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Effects of a Parent-Child Communications Intervention on Young Adolescents' Risk for Early Onset of Sexual Intercourse

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Context: The quality of parent-child communications about sex and sexuality appears to be a strong determinant of adolescents' sexual behavior. Evaluations of interventions aimed at improving such communications can help identify strategies for preventing early onset of sexual behavior.

Methods: A school-based abstinence-only curriculum was implemented among 351 middle school students, who were randomly assigned to receive either the classroom instruction alone or the classroom instruction enhanced by five homework assignments designed to be completed by the students and their parents. An experimental design involving pretest and posttest surveys was used to assess the relative efficacy of the curriculum delivered with and without the parent-child homework assignments.

Results: In analyses of covariance controlling for baseline scores, immediately after the intervention, adolescents who received the enhanced curriculum reported greater self-efficacy for refusing high-risk behaviors than did those who received the classroom instruction only (mean scores, 16.8 vs. 15.8). They also reported less intention to have sex before finishing high school (0.4 vs. 0.5), and more frequent parent-child communications about prevention (1.6 vs. 1.0) and sexual consequences (1.6 vs. 1.1). In all significant comparisons, the direction of the findings favored adolescents who received the enhanced curriculum. Dose-response relationships supported the findings.

Conclusions: Parent-child homework assignments designed to reinforce and support school-based prevention curricula can have an immediate impact on several key determinants of sexual behavior among middle school adolescents.—paragraph

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The extent to which parents are involved and the manner in which they are involved in their children's lives are critical factors in the prevention of high-risk sexual activity. Children whose parents talk with them about sexual matters or provide sexuality education or contraceptive information at home are more likely than others to postpone sexual activity. And when these adolescents become sexually active, they have fewer sexual partners and are more likely to use contraceptives and condoms than young people who do not discuss sexual matters with their parents, and therefore

are at reduced risk for pregnancy, HIV and other sexually transmitted diseases (STDs).¹

The positive effects of parent-child communications appear to be mediated by several critical factors: the frequency and specificity of communications;² the quality and nature of exchanges;³ parental knowledge, beliefs and comfort with the subject matter;⁴ and the content and timing of communications (for example, whether they take place before the young person initiates sexual activity).⁵ A number of more general indices of family structure and relationship quality also play a role in adolescent sexual behavior. These include family cohesion or closeness;⁶ family structure;⁷ parenting style, including parental monitoring, supervision or coercion;⁸ and general parent-child communication patterns.⁹ Thus, while the precise mechanisms whereby parental communications influence adolescent sexual behavior have not been fully determined, the preponderance of evidence regarding communication effectiveness supports the important role that parents can play in preventing early sexual onset.

Previous investigators have suggested that efforts to increase parent-child communications should parallel the HIV, STD and pregnancy prevention education that is provided in schools.¹⁰ Although multiple strategies and programs to increase parent-child communication have been described in the literature,¹¹ relatively few have been evaluated. Programs designed to increase parent-child communications about HIV, sexuality or sexual abuse have been effective in elevating parental knowledge,¹² building communication confidence and skills, as well as intentions to discuss sexuality;¹³ and raising the frequency or quality of parent-child communications about sex and sexuality.¹⁴ The few studies that have reported an impact on the sexual attitudes, skills or behaviors of participating children have documented generally positive results.¹⁵ Yet, none of these studies clearly demonstrated a direct impact of parent-child communication on adolescent intentions, other potential mediators or sexual behavior, and few discussed how self-selection may have influenced the makeup of the groups of parents and children participating or the nature of the parent-child communication.

In summary, the quality of parent-child relationships and parenting style in general, and communications about sex and sexuality more specifically, appear to be strong determinants of adolescent sexual behavior. Relationships to adolescent sexual behavior have been found in both cross-sectional and prospective studies, particularly when parent-child communications were characterized as being "open and receptive." Given the consistency of these findings, it is rather surprising that so few interventions have been developed and tested for effectiveness in improving parent-child communications related to sex and sexuality, and consequently adolescent sexual behavior.

We sought to develop such an intervention targeting younger adolescents, the majority of whom were not yet sexually experienced, to prevent early onset of sexual intercourse. Five homework assignments, each involving parental participation, were developed to reinforce and support a standard abstinence-only curriculum, entitled Managing the Pressures Before Marriage (MPM), that was being used in middle schools. Social learning and social cognitive theoretical constructs were applied to

involve parents in reinforcing the skills and information that children learned in class, and in clearly specifying and modeling expected behaviors.¹⁶

The purpose of this study was to assess the effectiveness of these homework assignments delivered in conjunction with the curriculum (referred to here as MPM-enhanced) as compared with the effectiveness of the school-based curriculum alone (MPM only). We hypothesized that the enhanced intervention would be more effective in changing adolescent beliefs, self-efficacy and intentions to delay sexual onset than the curriculum alone. Specifically, we expected that students receiving the homework assignments would, as a result, not only communicate more often with their parents about these issues, but also express stronger beliefs supporting abstinence, greater self-efficacy and firmer intentions to remain abstinent than those who received the standard curriculum only.

