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Impacts of the *Heritage Keepers*® Life Skills Education Component

Final Report

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CONTENTS

TABLES

Table **Page**

FIGURES

EXECUTIVE SUMMARY

The *Heritage Keepers*® Life Skills Education Component is a character-based program designed to enhance life skills thought to be supportive of sexual abstinence and to empower students to avoid sexual activity and other risky behaviors. Life Skills Education is one of three main components of the *Heritage Keepers*® abstinence education program, which also includes a core Abstinence Education Component and a Community Education Component. In Edgefield, South Carolina, Life Skills Education is delivered as a voluntary supplement to the mandatory Abstinence Education Component that all middle and high school youth receive and is intended to reinforce that component's message of abstinence from sexual activity as the expected standard for school-age children.

This report examines the effect of the Life Skills Education Component on middle and high school youth in Edgefield. All youth participating in Life Skills Education had also participated in the core Abstinence Education Component and may have participated in the Community Education Component. Thus, this report examines the incremental impact of the Life Skills Education Component on youth already participating in the other components of *Heritage Keepers*®. It does not examine the impact of the full *Heritage Keepers*® Program. The report presents estimates of the incremental impacts of Life Skills Education on potential mediators of teen sexual activity as well as on teens' sexual abstinence, their risks of pregnancy and of contracting sexually transmitted diseases (STDs), and other behavioral outcomes two to four years after study enrollment.

This report is part of a broader, Congressionally authorized multiyear evaluation of selected abstinence education programs funded by the Title V, Section 510 Abstinence Education Program. This broader evaluation comprises (1) an implementation and process analysis that documented the experiences of 11 organizations and communities that received Title V, Section 510 block grants (Devaney et al. 2002); and (2) a rigorous, experimentally based evaluation of the impacts of five selected Title V, Section 510 abstinence education programs, including the Life Skills Education Component, on sexual abstinence and related outcomes. A previous report presented findings for the other four programs in the impact evaluation (Trenholm et al. 2007). The evaluation of the Life Skills Education Component differs from the evaluation of the other four programs, in that it estimates the incremental effects of providing an abstinence-focused life skills program to students already receiving a

core abstinence education program rather than the effects of a complete abstinence education program.

THE *HERITAGE KEEPERS*® PROGRAM

Heritage Keepers® is an abstinence education program developed by Heritage Community Services of South Carolina and funded by the federal Title V, Section 510 Abstinence Education Program, one of the major sources of federal funding for abstinence education. As with all programs funded by Title V, Section 510, *Heritage Keepers*® must be consistent with all eight points of the "A-H" definition of abstinence education prescribed in the Social Security Act of 1996 (Table 1). In particular, the program cannot promote the use of condoms or other forms of birth control. *Heritage Keepers*® uses a systemic approach to abstinence education that involves schools, parents, and other community stakeholders in promoting sexual abstinence until marriage. The Edgefield program targets middle and high school students, beginning in sixth grade and continuing through twelfth, with the mandatory core Abstinence Education Component, the voluntary Life Skills Education Component, and the Community Education Component.

Components of the *Heritage Keepers*® Program

Component	Participation	Annual Contact Hours	Focus of This Report
Abstinence Education	Required	7.5 hours/ year	No
Life Skills Education	Voluntary	Up to 28 hours/year	Yes
Community Education	Voluntary	Varied	No

Table 1. A-H Definition of Abstinence Education

A	Have as its exclusive purpose teaching the social, psychological, and health gains to be realized by abstaining from sexual activity
B	Teach abstinence from sexual activity outside marriage as the expected standard for all school-age children
C	Teach that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems
D	Teach that a mutually faithful, monogamous relationship in the context of marriage is the expected standard of sexual activity
E	Teach that sexual activity outside the context of marriage is likely to have harmful psychological and physical effects
F	Teach that bearing children out of wedlock is likely to have harmful consequences for the child, the child's parents, and society
G	Teach young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances
H	Teach the importance of attaining self-sufficiency before engaging in sexual activity

Source: Title V, Section 510 (b)(2)(A-H) of the Social Security Act (P.L. 104-193).

