

Original article

Adult identity mentoring: Reducing sexual risk for African-American seventh grade students

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Abstract

Purpose: This study was undertaken to determine whether the Adult Identity Mentoring (AIM) project successfully promotes abstinence, delays initiation of sex, and decreases intention to engage in sex.

Methods: Twenty middle school classes of African-American seventh graders were randomly assigned to receive either the AIM intervention or a standard health education control curriculum. The AIM is a 10-session curriculum based on the theory of possible selves. Class exercises encourage students to articulate a possible future self-identity and to develop self-promotion skills. Surveys about sexual activity were conducted before the intervention, 19 weeks after baseline, and again at 1 year after the intervention.

Results: Hierarchical logistic regression analyses showed significant effects for the intervention on sexual intentions, abstinence, and a trend toward fewer virgins initiating intercourse for the first time, 19 weeks after baseline. Specifically, students who received the intervention showed decreased intention to engage in sex and increased abstinence compared with students not receiving the intervention. Effects for 1-year follow-up, with smaller sample size, showed only that AIM male participants maintained the significant abstinence effect.

Conclusions: A new intervention, AIM was evaluated among African-American seventh graders. This program, by focusing students on positive future selves, effectively modified sexual risk without directly providing instruction on sexually explicit topics. © 2005 Society for Adolescent Medicine. All rights reserved.

Keywords: Adolescents; African American; HIV prevention; Possible selves; Sexual risk

Sexually transmitted infections (STIs), including infection with human immunodeficiency virus (HIV), disproportionately affect minority adolescents and young adults. Although African-Americans account for 15% of the adolescent population in the United States, they accounted for 64% of new acquired

immune deficiency syndrome cases in 2000 and 50% of cases reported from 1981 through 1999 in youth aged 13 through 19 years [1]. Sexual risk behaviors that contribute to the likelihood of becoming infected with HIV include beginning sexual activity at a young age, having many sex partners, and not using condoms [2].

Data from the 2001 Youth Risk Behavior Surveillance Survey [3] illustrate that sexual risk behaviors are more prevalent among African-American high school students than among white or Hispanic high school students. African-Amer-

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ican students (61%) were more likely than Hispanic (48%) and white (43%) students to have ever experienced sexual intercourse. Sixteen percent of African-American high school students, compared with 8% of Hispanic and 5% of white students, had had sexual intercourse before age 13 years. Furthermore, 27% of African-American students reported having had 4 or more sexual partners during their lifetime, compared with 15% of Hispanic and 12% of white students.

To reduce STIs in adolescents, interventions have been developed to delay initiation of first sexual intercourse for sexually inexperienced adolescents and to promote abstinence and increased condom use by sexually active adolescents [4–7]. These school-based and clinic-based interventions consist of curriculum-based programs that include sex education, condom use skills, and abstinence-based education [8].

Other programs to prevent adolescent risk behaviors, such as drug use and violence, have used a youth development or resiliency approach [9]. These programs attempt to reduce risk by improving general life skills; instilling an optimistic belief in the future, and building self-confidence, coping, and risk avoidance skills. Systematic research examining the effect of youth development programs on adolescent sexual behavior, condom use, or STI rates has not been conducted. However, several studies have shown that youth development programs significantly reduce rates of teen pregnancy or birth, which implies that these programs may also reduce risk for STIs, including HIV [10]. In addition, programs with a service learning component have been shown to reduce sexual risk [11].

Adolescence is a time of many challenges, in which developing a self-identity as an adult is a primary task [12]. During this time youth are developing cognitively, and many begin to recognize that their circumstances and environment may restrict their life alternatives. Early sexual risk behaviors may occur as a reaction to a pessimistic view of one's future or as a means of asserting oneself as an adult [13]. In either instance, risk behavior occurs not merely due to a lack of skills, as many current HIV prevention programs assume, but because at-risk adolescents are not motivated to make wise risk behavior choices [13]. One such motivational theory is the theory of possible selves, developed by Markus and Nurius [14].