METHODS

Intervention Description

The MPM curriculum, developed by the Center for Adolescent Reproductive Health at Grady Memorial Hospital, is a modified version of Postponing Sexual Involvement (PSI), a skills-based curriculum that has been tested and found to be effective.¹⁷ Early studies demonstrated PSI's acceptability and its contribution to adolescents' decisions to postpone sex.¹⁸ Among lower-income, minority adolescents of middle school age, PSI reduced the proportion initiating sexual intercourse (4% in the intervention group vs. 20% in the comparison group), but it had no discernible impact on adolescents who were already sexually active. While results were less impressive after one year, group differences remained significant, particularly among females.¹⁹

MPM and PSI use basically the same content and instructional methods. Both consist of five one-hour sessions led by pairs of trained youth leaders. Both address risks of early sexual involvement, social and media pressures to become sexually active, and assertiveness and communication skills an adolescent needs to resist peer pressure. Instructional strategies include brainstorming, critical analysis, role-playing, and skill training and rehearsal. The only significant difference between these two curricula is that MPM reinforces the message that abstinence until marriage is the expected standard of behavior, whereas PSI provides a general message that students should postpone sexual intercourse without specifying for how long.

The five homework assignments were developed on the basis of formative research. Focus groups were conducted with parents and adolescents, and the lessons, other available curricula and scientific literature related to parent-child communications about sexuality and sexual behavior were reviewed. The homework assignments were designed to increase parents' understanding of the changes and pressures that their children of middle school age face; facilitate open and receptive parent-child communications about sex and sexuality; increase parents' ability to encourage their children to avoid or resist peer pressure to become sexually active; and build parents' and children's skills in identifying and reducing the risks of pregnancy, HIV and other STDs. The assignments did not stress abstaining from sex until marriage. (Details of each assignment are described in the [appendix](#)).

Like the school-based curriculum, the strategies and activities developed for the

homework assignments were based upon principles of social learning theory. Communication exercises were aimed at facilitating new parent-child exchanges, encouraging interpersonal learning, increasing equity and exchange during parent-child communications, and shifting habitual ways of communicating and thinking about these issues. For example, both parents and children were encouraged to discuss challenges they face, to talk about their wishes for one another and to compare their responses to similar questions (such as what kinds of qualities to look for in close friendships or dating relationships). Activities included structured communications, modeling, demonstration and rehearsal.

Procedures

Active parental consent procedures were used. All parents were offered the opportunity to exempt their child from participation in a class where instruction would be based on an abstinence-only pregnancy prevention curriculum. (Only one parent refused.) Along with the consent form, parents of children in the MPM-enhanced group received copies of the homework assignments.

Youth leaders were recruited from local high schools by means of morning or afternoon announcements; interested students were invited to attend an informational meeting after school that described the basic program and youth leader responsibilities. Contacts at the high schools (usually health or home economics teachers) also recruited students who they thought might be interested and would do a good job. Of the 38 students who participated, 25 were female and 36 were white; 28 were in grades 10 and 11, six were in ninth grade and four were in 12th grade.

Youth leaders received 30 hours of training before conducting MPM classroom sessions. In general, one pair of leaders was assigned to each classroom, but on occasion, one leader filled in for another in a different classroom. One program staff member attended and assisted with each lesson. Youth leaders were aware that some classes were receiving homework assignments and some were not. However, they were not given detailed information regarding why, nor was there any evidence that their presentation of the lessons changed as a result of differences in classroom assignment. The lessons were implemented in five weekly sessions and were identical for classes receiving MPM alone and those receiving the enhanced intervention.

Additional coordination activities were required in the MPM-enhanced group. Project staff introduced the first parent-child homework assignment immediately after students completed the baseline survey, and before the classroom sessions began. The difficulties both adolescents and parents have when talking about sex or sexuality-related topics were acknowledged, and students' concerns and questions about talking to their parents were addressed. Students who felt uncomfortable talking with their parents were encouraged to complete the assignments with a project staff member or another adult. The remaining homework assignments were completed after each of the first four classroom sessions so that the last one could be reviewed on the final day of class.

After each lesson, if time permitted, program staff asked the students general questions about the homework assignment (e.g., whether they completed it and liked the activities). Staff acknowledged that the lessons generally left little time to go into

specifics about the homework activities. Students were reminded at the end of each session to complete at least one activity in the next assignment before the next class.

