

A Comparative Study of Interventions for Delaying The Initiation of Sexual Intercourse Among Latino And Black Youth

CONTEXT: Latino and black adolescents are disproportionately affected by STDs, including HIV, and unintended pregnancies. Few parent-based interventions have targeted these youth, focused on early adolescence and had high participation rates.

METHODS: Between 2003 and 2009, a randomized clinical trial was conducted with 2,016 Latino and black mother-adolescent dyads in New York City. Adolescents were eligible if they were in grade 6 or 7. Dyads were assigned to one of three conditions: a parent-based intervention, Families Talking Together (FTT); an adolescent-only intervention, Making a Difference! (MAD); or a combined FTT+MAD intervention. Respondents completed questionnaires at baseline and 12 months later. Single-degree-of-freedom contrasts and logistic regression analysis were used to evaluate differences in outcomes by intervention.

RESULTS: The proportion of youth who reported ever having engaged in vaginal intercourse increased over the study period by eight percentage points among those in the MAD group, five points in the FTT group and three points in the combined group; the differences among these increases were not statistically significant. Adolescents in the two FTT groups were significantly more likely than those in the MAD group to indicate that their mother had talked to them about not having intercourse (79% vs. 68%). They also scored higher than youth in the MAD group on measures of communication and perceived maternal attributes, and lower on activities that might lead to risky behaviors.

CONCLUSIONS: The proportions of adolescents who initiated intercourse during the study period were not significantly different across groups, implying that the interventions were comparable. Findings suggest that FTT may have led to improved parenting behaviors.

Perspectives on Sexual and Reproductive Health, 2011, 43(4):247–254, doi: 10.1363/4324711

By Vincent Guilamo-Ramos, James Jaccard, Patricia Dittus, Alida Bouris, Bernardo Gonzalez, Eileen Casillas and Stephen Banspach

Vincent Guilamo-Ramos and James Jaccard are professors and codirectors, and Bernardo Gonzalez and Eileen Casillas are project coordinators, all at the Center for Latino Adolescent and Family Health, Silver School of Social Work, New York University, New York. Patricia Dittus is behavioral scientist at the Division of STD Prevention, and Stephen Banspach is associate director for science at the Division of Adolescent and School Health, both at the Centers for Disease Control and Prevention, Atlanta. Alida Bouris is assistant professor, School of Social Service Administration, University of Chicago.

Epidemiologic surveillance data show that Latino and black youth experience higher rates of unintended pregnancies,¹ STDs,² and HIV and AIDS^{3,4} than their white peers. A large body of research suggests that parents can influence their adolescent child's sexual decision making.^{5–8} Parental monitoring,^{7,8} parent-adolescent communication^{6,9} and parental attitudes that discourage adolescent sexual intercourse^{5,7} have been associated with reduced levels of risky sexual behavior among Latino and black youth. Studies of parent-based interventions to reduce adolescent sexual behaviors have tended to find contradictory effects and have suffered from methodological limitations regarding participant recruitment and retention.^{10,11}

A number of parent-based interventions developed for Latino and black youth have demonstrated positive effects on increasing condom use, delaying the initiation of intercourse and reducing levels of unsafe sexual behavior.^{12–17} However, few have targeted inner-city youth, focused on early adolescence, had high rates of parental participation and been delivered in formats that are not time-intensive for participants. Furthermore, because parent-based interventions are typically combined with school-based interventions, it is difficult to reach conclusions regarding the effectiveness of each approach on adolescent behavior.¹⁸

One program that addresses these shortcomings is Families Talking Together (FTT), which we developed in the context of the Linking Lives Health Education Program, a parent-based intervention that focuses on healthy living among middle school students. This intervention is aimed at delaying the initiation of sexual intercourse among middle school-aged, inner-city youth. It is developmentally appropriate, based on extensive formative research, theory-driven and tailored to the ethnicity of the target population.¹⁹ In an evaluation of the intervention in clinic settings, Guilamo-Ramos et al.²⁰ assigned Latino and black mother-adolescent dyads to either the intervention condition or a control group that received the normal “standard of care.” Dyads were assigned to conditions when they came to the clinic to obtain an annual physical exam for entry into school in the fall. While the adolescents were having their exam, mothers in the experimental condition were invited into a private room, where they participated in a 30-minute intervention focused on effective communication and parenting strategies for reducing sexual risk behavior. Participants then received two follow-up booster calls over the ensuing five months. Approximately nine months after the intervention, adolescents from both groups were interviewed. The primary outcome was whether they had

ever engaged in vaginal intercourse. At baseline, 6% of adolescents in both study conditions reported having engaged in intercourse; nine months later, the proportion remained at 6% in the intervention condition, but was 22% in the control condition ($p < .05$).