The theory of possible selves maintains that we are motivated in our present life by mental images of possible future selves [14]. It postulates that motivations are enhanced when we have a balance between those future selves that we wish to achieve and those that we wish to avoid becoming. The better articulated we make these images, the more attainable, or real, they appear, and hence the more motivating they can become. When we have only positive future selves, we may not accurately gauge our chances at success or properly prepare ourselves for obstacles, short-term disappointments, or setbacks. With only negative future selves in mind, we have no belief that a positive future

is possible, and therefore we do not plan for the future and are not motivated to avoid present gratification in the pursuit of long-term goals.

Constructs from the theory of possible selves have been successfully used to predict adolescent risk behavior [15] and recidivism among African-American male juvenile offenders [16–18] and to identify which at-risk African-American male adolescents are likely to graduate from versus drop out of high school [19]. In addition, a theory-based curriculum (School to Jobs Program) has successfully improved bonding and commitment to school among African-American eighth graders [20].

The theory of possible selves also offers a new approach to HIV prevention by focusing on young adults' desires and motivations for attaining goals. By drawing from the assumptions in resiliency literature and the theory of possible selves [14], a novel mixture of theory resulted in the development of Adult Identity Mentoring (Project AIM).

Project AIM was developed to steer adolescents away from risky behavioral choices by offering alternative avenues to defining themselves as adults. The AIM exercises enhance individual students' articulation of their future self through interest inventories, business cards, and resumes. Students consider how their own behaviors might promote or impede the development of desired future self-identities. The curriculum encourages self-examination through exercises to identify desired future selves, through peer discussions of risky behavior and achieving future selves, and through interviews of participants regarding their desired occupation. In these ways the intervention provides opportunities for students to think about their future and their responsibility for that future.

Like the School to Jobs Program, Project AIM encourages at-risk adolescents to articulate their personal goals and uses exercises to teach them the skills required to achieve these goals [21]. Unlike the School to Jobs Program, Project AIM attempts to reduce risk behaviors by increasing adolescents' interest in successful adult development rather than academic improvement. Small groups and role models are used to create and sustain group norms of delaying or abstaining from sexual activity and other behaviors (drugs, violence, dropping out of school) that could disrupt achievement of their goals.

Project AIM is designed to encourage young people to think about their desired future and how current risky behavior choices can adversely affect it. By fostering future possible selves, youth may form an adult identity that could be threatened by risky behaviors, thereby motivating them to avoid risky behavioral choices. For example, an adolescent interested in the health industry might think about ways to volunteer to help at hospitals and how involvement in sex or drugs might obstruct their educational goals. A budding musician may begin by spending more time practicing, while a future businessman may decide that partying with friends may disrupt the learning of mathematics or com-

puter skills and make him appear less reliable to future employers (see Appendix A for a description of the AIM intervention). Project AIM uses a more holistic approach than changing a specific sexual risk behavior; it helps youth to explore seeing themselves as adults, a task developmentally associated with adolescence.

Although the overall evaluation of Project AIM included assessments of other risky behaviors, this article focuses on the effect of AIM on the sexual risk outcome behaviors of seventh grade students. We predicted that Project AIM would significantly reduce intentions to engage in sexual activity and increase abstinence among all students. In secondary analyses of the subset of virgins, we examined the effectiveness of AIM to reduce intentions to engage in sexual activity and to delay sexual debut of sexual intercourse.

Methods

Setting

Project AIM was implemented in a middle school in a suburban town near a southeastern metropolitan area. The students were predominately (98%) African-American and were mostly from low-income families. At the time of the program the school was on academic probation, meaning that less than 50% of students were able to pass the Stanford Achievement Test.

Participants

All students who were African-American, in seventh grade, and enrolled in the required 9-week health education class were eligible for study participation. Seventh graders ranged in age from 12 to 14 years. Active parental and child consent was required. Of the 252 eligible students, 4 parents (less than 2%) refused to let their child participate. These students completed library enrichment activities assigned by school personnel during intervention or assessment sessions. Of the remaining 248 students, all completed the baseline surveys 1 week before the intervention; however, 6 were dropped from analysis because of extensive missing data.