Study Design and Data Collection

The relative efficacy of the MPM curriculum delivered with and without the five parent-child homework assignments was assessed by means of an experimental design in which study and comparison groups in the same schools were examined before and after the intervention. Once we had obtained administrative approval in three middle schools, we randomly assigned (by quarter marking period within schools) 19 eighth-grade health or family and consumer science classrooms to receive either the curriculum only or the curriculum plus the five parent-child homework assignments during the 1998-1999 school year. Because the number of classrooms available in each school was smaller than we would have preferred, and we wished to maximize exposure to the parent-child homework assignments, eight classrooms received the curriculum only, and 11 received the enhanced intervention.

One week prior to the intervention, project staff introduced the study to students, explained that it involved two surveys, and stressed the confidential and voluntary nature of students' responses and participation. Students completed baseline surveys at this time. Postintervention surveys were administered seven weeks later, within one week following completion of the MPM curriculum.

Survey questionnaires were collected from 389 students at baseline and from 410 students immediately postintervention. The analyses presented here include only the subset of 351 adolescents from whom we collected both questionnaires—190 who received the enhanced curriculum and 161 who received MPM only. The preintervention sample was equally divided by gender (males, 52%; and females, 48%); the majority of adolescents were white and non-Hispanic (85%). Students lived in predominantly middle-class suburban communities outside Rochester, New York. No additional demographic data were collected because of programmatic constraints and a desire to reduce the burden on respondents and the time required to complete the survey.

Three forms in addition to the survey questionnaires were used to gather data: an attendance form, which project staff completed at each session; a homework form, which students in the MPM-enhanced group were asked to fill out with their parents after completing each assignment; and a form given to students who did not return a homework form, to document that the assignment had not been completed. Linkages among data sources, as well as participants' confidentiality, were facilitated by unique identification numbers staff assigned to each student on the basis of classroom enrollment data.

Homework forms included questions regarding which lesson activities were completed, the date of completion, and what the student and parent separately liked or disliked about the lesson. A space was provided, if an activity was not completed, to explain why not. The bottom of the form contained a line for both the parent and the child to sign, verifying completion (or not) of each assignment.

Because of initial difficulties in retrieving homework forms, incentives were provided for their completion. For each form students returned, they were given one ticket for a

raffle at the end of the intervention; prizes (e.g., a family pack of four tickets to the movies or a video arcade) had been voted upon by each class. Students who turned in forms could also select one item from a "goodie box" filled with candy bars, markers, key chains, pens and stickers. Those who did not turn in a signed homework form but completed a form describing whether the assignment was completed or the reason for noncompletion were given a lesser incentive.

A total of 642 homework forms and noncompletion forms were returned—68% of the possible 950 (190 students for each of five sessions). Of these, 492 indicated that some portion of the assignment was completed, and 41 that the assignment had not been completed; 109 forms were unclear as to whether the assignment had been completed.

The proportion of returned homework forms was 78% for the first session, but it declined steadily, to 58% for the last session. Similarly, the proportion of students who completed the homework assignments was 65% for the first session, but it declined for each session thereafter (to 38% for the final session).

Measures

The independent variable in this study was treatment condition (MPM-enhanced vs. MPM only). Dependent variables were multiple determinants of sexual onset, characteristics of parent-child communication about sex and risk-related behaviors. The survey also asked about students' age, grade, race or ethnicity, and average grades in school.*

- *Knowledge.* Two knowledge items that may influence when young people initiate sexual intercourse were assessed: students' perceptions of the effectiveness of abstinence as a preventive method and of the risks of pregnancy the first time one has sexual intercourse.

- *Sexual beliefs and attitudes.* A variety of measures assessing beliefs about sex and perceptions of norms were grouped into summary scales. Three scales are based on items for which possible responses ranged from one (indicating strong agreement) to four (strong disagreement): overall sexual beliefs (14 items; $\alpha=.78$), personal beliefs that support delaying sexual intercourse (eight items; $\alpha=.77$) and perceived peer beliefs supporting such delay (three items; $\alpha=.67$). Three items independently measured perceptions that substance use increases risk taking, that adolescents who have had sexual intercourse will expect it from their next partner and that the media encourage adolescent sex; possible responses ranged from one (strongly agree) to four (strongly disagree) for the first two items and from one (strongly disagree) to four (strongly agree) for the third. Adolescents' perceptions of the number of males and females in their school who had ever had sexual intercourse (with response options ranging from zero, indicating none, to four, indicating almost all) were combined into a summary scale (two items; $\alpha=.88$).