The present study extends this research by comparing the relative efficacy of the parent-based intervention with the Making a Difference! (MAD) program—an adaptation of Be Proud! Be Responsible!—one of the leading evidence-based programs to delay the initiation of adolescent sexual intercourse that targets youth directly and does not include parents.^{21,22} This program and theoretically similar ones focused on abstinence-only or comprehensive sex education are effective in reducing sexual risk behavior among sexually active or inactive youth, regardless of their race or ethnicity.^{23–25} If the parent-based intervention is as effective as the adolescent-only intervention, schools could have another way to address sexual risk behavior. One feature of programs built on parental involvement is that parents make the decisions about the content and timing of messages, and can tailor them to the needs of a given adolescent and his or her family. Parent-based programs also engender a sense of school engagement for parents, demonstrate schools' commitment to the broader needs of families and are likely to be less controversial than comparable programs aimed solely at middle school teenagers.^{15,26,27}

The current research evaluated three conditions in a randomized clinical trial. One condition used the FTT intervention and focused on mothers of adolescents, the second used only the MAD intervention, and the third administered both the FTT and the MAD interventions (FTT+MAD) to the mother-adolescent dyads. This approach allowed us to assess the relative efficacy of FTT and MAD, and to test whether adding the MAD program to the parent-based intervention improves the efficacy of the latter. No formal control group was included because the programs have already demonstrated their efficacy^{20,28} and because the focus of the current research was on the conditions' relative effectiveness, not their absolute effectiveness.

METHODS

Participants

A total of 2,016 Latino and black mother-adolescent dyads participated in the study, which was conducted from 2003 to 2009 in five middle schools in Bronx and Harlem neighborhoods of New York City. Schools were selected on the basis of location in areas with documented high rates of HIV, other STDs and teenage pregnancy. Families were randomly chosen from among those that included a Latino or black youth enrolled in grade 6 or 7 at a participating middle school. Recruiters who were bilingual in English and Spanish telephoned the resident mother

and invited her and the target adolescent to participate in a family-based program to reduce sexual risk behavior by delaying the initiation of intercourse. The resident mother—defined as the adult female who lived in the home and was primarily responsible for caring for the adolescent—was selected because research suggests that many Latino and black households in the target communities are headed by a single female.⁶

A total of 2,460 families were invited to participate, of whom 82% agreed to do so. Seven percent refused, 8% were scheduled to attend an event but did not, and 3% either moved or transferred their child to another school. All but 12 nonparticipating families completed refusal bias surveys during recruitment calls. No significant differences in maternal education, marital status or number of children were observed between participating and nonparticipating families. If participating families were unable to attend the in-school events, they were offered a home visit; 8% received a shortened home version of the interventions. The proportions of families receiving the in-home interventions were roughly equal across the three experimental conditions.* Of the dyads interviewed at baseline, 89% participated in the final interview. Attrition did not vary significantly by condition and was not associated with any baseline measures.

Adolescents signed assent forms, and mothers signed permission and consent forms. All forms were available in English and Spanish. Families received \$25 for each survey they completed: Adolescents received \$10 per survey, and mothers \$15 per survey. Institutional review board approval was obtained from Columbia University and the Centers for Disease Control and Prevention.

Interventions

At the initial in-school data collection event, adolescents and mothers completed baseline assessments in separate rooms. Families were then randomly assigned via a computer-based program to one of the three intervention conditions. Intervention allocation was concealed from data collectors and participants to reduce the potential for bias at the postintervention assessment.

•**Making a Difference!** MAD's scope and goals are similar to those of the Be Proud! Be Responsible! program.^{29,30} However, rather than stressing a safer-sex approach, the MAD curriculum advocates abstinence. The original version of MAD consists of eight one-hour modules that can be implemented in eight classroom sessions, in four two-module sessions or in two four-module sessions. The program includes a manual for facilitators, a student workbook, activities and games, and videos. Its design was based on social cognitive theory, the theory of planned behavior and the theory of reasoned action.

We implemented a slightly modified version of MAD because the original intervention was somewhat demanding of participating schools' resources. Materials were based on the original MAD curriculum and student workbook. All core components of MAD were delivered in the

*When families who received the in-home interventions were excluded from analyses, results were comparable with those for the total sample.

modified intervention, and we conducted three formative research activities to tailor the intervention to the target families: focus groups with mothers and adolescents to gain perspectives on their preferences regarding intervention feasibility, content and delivery; in-depth interviews with mothers and adolescents to obtain information on sensitive aspects of adolescent sexual behavior; and a pre-intervention survey. In all three activities, we explored variation associated with gender, grade, and race or ethnicity, and intervention materials were adapted as appropriate. The only MAD component that was excluded was the videos, as they were available only in English.