Of the remaining 242 eligible students, 211 (87% of baseline) provided data that could be used to evaluate intervention outcomes (i.e., they completed both baseline and short-term outcome assessment and did not have missing data) and 156 (64%) provided data that could be used to evaluate intervention outcomes at the 1-year post-intervention assessment.

Data collection and intervention procedures

Throughout the academic school year, 20 health education classes were offered (5 per quarter). Of these 20 classes, 11 were randomly assigned to offer the AIM intervention, twice a week for 6 weeks, in place of standard health education curriculum on those days. The remaining 9 classes followed the standard health education curriculum.

In quarter 1, class periods 3 and 5 were assigned to AIM and periods 2, 4, and 6 were assigned to standard health education curriculum. In the remaining quarters, class periods 2, 3, and 6 were randomly assigned as AIM intervention classes and periods 4 and 5 as the standard health education curriculum. In this way quarter 1 health education students had the opportunity to participate in AIM in the fall, and quarter 4 health education students had the opportunity to participate in AIM in the late spring.

Intervention sessions ($n = 10$) were conducted once or twice a week for 6 weeks, depending on the overall school schedule, such as assemblies, testing, holidays. (See Appendix A for description of activities). No intervention sessions were held on consecutive days. African-American college graduate students, 1 male and 1 female, trained in AIM delivery, implemented the intervention. Health education classes were taught by the regular classroom instructor. Intervention outcomes were examined in the short-term (19 weeks after baseline) and again at 1 year post intervention.

Before announcing which classes would receive the AIM intervention and which would receive the standard health education curriculum, baseline surveys were administered by Project AIM staff in the health education classroom settings in August (quarter 1), October (quarter 2), January (quarter 3), and April (quarter 4). Because health education classes were no longer in session during the follow-up period, assessment of short-term outcomes and 1 year post intervention took place in classrooms, the library, or the auditorium. Each student who participated received a \$5 coupon as compensation for every survey completed.

Survey measures

Demographics. Basic demographics included year of birth and ethnicity. Ethnicity was ascertained via the question, "With what racial/ethnic group do you most closely identify?" Response options included "African-American/black," "Caucasian/white," and "Other."

Sexual intentions. Sexual intentions were assessed at baseline, as short-term outcomes, and 1 year post intervention, using similar questions. At baseline students were asked, "Which of the following best describes how much you intend to have sex in the next 6 months?" For short-term outcome assessments, students were asked, "Which of the following best describes how much you intend to have sex in the next 9 months?"; for the 1-year follow-up they were asked about their intentions over a 12-month interval. The response options were the same for each of these 3 intention question formats: "I plan to have sex in the next X months," "I'm thinking about having sex in the next X months," "I have no plan to have sex in the next X months," and "I plan not to have sex in the next X months."

Sexual behaviors. Questions about voluntary sexual intercourse were taken from prior work by Miller et al [22–24]. The specific question for female study participants was,

“Have you ever had sexual intercourse (a boy or man has put his penis in your vagina) without being forced?” This question for male participants was worded “Have you ever had sexual intercourse (you have put your penis in a girl or woman’s vagina) without being forced?” Response categories were “Yes,” “No,” and “Haven’t had sex.” This question was asked at baseline, and at subsequent surveys was asked to reflect the time between baseline and short-term outcomes (19 weeks) and between post-intervention and 1-year follow-up.

Coding of outcome measures

With respect to sexual intercourse, there are 4 possible groups: group 1, sexually active students who abstain from baseline to follow-up; group 2, sexually active students who continue to have sex; group 3, students who are not yet sexually active and remain not active; and group 4, students who have sexual intercourse for the first time during the study follow-up period.

The first outcome variable examines the combination of groups 2 and 4, that is, those who had sex during the study follow-up period, regardless of whether they had experienced sexual intercourse prior to baseline. In other words, the first variable examines any instance of sexual intercourse from baseline to follow-up. Engaging in sexual intercourse was defined as reporting 1 or more instances of sexual intercourse between the baseline survey and the follow-up survey assessments. If any intercourse was reported during those intervals (baseline to short-term outcomes or baseline to 1-year follow-up) the participant was coded as sexually active or nonabstinent.