- *Self-efficacy for refusal/avoidance.* We asked adolescents to rate how sure they were that they could refuse or avoid hypothetical situations involving peer or partner pressure to drink alcohol, use drugs or engage in sexual intercourse; possible responses ranged from one (very unsure) to four (very sure). We constructed individual scales to reflect overall self-efficacy (five items; $\alpha=.83$) and self-efficacy related to substance use (two items; $\alpha=.70$) and sexual avoidance or refusal (three

items; $\alpha=.77$).

- *Behavioral intentions.* We asked adolescents to rate the likelihood that they would have sex before finishing middle school and before finishing high school; possible responses ranged from one (no chance) to four (already have). Using only responses from sexually inexperienced students, we combined these measures into a summary scale (two items; $\alpha=.84$). Two additional items, both rated on a five-point scale ranging from one (definitely not) to five (definitely would), were combined into one scale ($\alpha=.87$) measuring the likelihood of sexual intercourse under specific circumstances—that is, "if you had sexual feelings for someone you liked" and "if someone you liked wanted to have sex with you."

- *Parent-child communications.* Adolescents rated their comfort in talking with their parents about sex on a scale ranging from one (very uncomfortable) to four (very comfortable). We assessed the frequency of conversations in which parents addressed nine specific topics (how they expected their child to behave when it comes to having sex; abstinence; developing positive relationships; body changes during puberty; reasons to wait to have sex; and ways to avoid sexual pressure situations, to refuse sex, to avoid HIV and other STDs, and to prevent pregnancy). Responses, ranging from zero (never) to three (six or more), were combined into five variables: a single item on communications about puberty and physiological changes, and summary scales measuring the overall frequency of communications (nine items; $\alpha=.90$) and the frequency of communications about sexual expectations (four items; $\alpha=.80$), prevention strategies (two items; $\alpha=.91$) and consequences of sexual intercourse (two items; $\alpha=.83$). Two items separately measured the extent to which students discussed with their parents what they learned in class or worked on for a homework assignment.[†]

- *Sexual opportunities.* Adolescents rated how often in the previous three months they were exposed to each of two situations that we classified as "potentially sexual" (i.e., someone pressured them to drink alcohol or use drugs, and someone tried to get them into a situation where sex might occur) and three situations that we categorized as "sexual" (i.e., they kissed or touched someone sexually, someone tried to have intercourse with them and they tried to have intercourse with someone). Scales were developed to measure exposure to the "potentially sexual situations" (two items; $\alpha=.77$) and the "sexual situations" (three items; $\alpha=.71$), and overall exposure to any situations (five items; $\alpha=.84$).

- *Avoidance or refusal in high-risk sexual situations.* We also assessed how often adolescents who were exposed to high-risk situations refused to engage in risky behavior. Six variables indicate what proportion of times adolescents refused risky behavior overall (six items, $\alpha=.89$), in potentially sexual situations (two items; $\alpha=.69$) and in sexual situations (four items; $\alpha=.87$).

- *Substance use and sexual behaviors.* Two variables were created from one survey item to reflect lifetime and recent alcohol use. Responses for lifetime use were coded from one (never had alcohol) to seven (drank alcohol on 20-30 of the past 30 days); for recent use, responses were coded from zero (no use in the past 30 days) to five (drank on 20-30 of the past 30 days). Separate items assessed whether adolescents had

ever had sexual intercourse, whether they had had intercourse in the past three months, their lifetime number of partners and the regularity with which they used condoms; only the first two of these items were used in this study because of the small number of students who reported sexual intercourse. One item assessed the number of times that adolescents "went further, sexually," than they really wanted to in the past three months.

Data Analysis

Basic frequencies and means were calculated for each variable and summary scale on the baseline and postintervention surveys. Interitem correlation coefficients for each scale were calculated from pretest data, using Cronbach's alpha. T-tests for mean differences, kappa statistics and McNemar tests for nonindependent samples were used to assess changes in knowledge, attitudes, intentions and practices from baseline to postintervention.

We employed two strategies to determine whether the assignments were effective. First, we used repeated-measures analyses of variance to simultaneously assess the effects of time (baseline vs. postintervention) and treatment condition (MPM-enhanced vs. MPM only). Second, we conducted analyses of covariance to assess differences after the intervention between the two treatment groups, and after controlling for the baseline values of each variable. Both analyses included all adolescents from the MPM-enhanced group, irrespective of whether they completed the parent-child homework assignments. In both instances, gender was included as an independent variable to determine whether males and females were equally likely to benefit. These results are not presented in this article, but may be found elsewhere.²⁰

We initially performed standard statistical tests using SAS (data presented in tables), and then employed mixed-model analyses using SAS PROC MIXED statistical software to address potential clustering of observations. Because the probability of a type I error increases when the unit of randomization and intervention delivery is the classroom but data analyzed are from individual students, we used mixed-model procedures to confirm these results. For significant findings, we also calculated the amount of variance in outcomes explained by group membership. Finally, analyses of covariance, again controlling for the baseline value of each variable, were used to determine whether adolescents who completed more homework assignments and activities were more likely to benefit. Since students' demographic and baseline characteristics may have influenced their likelihood of completing homework assignments, we performed post-hoc comparisons, controlling for these factors, to determine whether dose-response relationships remained significant.