The modified version consisted of two sessions, each lasting approximately 2.5 hours and delivered on separate days (primarily in the evenings and on weekends). Day 1 included five modules of MAD: getting to know your dreams and steps to making your dreams come true; understanding adolescent sexuality and abstinence; HIV infection; attitudes, beliefs and giving advice about HIV, STDs and abstinence; and STDs. On Day 2, the remaining modules were addressed: pregnancy; responding to peer and partner pressure; and role-plays on refusal and negotiation skills. In each session, investigator-trained, bilingual facilitators engaged adolescents in games and activities that enabled the youth to practice the covered content and skills. In addition, all adolescents received an activity workbook in English or Spanish that was designed to enhance the core content of the curriculum; the Spanish workbook was created by back-translating from the English version.³¹

•**Families Talking Together.** The parent-based FTT intervention consisted of two group sessions (lasting about 2.5 hours each); distribution of a manual for parents that focused on effective communication and parental monitoring strategies for delaying the initiation of adolescent sexual intercourse; and two booster telephone calls, made one month and six months after the intervention. The sessions and booster calls were administered by trained, bilingual facilitators. The manual included 11 short modules written at a fourth-grade reading level: The first nine were for parental use, and the last two were for parents to give to their adolescents as companion resources if they wished. The manual also had two interactive parent-adolescent homework assignments designed to reinforce intervention content. All sessions and materials were available in English and Spanish; two English versions of the manual were available, one tailored to Latino parents, and one to black parents. The manuals were developed using the same three preintervention formative activities as conducted for the MAD program. In addition, the Spanish materials were created from the English versions using back-translation procedures.³¹

During the Day 1 session, the manual was distributed and reviewed with parents. Principles from the modules were discussed, including parents' ability to make a difference, strategies for effective communication and the importance of parental monitoring. Facilitators discussed

the health consequences of adolescent sexual risk behavior, the prevalence of sexual intercourse among teenagers, the social aspects of adolescents' engaging in sexual intercourse and how to teach children to resist peer pressure to engage in intercourse.

Day 2, one week later, focused on homework assignments and reviewed content from the previous session, which allowed parents to practice the core skills. The assignments used playing cards to facilitate conversation between parents and adolescents, critical thinking and problem solving regarding issues associated with the social aspects of engaging in intercourse. The first assignment presented scenarios in which an adolescent encounters peer pressure. Adolescents are then offered a series of cards with possible comebacks to the peer pressure, and are asked to select the most appropriate one. The activity also encourages parent-adolescent communication about other ways to respond that may be tailored to a particular adolescent's or family's style. The second assignment addressed social reasons that adolescents commonly embrace to justify engaging in intercourse: Adolescents and parents read a short story that describes a youth who has decided to have intercourse for social reasons and who later experiences consequences that lead to regret for having done so. Parents are provided with strategies for presenting the story to their adolescents, a series of question cards based on the story to promote communication and preparation for conversations that may ensue after their child has read the story.

During the one- and six-month booster calls, facilitators asked mothers if they had done the homework assignments with their child and employed the suggested parenting strategies. If families had not completed the assignments or needed additional support, facilitators reviewed the intervention material with the mothers and provided additional assistance.

•**Intervention contamination.** Because the interventions were administered within the same schools, we tested for contamination effects by assessing if materials distributed to parents in the FTT conditions somehow found their way to parents of adolescents in the MAD condition. Forty-one percent of parents in the latter group stated that they had given their child a handout that had been distributed to parents in the FTT conditions, which represents a higher level of contamination than we anticipated. When we compared parents in the MAD condition who had access to the handout with those who did not, we found no significant differences in the adolescent behavioral outcomes. Contamination from the MAD-only condition to the FTT-only condition was unlikely because this would require adolescents in the former intervention to interact with parents in the latter one.

Sample Sizes

At baseline, 666 mother-adolescent dyads participated in the FTT, 679 in the MAD and 671 in the FTT+MAD condition. The study was powered to detect an absolute

difference of eight percentage points between the intervention conditions (assuming a two-tailed alpha level in the context of a logistic analysis), on the assumption that this represented a meaningful difference. Furthermore, although we recognize that scientists who have more stringent standards for defining meaningful differences might view the study as being underpowered, we believed that these recruitment levels represented a reasonable balance between study costs and test sensitivity. Self-administered questionnaires were completed at baseline and 12 months later, when data on the primary outcome measures were collected from 600 mother-adolescent dyads in the FTT, 614 in the MAD and 603 in the FTT+MAD condition.

Of those who participated in any of the intervention groups, 70% attended both sessions, and 30% only the first one; these rates did not vary appreciably by intervention. The group size for all interventions was 8–10 individuals per session.

Measures

All measures have been used in our prior research with the target population and have been shown to have excellent psychometric properties.^{5,6,19,32,33} Our research with inner-city populations suggests that respondents find frequent changes in scale format confusing, so whenever possible, we structured items to use a five-point agreement scale (strongly disagree, moderately disagree, neither agree nor disagree, moderately agree, strongly agree). The wording of the items was based on linguistic analysis of focus groups conducted previously with the target population, and questionnaires were pilot-tested for readability and comprehension. Separate versions of the questionnaire were developed for male and female adolescents, as well as for mothers of male adolescents and mothers of female youth. (In the following descriptions, we use phrasing consistent with the version meant for females.) The questionnaire was forward- and back-translated into Spanish using established methods.³¹

Questionnaire instructions were reviewed verbally with respondents, who were then given practice items to eliminate warmup effects and ensure scale understanding. To encourage truthful answers, we assured them that their responses were confidential. Fifty-four percent of mothers and 17% of adolescents completed surveys and participated in intervention sessions in Spanish.