The second outcome variable, sexual intention, is defined as having a plan to have sex within the next 9 months (short-term outcomes) or 12 months (1-year follow-up). For all study participants sexual intention was coded as a dichotomous variable, differentiating those students who had a plan to have sex from those who did not (all other responses).

Separate exploratory subanalyses were conducted examining groups 3 and 4, those students who had not previously had sexual intercourse. Sexual initiation was defined using students who reported having never had voluntary sexual intercourse prior to the baseline survey. Within this group, those who initiated sex between baseline and short-term outcomes or 1 year post intervention were defined as having initiated sex. Sexual intentions were also examined for this group.

Data analysis

All data were double-entered by an independent firm, and verified by project personnel. The Statistical Package for Social Sciences (SPSS Inc, Chicago, IL) was used for all descriptive analyses, and hierarchical linear modeling (HLM) was used to test intervention effects. It was neces-

sary to use HLM to take into account the multilevel nature of the research design [25,26]. Not only were students in existing classroom groups, but these groups or classroom clusters, and not the individual students, were randomly assigned to the AIM intervention or standard health education curriculum. The multilevel model allowed for the clustering of residuals (error variance within each class) and for the fact that the intervention was a class-level manipulation. For these reasons, the HLM statistical approach was the best choice for the current study.

Because of dichotomous outcome variables (i.e., sexually active vs. abstinent, plans to have sex vs. no plans, sexual initiation [yes vs. no], and plans to have sex by students who were previously not sexually active), the logit link function was used in the HLM analysis. Consequently, these models represented multilevel extensions of standard logistic regression analyses. If a standard logistic regression analysis approach were used with these data, the clustering of residuals for students within classes could lead to an inflated type I error rate. The multilevel approach implemented through HLM avoided this potential problem [26].

When analyzing intervention effects, gender and the baseline value for the outcome variable in question were entered into the HLM analysis as a covariate (e.g., sexual intention, sexual intercourse). Because intervention was manipulated at the class level, the unit of analysis for the intervention condition main effect was the class ($N_{\text{classes}} = 20$). The unit of analysis for the main effect of gender were the student ($N_{\text{students}} = 211$).

Results

There were no significant baseline differences in demographic and sexual risk characteristics between students receiving the standard health education classes and students receiving the AIM intervention, with 1 exception. There were imbalances in previous sexual experience among the 2 groups, and therefore this was used as a baseline covariate in analysis of abstinence (Table 1).

Effect of intervention across all students on short-term outcomes

Sexual intention. Using HLM and controlling for baseline intentions, there was a significant main effect for intervention condition on the proportion of students who reported sexual intentions at short-term outcomes: intervention, $t(1,18) = -2.249$, $p < .037$, $\beta = -1.146$, $SE = .5095$. AIM produced a protective effect (partial odds ratio [OR] = .32; 95% confidence interval [CI] = .12, .87). Only 16% of students receiving the AIM intervention reported having any plans to engage in sexual intercourse in the next 9 months, compared with 49% of students receiving the standard health education curriculum (Table 2).

Table 1
Project AIM Participants at Baseline Assessment (N = 221): Demographic and Sexual Risk Characteristics

Characteristic	AIM			Control		
	Boy (n = 70)	Girl (n = 48)	Total (n = 117)	Boy (n = 52)	Girl (n = 52)	Total (n = 104)
Age (mean, SD)	12.52 (.64)	12.48 (.64)	12.50 (.64)	12.47 (.67)	12.79 (.65)	12.62 (.67)
Age at first sexual encounter (mean, SD)	10.19 (2.5)	10.14 (1.6)	10.18 (2.2)	10.20 (1.8)	11.70 (1.4)	10.80 (1.8)
No. of sex partners (mean, SD)	3.29 (3.4)	3.20 (1.8)	3.27 (2.4)	3.64 (3.4)	5.25 (8.1)	4.23 (5.4)
Sexually active* (n, %)	35 (50)	7 (15)	42 (36)	17 (33)	15 (29)	32 (31)
Condom use at most recent sexual encounter (n, %)	23 (79)	4 (66)	27 (77)	11 (73)	8 (80)	19 (76)
Birth control use at first sexual encounter (n, %)	13 (46)	1 (20)	14 (42)	8 (53)	3 (30)	11 (44)

AIM, adult identity monitoring.