RESULTS

Baseline Comparisons

No baseline differences existed between groups in race or ethnicity, age, sex or academic achievement. One-way analyses of variance indicated that the MPM-enhanced group was significantly more likely than the MPM-only group to believe that substance use increases sexual risk (2.2 vs. 2.0; $p \leq .05$) and that the media influence adolescent sexual behavior (3.0 vs. 2.8; $p \leq .01$); they also were more likely to say that

they had gone further than they had wanted to sexually within the previous three months (1.6 vs. 1.1; $p \leq .01$). students in the mpm-only group were more likely than others to have been in high-risk sexual situations in the past three months (1.7 vs. 1.4; $p \leq .05$), to report lifetime alcohol use (2.1 vs. 1.8; $p \leq .05$) and to say that they had used alcohol recently (0.5 vs. 0.3; $p \leq .05$). no other differences were found between groups at baseline.

Overall Change

We compared values of the dependent variables at baseline and postintervention for both treatment groups combined ([Table 1](#)). Adolescents were significantly more likely to know of the effectiveness of abstinence as a prevention strategy after the intervention (87%) than before (70%), but their level of knowledge about the risk of pregnancy at first sex did not change; nevertheless, the proportion who answered both knowledge items correctly rose from 63% to 80% (not shown). The belief that peers and friends support abstinence increased from baseline to the second survey (8.5 vs. 8.8), as did the perception that the media influence adolescent sexual behavior (2.9 vs. 3.4).

The average score reflecting self-efficacy for sexual refusal or avoidance rose significantly from the baseline to the postintervention survey (9.4 vs. 9.8), and the score for intentions to have sex before finishing high school declined (0.6 vs. 0.5). Perceived comfort communicating with parents about sex improved (2.5 vs. 2.6), but the frequency of parent-child communications about sex did not change significantly. All other measures were similar at baseline and postintervention. These results remained significant in the mixed-model analyses.

Impact of the Enhanced Curriculum

In analyses controlling for baseline values, adolescents in the MPM-enhanced group did not differ from those in the MPM-only group with respect to knowledge or most attitudinal values immediately after the intervention ([Table 2](#)). The one exception is that those in the MPM-only group were more likely than those who received the enhanced curriculum to agree that adolescents who have had sexual intercourse will always expect to have sex in their next relationship (mean scores, 2.4 and 2.2, respectively). Students in the MPM-enhanced group expressed significantly greater self-efficacy with regard to refusing or avoiding substance use and sexual behavior (16.8 vs. 15.8 overall), and were less likely to intend to have sex before completing high school (0.4 vs. 0.5).

In the postintervention survey, the two groups reported similar levels of comfort in talking to their parents about sex. As we expected, however, students in the MPM-enhanced group reported more frequent communication with their parents than did adolescents who did not receive the parent-child homework assignments (overall means, 7.2 and 5.8, respectively). This difference reflects more frequent communications about prevention strategies (1.6 vs. 1.0) and consequences of sexual intercourse (1.6 vs. 1.1). In addition to having completed the homework assignments together, adolescents in the MPM-enhanced group talked more often with parents about the class lessons (2.5 vs. 1.8).

Although the MPM-only group was more likely to have been exposed to potentially sexual or sexual situations at baseline (not shown), the analyses controlling for baseline differences revealed no group differences after the intervention in exposure to high-risk situations, refusal when exposed to high-risk sexual situations, or lifetime or recent sexual intercourse. However, students in the MPM-enhanced group had significantly lower scores than those in the MPM-only group on lifetime alcohol use (1.9 vs. 2.2) and on alcohol use in the previous three months (0.4 vs. 0.6).

In the analyses controlling for the cluster sampling design, all but two of the significant findings reported above remained significant: The belief that sexually experienced adolescents will expect sex in future relationships and recent alcohol use became marginally significant ($p=.08$). Although the amount of variance explained in the overall models was relatively high in both the repeated-measures analyses and the analyses of covariance (e.g., for self-efficacy, at least 40%), the variance attributable to differences between groups was small (e.g., less than 5% for self-efficacy, intentions and parent-child communications), except with regard to having talked to parents about class lessons (9%) and completing homework assignments together (45%).