•Mother-adolescent communication. Adolescents indicated how much they had talked with their mother about 15 specific topics—for example, “how if I had sexual intercourse at this time in my life, I might get a sexually transmitted disease”; “how I might get a bad reputation if I had sexual intercourse at this time in my life”; and “how having sexual intercourse at this time in my life would be morally wrong.” Responses were scored on a four-point scale (not at all, somewhat, a moderate amount, a great deal). A mean communication score was calculated by averaging the responses to the 15 items (Cronbach’s alpha, 0.97). In addition, a dichotomous item asked whether the

mother had ever talked with the adolescent about not having sexual intercourse at this time in her life.

•Maternal monitoring and supervision. The FTT intervention encouraged parents to monitor their children’s social activities that might either directly or indirectly lead to opportunities to engage in sexual risk behaviors. Each item asked the adolescent how often she had engaged in the activity in the past three months (never, 1–2 times, 3–4 times, at least five times). The items were “had boys over to the house when no adult was at home”; “went out socially on school nights”; “went to an unsupervised party where there were both boys and girls”; “hung out with older girls (one or two grades older than me)”; “went out on ‘dates’ with boys”; and “went out on ‘dates’ with boys who are older than me (one or two grades older).” The overall scale of all six measures had a Cronbach’s alpha of 0.80, and its validity has been demonstrated in previous work.³² We present the scores for each item to provide a more nuanced perspective on monitoring activities.

•Perceived maternal expertise and trustworthiness. FTT was designed, in part, to teach parents how to gain the trust of their adolescent and to give good advice. Perceived maternal expertise and trustworthiness were measured using three items for each construct; responses were rated on the five-point agreement scale. The items for expertise were “My mother gives me good advice”; “The advice my mother gives me is helpful when we talk about important topics”; and “When I need good advice about something important, I go to my mother for help.” The items for trustworthiness were “I can trust my mother when we talk”; “My mother keeps her promises to me”; and “My mother is honest with me.” Scores were calculated by averaging responses to each scale (Cronbach’s alphas, 0.73 and 0.82, respectively). These measures have been shown to have construct validity.³³

•Satisfaction with mother-adolescent relationship. FTT offered constructive ways in which parents could increase adolescents’ satisfaction with the maternal relationship. Using the five-point agreement scale, adolescents responded to the statement “I am satisfied with my relationship with my mother.” This item is highly correlated with more complex scales of relationship satisfaction and has shown excellent predictive validity of sexual behavior in national studies.⁵

•Sexual behavior. Adolescents were given a definition of vaginal intercourse and were asked if they had ever engaged in it. If they had, they indicated the number of times they had done so in the past 12 months, using a five-point scale (never, less than once a month, once a month, 2–3 times a month, at least once a week). Frequency of sex was assessed only at the 12-month follow-up.

•Social desirability. We measured social desirability response tendencies using a scale based on the work of Paulhus.³⁴ Adolescents were asked to indicate on the five-point scale their agreement with four items that were clearly false but that one might endorse to create a good impression: “I never swear”; “I don’t gossip about other

people's business"; "I never criticize other people"; and "I never say something bad about a friend behind his or her back." Cronbach's alpha for the summed scale was 0.75.

Analysis

Single-degree-of-freedom contrasts assessed if the outcomes were significantly different depending on whether the mother-adolescent dyads were assigned to FTT or FTT+MAD, as compared with the MAD-only condition. Critical ratios were calculated by dividing the difference by its standard error; in the case of the Wald statistic calculated for the measure of whether a mother had talked with her adolescent about not having sex, the difference in the log odds was divided by its standard error and squared. The a priori logic was that because the MAD-only intervention did not include parents, it was an appropriate control group for evaluating whether the FTT intervention led to changes in parenting behaviors. If the FTT component is indeed successful at changing parenting behaviors, then we should observe parenting differences between the pooled FTT conditions and the MAD-only condition when the outcome is related to a parenting behavior. Adolescent sexual behavior outcomes were evaluated for each of the three groups separately. The contrasts for all outcomes used either logistic regression or robust algorithms for comparing means based on either bootstrapping or robust Welch tests.³⁵ Logistic regression analysis was performed using contrast coding to compare each possible pair of groups on the one-year follow-up reports of sexual intercourse.

RESULTS

Sample Characteristics

Seventy-five percent of the mother-adolescent dyads were Latino, and 25% were black (Table 1). Mothers' mean age was 40, and 43% of mothers were single heads of household. More than half spoke primarily Spanish at home; only one-quarter had completed high school. A third of the mothers had been born in the United States, and nearly six in 10 were Catholic.