* Differences between baseline treatment and control, $p < .05$.

Sexual intercourse. Those students who reported being sexually experienced at baseline were more likely to report having had sexual intercourse at short-term outcomes: $t(206) = 3.52, p < .001$. After controlling for these baseline effects for sexual experience, there were significant main effects for AIM intervention and gender on the proportion of students who reported sexual intercourse at short-term outcome: intervention, $t(18) = -2.69, p = .015, \beta = -1.218, SE = .453$; gender, $t(207) = 2.97, p = .003, \beta = 1.350, SE = .454$. The overall effect for intervention condition indicates that the AIM intervention produced a protective effect for all students. Regardless of baseline sexual experience, students receiving the AIM intervention were significantly less likely to report any sexual intercourse (from 36% to 26%) than were students receiving the standard health education curriculum (from 33% to 34%), partial OR = 0.30, 95% CI = .11, .77. The main effect for gender indicates that male students were much more likely to be sexually

active than female students (partial OR = 3.86, 95% CI = 1.56, 9.56; Table 2).

Sexual risk for virgin students

Sexual intention. Analyses of a main effect of the AIM intervention showed significant protective effects on sexual intention for short-term outcome: $t(1,18) = -2.599, p < .018, \beta = -2.073, SE = .7976$, partial OR = .13, 95% CI = .034, .61). Only 1% of students who were virgins at baseline and who received the AIM intervention reported the intention to have sex in the next 9 months, compared with 15% who were virgins at baseline and received the standard health education curriculum.

Sexual initiation. HLM showed a marginally significant AIM intervention main effect; 4% of students receiving the AIM intervention reported having initiated sex at short-term outcome, compared with 14% of the students receiving the

Table 2
Project AIM Participants at Short-Term Outcome Assessment (N = 211): Number Engaging in Sexual Intercourse and Planning to Engage in Sexual Intercourse

Outcome	Baseline				Short-term outcomes			
	AIM		Control		AIM		Control	
	n	%	n	%	n	%	n	%
Sexual intercourse								
Total*	40	36	30	33	29	26	33	34
Males	33	50	16	32	24	36	23	46
Females	7	15	14	29	5	11	10	20
Sexual intention								
Total†	37	34	31	33	10	16	21	49
Males	17	35	17	27	10	16	15	31
Females	20	30	14	30	0	0	6	18

AIM, Adult Identity Monitoring.

* Intervention effect significant $p < .015$.

† Intervention effect significant at $p < .04$.

Table 3
Project AIM Participants at Short-Term Assessment Who Were Virgins (N = 134): Initiation of Sexual Intercourse and Intention to Initiate Sexual Intercourse

Outcome	Baseline				Short-Term Outcomes			
	AIM		Control		AIM		Control	
	n	%	n	%	n	%	n	%
Initiation of intercourse								
Total*	0		0		3	4	10	14
Males	0		0		2	6	9	27
Females	0		0		1	3	1	3
Sexual intention								
Total†	30	42	22	31	1	1	10	15
Males	10	30	12	35	1	3	8	24
Females	20	51	10	28	0	0	2	6

AIM, Adult Identity Monitoring.

* Intervention effect significant at $p < .07$.

† Intervention effect significant at $p < .02$.

standard health education curriculum: $t(1,18) = -1.91, p < .07, \beta = -1.375, SE = .719$; Table 3).

Descriptive discussion of previously sexually active students

Although the numbers were too small to yield statistically significant effects, we describe the pattern of responses of sexual intercourse for students who received the AIM intervention and who were not virgins at baseline. Of male students who were previously sexually active, 22 (64%) who received the AIM intervention reported 1 or more instances of sexual intercourse at the short-term assessment, compared with 35 (88%) of those who received the standard health education curriculum.

