine outcome variables in all, this plan of analysis called for 27 separate ANOVAs.

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[1] It is common practice to use ANCOVA, rather than repeated measures ANOVA, when there are significant differences between study groups on pretest levels of outcome variables. However, Maris (1998) points out that covariance analysis provides a biased estimate of treatment effects in two-wave experimental studies unless assignment to treatment condition is made on the basis of the pretest score itself. In addition, covariance analysis is subject to serious interpretation and statistical validity problems when it is used to estimate true change over time (Rogosa et al., 1982; Willett, 1988).

Conducting this number of analyses introduces considerable risk for chance findings; on the other hand, higher-order interactions of this kind are difficult to detect, particularly with relatively small samples. To compensate reasonably for family-wise error, the criterion value was set at $p < .01$ for each analysis. No test of moderating effects reached significance.

DISCUSSION

This study established the short-term efficacy of a family-based prevention counseling intervention for indicated-risk early adolescents. In comparison to controls, adolescents and their families who received family prevention counseling showed immediate improvement in several indicators of adolescent well-being—specifically, increases in self-concept and school bonding and decreases in the adolescent's report of antisocial behavior by close friends—as well as a trend for enhanced family cohesion. Overall these intervention gains were small to moderate in scope, and they were evident regardless of the adolescent's sex, age, or severity of behavioral symptoms at intake. The study demonstrates that an individually tailored, family-based prevention program can be successfully implemented with at-risk minority youth in an inner-city community. Furthermore, family prevention counseling can foster change in multiple behavioral domains that represent critical mediational influences on the ultimate development of substance use and antisocial behavior.

Both intervention-specific change and general developmental change were detected during the four-month window between pretest and posttest. Across both the intervention and control groups, youths reported significant improvements in self-competence and prosocial attitudes about drug use, as well as declines in school-related behavior problems and both externalizing and internalizing symptoms. On the one hand, these positive developmental changes are somewhat contrary to expectations for a high-risk sample; on the other, even within high-risk populations there are subgroups of resilient children who stabilize or improve with age (Masten et al., 1999). Interestingly, overall grade point average, the only record-based indicator in the study, fell from approximately C+ down to C. In this regard, the adolescents' subjective perceptions of improvement in some areas did not correspond to one objective standard of school performance. Results also suggest that the intervention enjoyed some success in reversing negative developmental trends: Whereas the no-intervention group experienced decreases in family cohesion and school bonding and an increase in peer delinquency, those receiving family prevention counseling reported strengthened family and school bonds and reduced peer delinquency. It is certainly true that developmental trajectories cannot be measured reliably by only two assessment points (Rogosa, Brandt, & Zimowski, 1982). Still, the available data intimate that MDFP favorably shaped the adolescents' bonding to prosocial influences. In this way, the prevention program may have slightly repositioned their developmental footholds to allow for more advantageous outcomes.

This study contributes to the growing evidence base supporting family-centered approaches to prevention of antisocial behavior (Ashery et al., 1998). Perhaps most promising is the multidomain profile of the outcomes. Some prevention effects occurred in all four targeted domains: individual, family, school, and peer. Contemporary prevention science contends that having risk/protective factors in several areas of functioning provides a multiplicative cost/benefit (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Newcomb & Felix-Ortiz, 1992). That is, developmental resilience may be a

function in part of having diverse personal and social resources. In a similar vein, developmental-ecological theories emphasize the need to attend to multiple social influences on adolescent development, particularly for youths at greatest risk (Tolan et al., 1995). To meet the goal of multidomain impact, many broad-based prevention programs are multimodular in design. Multimodule programs provide interconnected services to individual adolescents, families, schools, and sometimes whole communities. MDFP adheres to the spirit of multimodule prevention by focusing on family-level processes but also working simultaneously with individual members of the family—adolescents, parents, and other relatives—and with the relations between family members and key social systems in the adolescents' lives.

This study also adds to the relatively thin knowledge base on family prevention for ethnic minority youth. Minority youth are underserved by prevention programming of all kinds (Botvin & Schinke, 1997), and few family-based models have specifically targeted minority or multiethnic populations (Kumpfer & Alvarado, 1995). As it happens, African Americans may be particularly amenable to multisystemic interventions that emphasize family processes (Boyd-Franklin, 1995). At the least, the current study demonstrates that low-income, inner-city African-American families will participate in and benefit from intensive, ecological prevention efforts.

That said, it is important to underscore that prevention effects were detected only for hypothesized mediators of substance use and antisocial behavior; there were no effects for the ultimate problem behaviors themselves. Two features of the study design account for this. First, the intervention intentionally targeted proximal rather than ultimate outcomes. Second, the pre-post assessment window was too brief (four months) to capture significant progression in those problem behaviors. Given the brief evaluation period, the ultimate question regarding the efficacy of the MDFP model—Did it prevent or delay substance abuse and antisocial behavior?—could not be answered. Also, it is difficult to interpret the observed decrease in peer delinquency without knowing about the composition of the peer groups. Did the intervention encourage adolescents to reconfigure their circles of close friends, or did the adolescents become more positive influences on their friends' behavior? The fact that peer antisocial behavior was reported by the target adolescents rather than directly by peers themselves is a further confound for this outcome.