The mean age of adolescents was 12; equal proportions were males and females. At baseline, 48% of adolescents were in grade 6, and 52% were in grade 7. A third of them spoke mostly Spanish at home, and three-fourths were U.S.-born. Seven percent of adolescents had engaged in vaginal intercourse by baseline.

As a check on randomization, we compared the baseline proportions of adolescents who had engaged in sexual intercourse across the three intervention conditions. The proportions—8% of youth in the FTT and FTT+MAD conditions, and 5% of those in the MAD group—did not differ significantly. School effects on the various outcome variables were negligible and nonsignificant, suggesting no need to account for clustering as a function of schools. All analyses yielded comparable conclusions irrespective of whether schools were included as a covariate.

TABLE 1. Selected baseline characteristics of mothers and adolescents participating in a trial of three interventions aimed at delaying initiation of intercourse, New York City, 2003–2009

| Characteristic | % or mean (N=2,016)† |
|------------------------------|----------------------|
| Mother | |
| Race/ethnicity | |
| Latino | 75.0 |
| Black | 25.0 |
| Mean age | 40.1 (8.6) |
| Single head of household | 42.8 |
| Speak mostly Spanish at home | 51.5 |
| Completed high school | 24.6 |
| U.S.-born | 33.9 |
| Religion | |
| Catholic | 56.5 |
| Baptist | 8.7 |
| Other | 21.2 |
| None | 13.6 |
| Adolescent | |
| Race/ethnicity | |
| Latino | 75.0 |
| Black | 25.0 |
| Mean age | 12.2 (1.0) |
| Male | 49.8 |
| Grade | |
| 6 | 47.5 |
| 7 | 52.5 |
| Speak mostly Spanish at home | 32.2 |
| U.S.-born | 76.6 |
| Has had vaginal intercourse | 6.9 |

†The sample includes 2,016 mothers and 2,016 adolescents. Notes: Figures are percentages unless noted otherwise; figures in parentheses are standard deviations.

Adolescents' social desirability response tendencies were weakly but significantly associated with self-reports of having had sexual intercourse ($r=-0.07$, $p<.05$). However, all substantive findings were comparable in the analyses reported below, whether or not this measure was included as a covariate.

Primary Outcomes

At the one-year follow-up, 79% of adolescents in the two FTT conditions combined reported that their mother had ever talked with them about not having sexual intercourse, as did 68% of youth in the MAD condition (Table 2, page 252). These proportions were significantly different, as confirmed by results of logistic regression analysis. The mean communication scores of 3.2 for the two FTT conditions and 3.0 for the MAD condition were also significantly different.

Compared with youth in the adolescent-only MAD group, adolescents in the two parent-based groups reported significantly lower levels of all six behaviors targeted in the monitoring component of FTT (i.e., behaviors that could lead to opportunities for intercourse). Adolescent ratings of maternal expertise and maternal trustworthiness were significantly higher for the two FTT groups than for the MAD-only group: 4.1 vs. 4.0 for expertise, and 4.54 vs. 4.45 for trustworthiness. In addition, adolescents in the two FTT groups reported a significantly higher level of satisfaction with the relationship with

TABLE 2. Selected measures regarding the mother-adolescent relationship, as reported by adolescents at 12-month follow-up, by intervention

| Measure | FTT/ FTT+MAD (N=1,203) | MAD (N=614) | Critical ratio |
|---|------------------------------|----------------|-------------------|
| Communication | | | |
| Ever talked about not having sex (%) | 79.0 | 68.0 | 22.80* |
| Communication score (range, 1–4) | 3.16 | 2.99 | 3.72* |
| Maternal monitoring/supervision (range, 1–4) | | | |
| Had boys to house when no adult was home | 1.34 | 1.59 | 5.92* |
| Went out socially on school nights | 1.58 | 1.71 | 2.77* |
| Went to unsupervised party with boys and girls | 1.42 | 1.57 | 3.39* |
| Hung out with girls 1–2 grades older | 2.15 | 2.27 | 2.18* |
| Went on dates with boys | 1.48 | 1.64 | 3.57* |
| Went on dates with boys 1–2 grades older | 1.30 | 1.44 | 3.48* |
| Maternal expertise (range, 1–5) | | | |
| | 4.12 | 4.00 | 2.28* |
| Maternal trustworthiness (range, 1–5) | | | |
| | 4.54 | 4.45 | 2.22* |
| Satisfaction with relationship (range, 1–5) | | | |
| | 4.25 | 4.10 | 2.27* |

*p<.05. Notes: Questionnaire items were phrased for male or female adolescents as appropriate; phrasing for females is presented here. Figures are means unless noted otherwise; the higher the score, the stronger adolescents' endorsement of the measure. A Wald statistic was calculated for the first measure, and t tests were used for all others. Critical ratios were calculated by dividing the difference by its standard error; for the Wald statistic, the difference was divided by its standard error and squared. FTT=Families Talking Together. MAD=Making a Difference!

their mother than did youth in the MAD-only group (4.3 vs. 4.1).