Effect of intervention on 1-year follow-up

Sexual intentions and sexual intercourse across all subjects. The intervention effect for sexual intentions was no longer sig-

nificant for the 1-year post-intervention follow-up: $t(1,19) = -1.71, p < .10$. Of students receiving the AIM intervention, 9% intended to have sex in the next year, compared with 18% of students receiving the standard health education curriculum (Table 4).

At 1-year follow-up, the effects of baseline ($p < .001$) and gender ($p = .01$) were still statistically significant. The main effect for intervention condition was no longer statistically significant ($\beta = -1.604, SE = 1.00, p < .11$). While not originally a pre-specified hypothesis and therefore exploratory, the protective effect of the intervention on sexual activity for male students was still statistically significant: $t(18) = -2.08, p < .05, \beta = -1.221, SE = .586$. Controlling for baseline sexual activity, fewer male students who had received the AIM intervention were reporting any instances of sexual intercourse (47%) than were male students who had received the standard health education curriculum (54%; partial OR = 0.30, 95% CI = 0.09, .94; Table 4).

Table 4
Project AIM Participants at 1-Year Follow-Up (N = 156): Number Engaging in Sexual Intercourse and Planning to Have Sexual Intercourse

Outcome	Baseline				1-Year Follow-Up			
	AIM		Control		AIM		Control	
	n	%	n	%	n	%	n	%
Sexual intercourse								
Total	31	37	24	33	30	36	32	44
Males*	27	52	11	29	24	47	21	54
Females	4	13	13	39	6	19	11	32
Sexual intention								
Total†	29	36	25	36	8	9	10	18
Males	16	32	15	41	8	16.5	9	24
Females	13	43	10	32	0	0	1	5

AIM, Adult Identity Monitoring.

* Intervention effect significant at $p < .05$.

† Intervention effect significant at $p < .10$.

Table 5
Project AIM Participants at 1-Year Follow-Up Who Were Virgins (N = 101): Initiation of Sexual Intercourse and Intention to Initiate Sexual Intercourse

Outcome	Baseline				One-year follow-up			
	AIM		Control		AIM		Control	
	n	%	n	%	n	%	n	%
Initiation of intercourse*								
Total	0		0		7	13	11	23
Males	0		0		4	15	10	39
Females	0		0		3	11	1	5
Sexual intention*								
Total	19	40	16	36	3	6	6	13
Males	7	32	11	42	3	13	5	19
Females	12	48	5	26	0	0	1	5

AIM, Adult Identity Monitoring.

* None of these effects reached statistical significance.

Intentions and sexual debut for virgins. There were no long-term follow-up differences among sexual intentions among virgins. Although there was a 10% difference in virgins initiating sex by 1-year post-intervention follow-up ($n = 4$ [13%] for AIM) versus comparison students ($n = 10$ [23%]), there were no significant differences found for sexual initiation at 1-year follow-up (Table 5).

Descriptive data for previously sexually active students. At the 1-year follow-up assessment, 77% ($n = 20$) of male students who had received the AIM intervention and who were previously sexually active continued to be sexually active, compared with 92% ($n = 11$) of male students who had received the standard health education curriculum. For sexually active female students, 3 (57%) who had received the AIM intervention continued being sexually active at long-term follow-up, compared with 5 (65%) who had received the standard health education curriculum.

Discussion

Low-income African-American adolescents often live in environments where they are exposed to violence, drug use, school failure, and norms of sexual onset at a young age. Compounding this problem, many adolescents lack strong role models and mentors to guide them through the exploration that naturally occurs as a part of adolescent self-identity development. Guidance by parents, extended family, school personnel, and church affects adolescents' sexual risk [24]. However, many factors make it difficult for these sources of support to provide the guidance that is needed by adolescents. Schools, for example, are faced with maintaining specific standards of safety, discipline, and educational attainment, and often lack resources for adult development. Parents may find themselves in situations in which economic hardship and the challenges of daily living take precedence over socialization of their children regarding adulthood.

A fundamental assumption of Project AIM is that many at-risk youth are looking to define themselves in terms of adult identity, and this search is what leads them to engage in risk behaviors, such as engaging in sex, smoking, and drug use. Such adolescents may see no reason to follow adult authority, because they do not believe that it will reap them an adult independence that is worth having. Project AIM promotes the belief that one can achieve successful adulthood through academic excellence (and advanced schooling) and through planning for careers that do not require education beyond high school.