Selection Biases and Dose Response

The majority of students in the MPM enhanced group completed at least one parent-child homework assignment: Thirty percent completed one or two assignments, and 51% completed three or more; 19% completed no assignments. Each assignment included 3-5 activities (for a total of 18 activities), but students and their parents could choose which activities to complete; therefore, not all of the activities were completed. Fifty-four percent of students completed a total of three or fewer activities, 41% completed 4-8 and 5% completed nine or more.

Using demographic information from the survey questionnaires in conjunction with information from the homework completion forms, we found several selection biases influencing the completion of homework assignments. The proportion of students who had completed no assignments was higher among black and Hispanic adolescents than among non-Hispanic whites (43% vs. 18%; $p<.05$), was higher among males than among females (27% vs. 9%; $p<.01$), and was higher among adolescents who reported recent sexual intercourse than among those who did not (63% vs. 17%; $p<.001$). Students who received mostly A's in school were less likely to have completed no assignments than were those with lower grades (6% vs. 28%; $p<.001$).

We conducted three sets of comparisons between the MPM-only and MPM-enhanced groups to test the additive effects of having completed increasing numbers of homework assignments or activities: one according to whether any homework activities were completed, one according to the number of homework activities completed (three or fewer vs. four or more) and one according to the number of assignments completed (0-1 vs. 2-3 vs. 4-5).

Results of these analyses indicate that compared with adolescents in the MPM-only group, those in the MPM-enhanced group who completed any of the homework assignments reported significantly lower intentions to become sexually active, greater self-efficacy to refuse substances and sexual intercourse, less alcohol use in the past 30 days, and a greater overall frequency of parent-child communications about sex and

discussions related to the MPM classroom lessons ([Table 3](#)). Furthermore, within the enhanced intervention group, the frequency of communications in general, and communications related to sexual expectations more specifically, was significantly higher among students who completed any homework assignments than among those who completed none. No differences in exposure to potentially sexual situations or refusal within these situations were found (not shown).

Similar patterns were found in analyses of the number of activities and the number of assignments completed ([Tables 4 and 5](#)). Compared with adolescents in the MPM-only group, adolescents who completed more homework activities or assignments reported significantly lower intentions to become sexually active, greater self-efficacy to refuse or avoid risk behaviors, less lifetime alcohol use, more parent-child communications overall and more discussions related to the MPM classroom lessons. Within the MPM-enhanced group, incremental differences between various levels of homework completion were in the right direction on many variables, but comparisons reached statistical significance on only two variables: Students who completed fewer homework activities or assignments were less likely than those who completed more to say that they talked with their parents about the lessons and were more likely to say that they went further than they wanted to sexually.

Post-hoc analyses of these same dosage variables, controlling for selection biases in homework completion, yielded similar results. For most comparisons, significance levels remained the same or increased to include additional pairwise comparisons as significant. Only one result became nonsignificant: the intention to have sex before completing high school.

DISCUSSION

Parent-child homework activities designed to increase communications and reinforce standard school-based pregnancy, HIV and STD prevention curricula can enhance prevention effects among children. In our assessment of the relative effectiveness of a standard abstinence-only curriculum, with or without the addition of parent-child homework assignments, we have gone beyond previous work by attempting to look at the impact of a parent-child intervention on theory-based factors empirically found to influence adolescent sexual behavior.

Although changes from baseline to immediately after the intervention were evident among all adolescents, these changes were most likely to occur among those who received the parent-child homework assignments. In all significant comparisons, the direction of the findings favored adolescents who received the enhanced curriculum. The results were supported by the dose-response analyses to the extent that adolescents in the intervention group who completed more of the homework assignments evidenced the greatest benefits. Thus, results presented in this article were quite positive and support the potential for parent-child homework interventions to have an additive effect on school-based prevention curricula.

Social learning theory and social cognitive theory posit that learning occurs through observations, personal and vicarious experiences, and interactions with the surrounding environment.²¹ Behavioral consequences and feedback from the surrounding social and physical environment, and the way an individual interprets

these consequences and feedback, to determine future action. Over time, performance standards and moral codes become internalized through self-observation, assessment and reinforcement from oneself and others.