Among adolescents in the MAD-only group, the proportions who reported that they had engaged in vaginal intercourse were 5% at baseline and 13% at the one-year follow-up (Table 3). In the FTT-only group, 8% had had intercourse at baseline, and 13% had done so at follow-up. Finally, for the MAD+FTT group, the baseline and follow-up proportions were 8% and 11%, respectively. Relative risks calculated from these findings suggest that adolescents in the FTT group were 36% less likely than those in the MAD group to have initiated intercourse by follow-up, adolescents in the FTT+MAD group were 55% less likely than MAD youth to have done so, and adolescents in the FTT+MAD group were 30% less likely than those in the FTT-only group to have done so.* Although these appear to be large differences, the absolute changes were modest and did not differ significantly across conditions. Thus, there was no evidence that the MAD-only intervention was meaningfully superior (or inferior) to the FTT-only

intervention, or that adding the adolescent component improved the efficacy of FTT alone. Similarly, bootstrapped multiple regression analyses^{36,37} revealed no group differences in adolescents' frequency of sexual intercourse in the past year. When adolescents who had already initiated intercourse at baseline were excluded from analysis, the results of the significance tests were comparable and did not differ from the earlier ones.

DISCUSSION

Many parent-based interventions affect the amount of parent-adolescent communication about sex and adolescent knowledge and beliefs related to sex, but do not produce behavior change.¹⁸ We found that the FTT parent-based intervention and MAD, a leading evidence-based intervention delivered directly to adolescents, were about comparable in their efficacy in delaying adolescents' initiation of sexual intercourse. This finding suggests an additional outreach strategy for school-based initiatives to address unintended pregnancy and STDs in adolescents.

We believe that evidence-based sex education programs that directly target youth should continue to be a priority. However, their widespread adoption may be hampered by various constraints, including inadequate time to deliver the program in schools and tensions resulting from abstinence-only versus comprehensive sexuality approaches. Parent-based interventions offer an alternative option for addressing implementation challenges. Specifically, parents can ensure that interactions with their adolescent children are consistent with their cultural, religious and broader family values. Furthermore, parents can time the delivery of sexuality and reproductive health messages to adapt to the specific needs of their child.

Capacities within schools vary greatly. Schools that are accustomed to involving parents, or that have programs designed to encourage such involvement, may find implementation of a parent-based program feasible and attractive. In schools where engaging parents has historically been more difficult, professional development for staff may be needed to ensure comfort with sex-related content and sensitivity when they approach parents to participate in a school-based program. Methods that proved successful for parental recruitment in the current study included minimizing the number of intervention sessions, using booster calls and mailings, and allowing flexible scheduling.^{38–40} Implementation of parent-based interventions in resource-constrained settings can benefit from other strategies, such as partnering with university social work or public health programs that require students to fulfill community internships.

*Relative risk was calculated, for example, by subtracting the percentage-point increase from baseline to follow-up for the FTT condition from the corresponding increase for the MAD condition, and dividing by the latter figure (i.e., 7.8%–5.0%/7.8%).

TABLE 3. Sexual behavior outcomes among adolescents, by intervention

| Outcome | FTT | MAD | FTT+MAD |
|--|------------------|------------------|------------------|
| Ever had intercourse (%) | | | |
| Baseline | 7.5 (5.7–9.7) | 5.3 (3.8–7.2) | 7.9 (6.1–10.2) |
| One-year follow-up | 12.5 (10.1–15.5) | 13.1 (10.6–16.0) | 11.4 (9.1–14.2) |
| Percentage-point difference | 5.0 (2.1–7.9) | 7.8 (5.7–9.9) | 3.5 (0.9–6.1) |
| Frequency of intercourse (range, 1–5) | | | |
| | 2.24 (1.98–2.50) | 2.42 (2.13–2.71) | 2.38 (2.10–2.66) |

Notes: Frequency of intercourse was measured only at follow-up among adolescents who had had intercourse; the higher the mean, the greater the frequency. Figures in parentheses are 95% confidence intervals. FTT=Families Talking Together. MAD=Making a Difference!

We did not find that adding the MAD curriculum to the FTT intervention significantly improved the efficacy of the latter program. Thus, it may be more practical to use only one or the other intervention. However, perhaps with larger sample sizes to increase sensitivity, differences in postintervention changes in the proportion of adolescents reporting sexual experience would have reached statistical significance. Also, the efficacy of the MAD-only condition was probably augmented by the contamination effects that allowed parents in this group to obtain access to the FTT parenting materials.