One possible insight gained during participation in the AIM program is that engaging in risk behavior during early to middle adolescence reduces one's chances of successful adulthood. Encouraging adolescents to focus on a future positive self may also act directly as a competing adult agenda for at-risk youth, providing them with opportunities to pursue goals that directly conflict with engagement in risky behaviors.

Students who participated in AIM were more likely to be abstinent and less likely to intend to have sex than were students who did not participate in AIM. Project AIM also led to significantly lower intentions to have sex among all students, and separately among virgins. The long-term follow-up showed abstinence only for boys in a gender-specific analysis, which, because it was exploratory, should be viewed with caution.

There was a marginal trend for AIM to delay first sexual experience at short-term outcome ($p < .07$). This trend is similar to short-term effects on delay found by others [4,7,11]. Although at the 1-year follow-up, rates of initiation of first sexual experience for virgins not receiving the AIM intervention were 10% higher than for those who did receive the AIM intervention, this finding was not significant. The lack of long-term follow-up effects may be due to small sample size at 1-year follow-up or may be due to a dissipation of the AIM intervention effect. The answer to this awaits further research.

The positive outcomes demonstrated by the AIM intervention may be due to the strength of the theory and the timing of risk for adolescent male students. The theoretical basis of the intervention focused on motivating students to avoid risk by offering concrete examples of their own possible positive future selves. These visions of a positive future self and practice in skills relevant to achieving such a self provided an alternative to the less optimistic scenarios to which many such youth are exposed. Second, the timing of AIM was particularly relevant for male adolescents, as seventh and eighth grade is when African-American males are particularly likely to initiate intercourse [27].

Work by Oyserman et al. [20], which uses the School to Jobs Program, is similar in ways to Project AIM. Both interventions were designed to guide students in creating, visualizing, and articulating positive future identities for themselves. Students were encouraged by racially similar interventionists (and for AIM, visiting role models) to envision these identities and develop relevant skills through culturally appropriate materials. Both interventions were designed to help students realize that their current behaviors affect their future self and to motivate them to act in the best interest of that future self.

At 12 to 14 years of age, seventh graders may seem too young to engage in discussions of adult identity and responsibilities. However, research indicates that early adolescents are already facing adult opportunities to choose risky or safe behaviors [16]. Our findings, as well as those of Oyserman et al. [20], indicate that early adolescents are capable of articulating both positive and negative possible future selves and of understanding the connection between current behaviors and future selves.

Limitations and strengths of the study

This study was intended as the first small demonstration of the efficacy of a new intervention to reduce adolescent sexual risk. Therefore the sample size was small, involving only 1 school for 1 school year. With more than 200 participants in the overall analysis, power was adequate to detect statistically significant main effects for the intervention on abstinence and intentions. However, power was more limited for the 1-year follow-up analyses, and analyses of specific subgroups (e.g., virgins). Power for the subgroup analyses was particularly limited using the HLM approach, because of dwindling sample sizes within specific classes. Despite these limitations, the results are promising and warrant further investigation.

The data are limited because they are self-reported; it is possible that students receiving the AIM intervention may have been more likely to respond in ways they thought appropriate (less risky). However, in general, continued reports of virginity or reports of abstinence among male adolescents, in particular, should not be seen as a self-

enhancing admission in these contexts. In this sense, the findings work against self-presentational confounds.

Given that the study took place in 1 school, students receiving the standard health education curriculum may have talked to other students about information learned in the AIM intervention classes. Even so, results suggest that mere leaking of the knowledge is not sufficient to change sexual behavior. Each of the intervention classes was led by an African-American male-female pair who were graduate students at the local university. The use of 3 male interventionists and 2 female interventionists allowed for multiple pairings distributed across the 10 intervention classes. It is possible that interaction between students and any or all of the interventionists may have had a confounding effect that could explain some program outcomes. Future studies should include a group to control for effects due to interventionist attention. Finally, we recognize that implementing the program in an almost exclusively African-American school in a community with low socioeconomic status limits ability to generalize to diverse school populations.