It is surprising that no effects were found for parental monitoring practices. Parental monitoring is a critical factor in the development of antisocial behavior (Dishion & McMahon, 1998), and it is a primary intervention target for most universal and selective/indicated family prevention models. The developmental age of the study sample—adolescence—may have played a role in the negative findings. Parental monitoring of daily whereabouts and peer associations remains a deterrent to problem behavior even in early adolescence (Dishion, French, & Patterson, 1995). However, parent training programs, which have an excellent track record for enhancing monitoring and discipline practices in families with symptomatic and high-risk children (Kazdin, 1997), have encountered less success with families of teens (Bank, Marlowe, Reid, Patterson, & Weinrott, 1991; Dishion & Patterson, 1992). It is also possible that the prevention counselors in this study spent insufficient time or worked ineffectively on monitoring issues; a more sophisticated analysis of intervention processes is needed to address this implementation matter.

Several features of the study lend confidence to the validity and utility of the findings. The study was conducted in conjunction with a local youth organization, and the home-based approach of the prevention model appeared to facilitate intervention

acceptance by the host community. Risk screening assessments were used to identify youths most suitable for prevention counseling, and random assignment to study groups strengthened the internal validity of the design. Recruitment and retention rates were solid, given the formidable challenge of recruiting parents of high-risk youth into prevention programs (Prinz & Miller, 1996) and the compliance demands placed on intervention families by the intensive nature of the model. Manualization and adherence monitoring supported the standardization and quality of model implementation; moreover, adherence evaluation data from nonparticipant observational review of counseling sessions confirmed basic intervention fidelity.

Despite these strengths, enthusiasm for the results is tempered by the fact that prevention effects were examined only at program termination. The litmus test of a prevention model is long-term promotion of mental health in participants and, on a larger scale, reduction in prevalence rates for psychological disorders (Institute of Medicine, 1994). On top of this, effect sizes for the immediate outcomes were modest on the whole. On the one hand, it is difficult to apply principles of clinical significance estimation, with metrics commonly based on restoring symptomatic clients to pre-disorder levels of functioning (Kendall, Marrs-Garcia, Nath, & Sheldrick, 1999), to prevention samples (but see Hawley, 1995). On the other hand, prevention counseling models such as MDFP incur a relatively high cost due to smaller caseloads, more intensive service provision, and higher standards for intervenor training and supervision. If intervention effectiveness is to be predicated in large part on cost–benefit ratios, the burden falls squarely on the shoulders of intensive prevention models to prove the health value of observed outcomes. Moreover, no additional benefits were detected for families who attended a full course of counseling versus those who attended a partial course. Particularly for more intensive interventions, it is critical to establish maximal dose-effect ratios that can serve as cost-based implementation standards (Newman & Tejeda, 1996). Optimally, this is achieved by experimentally varying dose levels across comparable samples.

Also, the results were muddied to some degree by randomization failure, that is, by significant between-group differences at pretest. For two of the four indicators showing prevention effects—family cohesion and school bonding—the average posttest score of the intervention group remained below the average pretest score of controls. There is a perception that these data conditions can allow two biases to operate in favor of the intervention group: ceiling effects, wherein one group has significantly more "room to grow" than another, and regression to the mean, wherein within-group change reflects mere statistical fluctuation from a low mark at pretest back toward the population mean at posttest. However, repeated measures ANOVA, which is based on calculation of within-subject difference scores, is fairly robust against these biases. In fact, regression to the mean is a phenomenon that has no bearing on the estimation of difference scores in pretest-posttest designs (Maris, 1998). And contrary to earlier theories about the unreliability of difference scores (e.g., Cronbach & Furby, 1970), it has been shown that they do not unfairly inflate the estimation of change in persons with lower initial values (Francis, Fletcher, Stuebing, Davidson, & Thompson, 1991); moreover, when random assignment is used, they are unaffected by measurement error at pretest or posttest (Maris, 1998).

This study is one of the first to show that a traditionally difficult-to-serve population, families of high-risk inner-city adolescents, can be effectively recruited to participate in a family-based prevention program. Moreover, the collaborative nature of counseling-type interventions appears well-suited for meeting the idiosyncratic pre-

vention goals of high-risk adolescents and their caretakers. Family prevention counseling models such as MDFP may therefore be a productive third option within a unified prevention initiative: For adolescents with indicated risk profiles, or for those who do not respond to universal or selective prevention efforts, family prevention counseling offers an acute and individually tailored alternative. In addition, family prevention counseling makes for an excellent theoretical and strategic fit with comprehensive, ecological prevention strategies that seek to intervene in an integrated manner across multiple systems of influence on the development of problem behavior in adolescence.

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