Limitations

This study has limitations. First, the primary outcomes were based on self-reports, and one must be cautious when making inferences about behavior based on such data. Also, practical resource constraints in inner-city school settings required us to simplify the MAD intervention; thus, caution is warranted when making statements about the program. However, the eight-point increase from baseline to the 12-month follow-up is comparable with the 12-point increase previously observed with the MAD program over the same time frame with comparably aged adolescents of similar ethnicity.²⁵ Given a longer follow-up period, absolute differences may have been larger and statistically significant.

The study did not include a formal control group to test the efficacy of the FTT and MAD programs, because the efficacy of these programs has been established,^{20,28} and our purpose was to evaluate their relative efficacy. For example, our past research has consistently found levels of sexual initiation of about 20% among control group adolescents who received “standard of care” treatment in the target populations we work with.²⁰ Both the FTT and the MAD interventions showed initiation levels that were at least half that. Finally, the present study was restricted to an inner-city population in New York City; thus, the generalizability of our results to other populations and settings is limited. Future research should explore the efficacy of the interventions in other populations and be sufficiently powered to detect differences across racial and ethnic subgroups.

Conclusions

This research represents an important first step in comparing parent-based and adolescent-based programs. We recommend that future research explore how other programmatic differences, such as the degree of tailoring toward racial or ethnic subgroups, may influence adolescent behavioral outcomes. Such research may strengthen the potential impact of interventions that target parents or their children. Our results support the potential of parent-based interventions in delaying the initiation of sexual intercourse among young adolescents.

REFERENCES

1. Hamilton BE, Martin JA and Ventura SJ, Births: preliminary data for 2007, *National Vital Statistics Reports*, 2009, Vol. 57, No. 12.

2. Forhan S et al., Prevalence of sexually transmitted infections among female adolescents aged 14 to 19 in the United States, *Pediatrics*, 2009, 124(6):1505–1512.

3. Rangel MC et al., Epidemiology of HIV and AIDS among adolescents and young adults in the United States, *Journal of Adolescent Health*, 2006, 39(2):156–163.

4. Campsmith ML et al., HIV prevalence estimates—United States, *Morbidity and Mortality Weekly Report*, 2008, 57(39):1073–1076.

5. Dittus P and Jaccard J, The relationship of adolescent perceptions of maternal disapproval of sex and of the mother-adolescent relationship to sexual outcomes, *Journal of Adolescent Health*, 2000, 26(4):268–278.

6. Guilamo-Ramos V et al., Adolescent expectancies, parent-adolescent communication and intentions to have sexual intercourse among inner-city, middle school youth, *Annals of Behavioral Medicine*, 2007, 34(1):56–66.

7. Miller KS, Forehand R and Kotchick BA, Adolescent sexual behavior in two ethnic minority samples: the role of family variables, *Journal of Marriage and the Family*, 1999, 61(1):85–98.

8. Rai A et al., Relative influences of perceived parental monitoring and perceived peer involvement on adolescent risk behaviors: an analysis of six cross-sectional data sets, *Journal of Adolescent Health*, 2003, 33(2):108–118.

9. Hutchinson MK et al., The role of mother-daughter sexual risk communication in reducing sexual risk behaviors among urban adolescent females: a prospective study, *Journal of Adolescent Health*, 2003, 33(2):98–107.

10. Campero L et al., A quasi-experimental evaluation of parents as sexual health educators resulting in delayed sexual initiation and increased access to condoms, *Journal of Adolescence*, 2010, doi:10.1016/j.adolescence.2010.05.010, accessed Jan. 24, 2011.

11. Ethier K and Orr D, Behavioral interventions for prevention and control of STDs among adolescents, in: Aral S and Douglas JM, eds., *Behavioral Interventions for the Prevention and Control of Sexually Transmitted Diseases*, New York: Springer Science, 2007.

12. Dilorio C et al., Keepin' it R.E.A.L!.: results of a mother-adolescent HIV prevention program, *Nursing Research*, 2006, 55(1):43–51.

13. Forehand R et al., Efficacy of a parent-based sexual-risk prevention program for African American preadolescents: a randomized controlled trial, *Archives of Pediatrics & Adolescent Medicine*, 2007, 161(12):1123–1129.

14. Murry V et al., The Strong African American Families program: longitudinal pathways to sexual risk reduction, *Journal of Adolescent Health*, 2007, 41(4):333–342.

15. O'Donnell L et al., Saving Sex for Later: an evaluation of a parent education intervention, *Perspectives on Sexual and Reproductive Health*, 2005, 37(4):166–173.

16. Prado G et al., A randomized controlled trial of a parent-centered intervention in preventing substance use and HIV risk behaviors in Hispanic adolescents, *Journal of Consulting and Clinical Psychology*, 2007, 75(6):914–926.

17. Stanton B et al., Randomized trial of a parent intervention: parents can make a difference in long-term adolescent risk behaviors, perceptions, and knowledge, *Archives of Pediatrics & Adolescent Medicine*, 2004, 158(10):947–955.