Loss to follow-up is another limitation. Chi-square analyses comparing students who were surveyed at 19 weeks past baseline with the 31 who did not complete the intervention with regard to sexual activity and planning to have sex showed no differences between intervention and control groups and no differences when looking at male and female groups separately. Chi-square analyses examining outcomes for the 156 students available for long-term follow-up and the 65 who were not available showed no differences by intervention group or for gender-by-intervention interactions. Baseline variables in Table 1 were compared with variables for those students who were lost to follow-up and those who were not, by intervention group. These analyses found no differences in age and, for those already sexually active, no differences in age of sexual initiation, birth control, or condom use. These analyses show that students lost to follow-up were at no greater risk than those who remained in the study, and students were not differentially lost to follow-up as a function of intervention versus control conditions. The 1-year follow-up showed attrition that was in part due to school scheduling and in part to fourth-quarter eighth grade students electing not to attend school the week before graduation. While these occurrences are difficult to anticipate, they suggest that it may be best to conduct follow-up assessments earlier in a given quarter.

Strengths of the study include a theory-based curriculum and the ecologic validity (real-world quality) of intervention experiences. Methodologic strengths include the use of multiple interventionist pairs in multiple classes across 4 academic quarters, and analysis using HLM. This analysis approach takes into account the clustering of variance within classes, which provides the most appropriate test for intervention effects in this design. Because this intervention will be delivered in classroom settings, the randomization

and analysis at the level of classes were more compatible with the probable dissemination of the intervention.

School-based interventions are considered universal rather than targeted in their approach to prevention. However, Project AIM also personalizes each participant's experience of the intervention. For the intervention to be successful, it is not necessary that students actualize their chosen future occupation. It is the process of identifying future selves that motivates students to take action to promote positive future well-being and avoid actions with negative consequences for their future.

Conclusions

The theory of possible selves provided the framework for an early adolescent intervention curriculum that success-

fully reduced sexual risk for seventh graders. This developmental approach fosters adolescents' inner resources and dreams, and has the potential to affect a variety of protective as well as risk behaviors. Given the difficulties in getting communities and schools to embrace sexually explicit intervention curricula for early adolescents, Project AIM is a viable alternative to existing HIV prevention programs.

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APPENDIX A: Intervention Description

Unit 1: Legacy, Role Models, and Peers

Goals	Exercises (3 sessions)	Discussion
To conceptualize the meaning of legacy in their own lives	— Examples of African American who have left legacies	How certain behaviors jeopardize the achievement of life goals
To begin to think of their own future in terms of their legacies	— Interacting with visiting role models; composing thank you letters — Generating ways others help or harm us in goal achievement	How peers, family, and others can negatively and positively impact on our choices in life.

Unit 2: Self-Projection: Expanding Visions of Possible Selves

Goals	Exercises (2 sessions)	Discussion
To identify possible occupations of interest	— Interest inventories and career matching — Writing business letters	The ways in which today's products and services require abilities and teamwork of people with different jobs.
To research relevant occupations	— Decision-making exercise for choosing one's occupation	Visualizing oneself in a good future can guide current decisions
To commit to one occupation	— Behavioral declaration of the career choice	

Unit 3: Self-expression through Work: Development of Possible Self

Goals	Exercises (2 sessions)	Discussion
To identify the necessary skills to be competitive in the marketplace	— Creating business cards — Composing resume with community experiences	Presenting oneself in terms of relevant strengths
To learn the value of self-presentation specific to the desired future self	— Being interviewed for letter of recommendation for specific occupation chosen	Connecting current skills and experiences to one's future self Setting goals/developing skills can actualize one's positive future self.

Unit 4: Skills of Fulfilling Positive Future Possible Selves

Goals	Exercises (3 sessions)	Discussion
To gain skills to promote one's life goals	— Relationship and self-expression skills — Planning a group vacation	Reinforcement of relationship between current behaviors and one's future positive selves
To generalize skills	— Establishing a timeline for goals in their future life	Integration of experiences into products promotes possible positive future selves; avoids risky behavior
To motivate avoidance of future risky behavior		

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