In this study, parents facilitated the adoption and internalization, at least on a short-term basis, of values, beliefs and behaviors that might prevent future high-risk sexual activity. The increase in parent-child communications we observed was consistent with findings from previous interventions.²² And improvements in self-efficacy were consistent with at least one other parent-child homework intervention related to sexuality (out of three) reported in the literature that measured student outcomes.²³ The finding that adolescents who completed assignments with their parents had stronger intentions than others of remaining abstinent has not been previously reported. Given that improvements were observed on three theoretically and empirically derived determinants of behavior (i.e., parental communications about sex, self-efficacy for refusal and avoidance, and behavioral intentions to abstain from sex), this approach seems to have the potential for a longer-term impact on sexual behavior, since each of these factors is a fairly reliable predictor of the probability of sexual and other high-risk behaviors.²⁴

Several findings, however, were less supportive of the efficacy of this approach. Most important, the dose-response relationships we observed were primarily between adolescents assigned to the parent-child homework intervention and those who were not. We did not observe increases in personal beliefs supporting abstinence (which other authors have found to be directly associated with sexual intentions) and consequent sexual behavior.²⁵ We suspect this may be partially related to the content of the belief items included on our survey and the messages being communicated in class. Many adolescents participating in postintervention focus groups had difficulty with the "abstinence until marriage" message in the MPM curriculum, and several items endorsing this message were included in the summary scales.

Additionally, intentions to remain abstinent were observed only on global, as opposed to situation-specific, items. For example, intentions to have sex before finishing high school were lower among students who received the parent-child homework assignments than among those who participated only in the classroom work. However, no differences were found on items reflecting the likelihood of having sex with someone the adolescents "really liked." Indeed, several of the belief items also included conditional statements such as "I believe it's OK for people my age to have sex with a serious boyfriend or girlfriend." Thus, it appears that younger adolescents may already be making conditional and contextual decisions that could affect later sexual behavior; in principle, they want or intend to remain abstinent, but under certain conditions or circumstances, they may become sexually active. This may be another reason why we did not see an increase in beliefs supporting sexual delay, and it raises questions regarding when in a youth's development it is most appropriate to initiate discussions about contraception.

Finally, we did not find any differences between groups in recent sexual behaviors, most likely because of the timing of the postintervention assessment (immediately after the intervention), the low prevalence of sexual behavior among younger adolescents and the fact that changes in sexual onset or behavior can take as long as 18

months to demonstrate.²⁶ Only 6% of study participants had ever had sexual intercourse, and only 4% had done so within the previous three months. It remains to be seen, therefore, whether this type of intervention will have an impact on longer-term sexual behaviors or sexual onset.

Our study has several limitations, the most significant of which was the lack of a longer-term follow-up to determine whether the observed differences are sustained and whether assignment to the parent-child homework condition influenced sexual onset or behavior. Second, although our findings were confirmed in the analyses that adjusted for cluster effects due to classroom sampling,²⁷ the practical significance of these findings must be considered. While the amount of variance explained by the overall model for any given outcome was high, the variance attributable to differences between groups was rather small except in relation to having discussed class lessons or completed homework assignments. And although successful parent-child homework interventions have been reported in relation to other health risk behaviors, such as substance use,²⁸ questions have been raised about the extent to which homework assignments are powerful enough to change later behaviors.²⁹ Further, since our study involved a population of primarily suburban adolescents, the generalizability of the findings to more diverse, ethnic populations in urban areas is limited.

In addition, self-selection biases were clearly operative within the parent-child homework intervention condition, in that not all students completed all of the homework assignments, and those who did may have been at lower risk. These biases in many ways parallel those found in another study, in which parents who did not complete homework assignments with their child perceived their child to be at greater risk, were less certain whether their child was having sex, perceived significantly more barriers to communication and reported less self-efficacy related to parent-adolescent communication about sexual matters than parents with greater involvement.³⁰ Furthermore, since we encountered difficulties in collecting homework forms in later sessions, we may have underestimated the proportion of students who completed assignments, as well as the amount of discussion that occurred at home. Clearly, improvements can be made to intervention implementation and data collection to ensure that more time in each class is spent discussing and reinforcing parent-child communications and promoting completion of homework assignments by all students.

Nonetheless, the results were promising. Homework assignments designed to enhance parent-child communications and support a school-based prevention curriculum appeared to have an immediate impact on several key determinants of sexual behavior among middle school adolescents. Parent-child communications, self-efficacy, substance use and intentions to remain abstinent were improved. The most crucial question that our study leaves unanswered is the extent to which the changes that we observed immediately postintervention will produce longer-term changes in sexual onset and behavior. Randomized intervention trials to assess both the process and the outcomes of improved parent-child interventions are an important next step. Research on parent-child involvement in prevention interventions is still in its infancy. We are optimistic, however, that by conducting research along these lines, it may be possible to make a significant contribution to the prevention of HIV, STDs and pregnancy among adolescents.