18. Kirby D and Miller B, Interventions designed to promote parent-teen communication about sexuality, *New Directions for Child and Adolescent Development*, 2002, 2002(97):93–110.

19. Guilamo-Ramos V et al., A conceptual framework for the analysis of risk and problem behaviors: the case of adolescent sexual behavior, *Social Work Research*, 2008, 32(1):30–45.

20. Guilamo-Ramos V et al., A parent-based intervention for reducing sexual risk behavior in early adolescence: building alliances between physicians, social workers and parents, *Journal of Adolescent Health*, 2011, 48(2):159–163.
21. Jemmott JB III, Jemmott LS and Fong GT, Efficacy of a theory-based abstinence-only intervention over 24 months: a randomized controlled trial with young adolescents, *Archives of Pediatrics & Adolescent Medicine*, 2010, 164(2):152–159.
22. Jemmott JB III et al., Reducing HIV risk-associated sexual behavior among African American adolescents: testing the generality of intervention effects, *American Journal of Community Psychology*, 1999, 27(2):161–187.
23. Jemmott JB III et al., HIV/STD risk reduction interventions for African American and Latino adolescent girls at an adolescent medicine clinic: a randomized controlled trial, *Archives of Pediatrics & Adolescent Medicine*, 2005, 159(5):440–449.
24. Jemmott LS, Jemmott JB III and McCaffree K, *Making a Difference! An Abstinence-Based Approach to HIV/STDs and Teen Pregnancy Prevention*, New York: Select Media Publications, 2002.
25. Villarruel AM, Jemmott JB III and Jemmott LS, A randomized controlled trial testing an HIV prevention intervention for Latino youth, *Archives of Pediatrics & Adolescent Medicine*, 2006, 160(8):772–777.
26. Sheldon SB and Van Voorhis FL, Partnership programs in U.S. schools: their development and relationship to involvement outcomes, *School Effectiveness and School Involvement*, 2004, 15(2):125–148.
27. Soldano C and Markell G, Parent involvement in health concerns for youth: the issue of adolescent immunization, *Journal of School Health*, 1997, 67(7):292–293.
28. Jemmott JB III, Jemmott LS and Fong GT, Abstinence and safer sex HIV risk-reduction interventions for African American adolescents: a randomized controlled trial, *Journal of the American Medical Association*, 1998, 279(19):1529–1536.
29. Collins J et al., Programs-that-work: CDC's guide to effective programs that reduce health-risk behavior of youth, *Journal of School Health*, 2002, 72(3):93–99.
30. ETR Associates, Making a Difference! An abstinence based approach to prevention of STDs, HIV and teen pregnancy, no date, <<http://www.etr.org/recapp/index.cfm?fuseaction=pages.ebpDetail&PageID=127>>, accessed Apr. 22, 2011.
31. Marin G and Van Oss Marin B, *Research with Hispanic Populations*, Newbury Park, CA: Sage Publications, 1991.
32. Jaccard J et al., A three-process system of parental monitoring and supervision, in: Guilamo-Ramos V, Jaccard J and Dittus P, eds., *Parental Monitoring of Adolescents: Current Perspectives for Researchers and Practitioners*, New York: Columbia University Press, 2010, pp. 176–204.
33. Guilamo-Ramos V et al., Parental expertise, trustworthiness, and accessibility: parent-adolescent communication and adolescent risk behavior, *Journal of Marriage and Family*, 2006, 68(5):1229–1246.
34. Paulhus DL, *BIDR Reference Manual: Version 6*, Vancouver, Canada: Department of Psychology, University of British Columbia, 1991.
35. Wilcox R, *Introduction to Robust Estimation and Hypothesis Testing*, San Diego: Academic Press, 1997.
36. Bollen KA and Stine RA, Bootstrapping goodness-of-fit measures in structural equation models, in: Bollen KA and Long JS, eds., *Testing Structural Equation Models*, Newbury Park, CA: Sage Publications, 1993, pp. 111–135.
37. Davison A and Hinkley D, *Bootstrap Methods and Their Application*, Cambridge, UK: Cambridge University Press, 1997.
38. Spotha R et al., Barriers to participation in family skills preventive interventions and their evaluations: a replication and extension, *Family Relations*, 1996, 45(3):247–254.
39. Prinz RJ et al., Recruitment and retention of participants in prevention trials involving family-based interventions, *American Journal of Preventive Medicine*, 2001, 20(1 Suppl.):31–37.
40. Dumka LE et al., Recruitment and retention of high-risk families into a preventive parent training intervention, *Journal of Primary Prevention*, 1997, 18(1):25–39.

Acknowledgments

The research on which this analysis is based was supported by the Centers for Disease Control and Prevention (CDC) under cooperative agreement U87/CCU220155-3-0. As funder, the CDC was involved with the principal investigator in the conduct of the study. The findings and conclusions presented here are those of the authors and not necessarily those of the funder.

Author contact: vincent.amos@nyu.edu