The Abstinence Education Component is delivered by Heritage Community Services staff to middle and high school students, beginning in sixth grade and continuing through high school. In Edgefield, this portion of the *Heritage Keepers*® Program is mandatory for all students in the middle and high schools. The classes are scheduled to accommodate students' schedules, and are typically delivered by Heritage Community Services staff over five consecutive days in 90-minute sessions. Students are divided into single-sex groups of 10 to 20, with each group attending the Abstinence Education classes at some point during the school year. The 7.5 hour curriculum aims to increase knowledge and awareness of pregnancy and STD risks and to empower adolescents to abstain from sexual activity.

The Life Skills Education Component, the focus of this evaluation, is a voluntary, multiyear, character-based program intended to enhance life skills believed to support abstinence. It is designed to foster personal responsibility, with the goal of empowering students to avoid risky behaviors and to maximize their potential and opportunities. The program is intended to create a positive peer culture within the school and, over time, change the overall school and peer culture to be more supportive of abstinence. The component is delivered by Heritage Community Services staff and is implemented in some schools during regular class hours and in others as an after-school club. The sessions meet weekly throughout the school year and typically last at least 45 minutes.

The Community Education Component includes a Parent Education Element, designed to educate parents about the benefits of their children abstaining from sexual activity outside marriage; a Faith Community Element, which identifies and educates religious workers and leaders and provides abstinence education materials for program expansion; and a Media Element which educates media personnel on the benefits of abstinence outside marriage and uses various media to promote abstinence among students and the public. Family Assets and Character Councils are developed through regional training for community leaders representing various public and private institutions. The Community Education Component also fosters collaborations and partnerships with public and private institutions as well as with initiatives that share similar goals and objectives.

EVALUATION DESIGN

The impact evaluation of the Life Skills Education Component relies on an experimental design. Youth in the study sample were assigned to either (1) a "Life Skills Abstinence Education (AE) group" that was given the opportunity to participate in the Life Skills Education Component and the other two components of the *Heritage Keepers*® Program (the mandatory Abstinence Education Component and the Community Education Component), or (2) a "control Abstinence Education (AE) group" that could not participate in the Life Skills Education Component but did receive the remaining two components of the *Heritage Keepers*® Program. When coupled with sufficiently large sample sizes, longitudinal surveys conducted by independent data collectors, and appropriate statistical methods, this design is able to produce credible estimates of the incremental impact of the Life Skills Education Component on youth already participating in the other components of *Heritage Keepers*®. This design provided a unique opportunity to look at the effects of a

specific approach for enhancing a core abstinence education curriculum through a supplemental character-based life skills curriculum.

Despite the strengths of the experimental design, its application to the Life Skills Education Component has two potential limitations. First, given that the Life Skills Education Component encourages participating youth to promote abstinence among their peers, the component could result in "spillover" effects for students in the control group, possibly leading impact estimates to be understated. Second, program staff at *Heritage Keepers*® expressed concern that the design altered the selection process for the Life Skills Component in ways that may have potentially undermined the component's effectiveness. In a typical setting, the component attempts to reach a broad representation of the school youth, but with a focus on selecting "trendsetters" who can most effectively influence the school culture. For the purposes of the impact evaluation, however, all youth who applied for the Life Skills Education Component were randomly assigned to the Life Skills AE group or to the control AE group, a process that differs from a more purposeful-selection approach. There is no way to determine how, or even whether, the random assignment process ultimately changed the mix or attendance of students who were selected to participate in the Life Skills Component, or what effect such a change might have on the impact estimates presented in this report. As a result, caution should be used when generalizing the findings from this study to a more typical setting of the Life Skills Education Component.

Study Sample

This report is based on a final follow-up survey administered to 604 youth between spring and fall 2005—18 to 55 months after they began participating in the study. Just over half (320) were randomly assigned to the Life Skills AE group; the rest were assigned to the control AE group (Table 2).