Homework Assignment 1

The first assignment was designed to break the ice. Parents were asked to complete this assignment with their child prior to the first classroom MPM session. Activity 1 focuses on establishing and making a commitment to the "Ground Rules for Conversation." Parents and their children review these ground rules for open communication together, and then sign a commitment sheet, agreeing to follow the rules for the remainder of the sessions. The next two activities aim to help parents and children practice discussing sensitive or personal issues before specifically discussing issues related to sex, sexuality, HIV, STD or pregnancy prevention. In activity 2, parents and children review a "Stages of Life" chart, which describes issues and challenges that arise at various developmental stages (childhood, adolescence and adulthood). Parents and children take turns discussing how these issues and experiences affect them personally. During activity 3, "Make a Wish," parents and children separately answer a series of worksheet questions about what they would like to do and be, how they want to be perceived, and what they wish for themselves and each other. They then share their responses.

Homework Assignment 2

The second assignment was designed to reinforce information covered in the first classroom MPM session. In activity 1, "Interview of Parent," children interview their parents to find out what life was like when they grew up, whether teenagers were sexually active, whom they talked to about sex, why teenagers delayed or initiated sexual activity, etc. In activity 2, students pick from a list some of the "Reasons to Wait to Have Sex" that their friends might choose, and explain why they think their friends feel that way. In activity 3, parents have an opportunity to explain why they would like their child to wait to have sex. In activity 4, parents and children together complete a worksheet on "Myths and Facts" about HIV, STD and pregnancy risks, and then review their answers against the correct answers. In activity 5, parents and their children look through magazines together to try to identify "Messages in the Media" that promote sexual activity among adolescents. Students are asked to bring copies of media advertisements to the next MPM class.

Homework Assignment 3

The third assignment was designed to increase understanding of media pressures and why some preteenagers and teenagers become sexually active, and to identify ways to handle internal pressures. In activity 1, "Messages in the Media," parents and children review and discuss advertisement portrayals of men and women, and how these advertisements directly or indirectly promote sexual activity. In activity 2, parents and children individually review a list of "Reasons for Having Sex" and check off the ones that they think motivate adolescents to become sexually active; they then compare the top three on their lists. In activity 3, parents and children explore "Ways to Handle Internal Pressures" to have sex that teenagers face (e.g., having sexual feelings and desires, wanting to belong and fearing that someone will leave you).

Homework Assignment 4

The fourth assignment was designed to increase adolescents' skills in resisting peer pressures to become sexually active. Activity 1, "What Are My Strengths?" was designed to help students build self-esteem and increase their ability to resist peer pressures. Parents and children complete separate worksheets containing questions about personal and interpersonal strengths, positive qualities, goals for the future and at least one "pressure" situation that they handled positively. Parents and children share their answers and discuss similarities and differences. In activity 2, children answer a series of questions designed to identify the qualities they look for when "Choosing Best Friends." Their answers are discussed with parents. In activity 3, "Resisting Peer Pressures," parents and children select two out of five hypothetical role-play scenarios to enact together. They read the scenario, complete a worksheet, select a role, role-play the situation, and provide feedback to one another about successes and areas for improvement. During each role-play, they are instructed to strive for the following goals: resist pressure, feel good about yourself, feel accepted by the other person and feel in control of the situation. In activity 4, "Dealing with Peer Pressures to Have Sex," parents and children identify sources of peer pressure, the types of pressure received and how to respond effectively to these pressures.

Homework Assignment 5

The fifth assignment was designed to increase adolescents' skills in being able to resist dates' or partners' pressures to become sexually active. Activity 1, "Dating—Deciding Who You Will Go Out With," was designed to help students identify the expectations they have of dating relationships (e.g., what kind of person they would like to go out with, how they would like to be treated, "red flags" to look out for and how to handle pressures). Parents and children answer questions separately and then discuss the similarities and differences in their answers. In activity 2, "Dealing with Pressures to Have Sex," students identify the types of dating partners who might put the greatest pressure on them to have sex (e.g., someone they are attracted to, they have just started dating or have been dating a long time), "pressure lines" they might hear, how they could respond and what the expected outcomes of responding in that way might be. In activity 3, "Resisting Dating Pressures," parents and students select the types of dates that would put the greatest pressure on them, and choose two of 10 corresponding role-play scenarios to enact together. Before each role-play, parents and students read the scenario out loud, answer a series of questions about the situation together, pick roles and then role-play the situation to achieve the following goals: resist pressure, feel good about yourself, feel accepted by the other person and feel in control of the situation. After each role-play scenario, parents and students give each other feedback on their thoughts and feelings during the role-play.

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†Although students in the MPM-only group did not receive homework assignments to complete with their parents, they may have shared with their parents workbooks or other materials that they received as part of their work in class.