Table 2. Impact Analysis Evaluation Sample

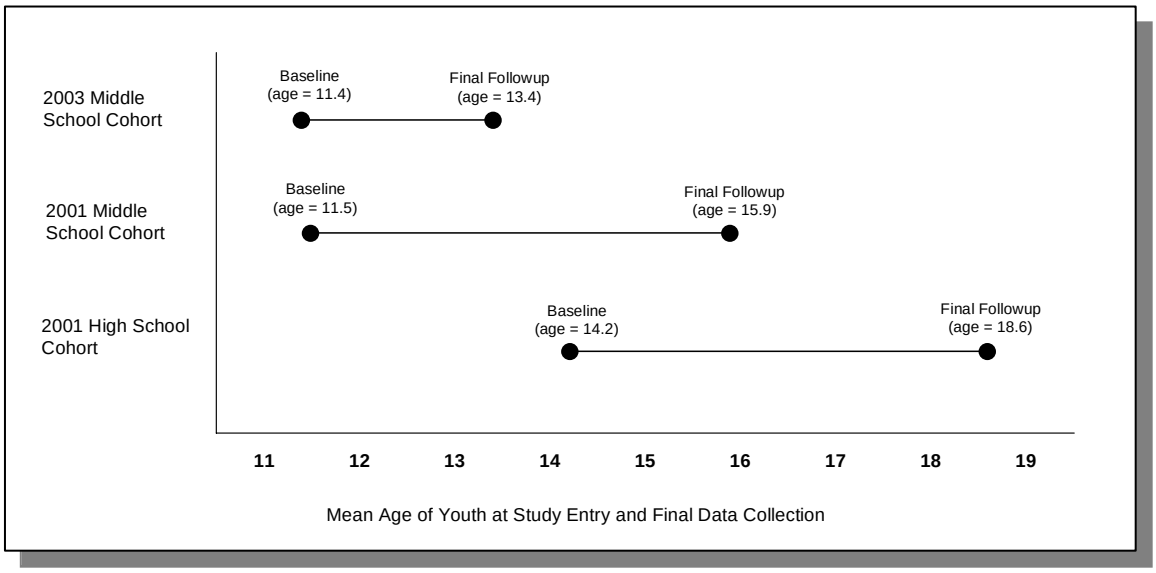
	Total (All Three Cohorts)	2003 Middle School Cohort	2001 Middle School Cohort	2001 High School Cohort
Total	604	160	300	144
Life Skills AE group	320	87	159	74
Control AE group	284	73	141	70
Age at Study Entry	12.8	11.4	11.5	14.2
Age at Final Follow-up	16.7	13.4	15.9	18.6

Source: Tracking System for the *Survey of Teen Activities and Attitudes* (Mathematica Policy Research, Inc.) and Wave 1 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 1999).

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

Youth enrolled in the study sample and the Life Skills Education Component in three separate cohorts. The initial cohort of sixth grade students (the "2001 middle school cohort") enrolled in spring and fall 2001. A second cohort of sixth graders (the "2003 middle school cohort") enrolled in fall 2003. A cohort of ninth grade students enrolled in fall 2001 (the "high school cohort"). The three study cohorts vary on several important dimensions. Most notably, the 2003 middle school cohort was considerably younger than the other two cohorts at the time of the final follow-up survey, with an average age of only 13 (Figure 1). Given their young ages, very few youth in this cohort would be expected to have engaged in sexual activity, with or without the *Heritage Keepers*® Program, by the time of the final follow-up survey. As a result, youth in this cohort could not be included in the analysis of behavioral impacts, although they are included in the analysis of impacts on potential mediators of teen sexual activity.

Figure 1. Age of Study Youth at Baseline and Final Data Collection



OUTCOME MEASURES

The impact evaluation draws on a rich longitudinal data set that includes (1) measures of potential mediators of youth risk behavior, such as refusal skills and knowledge of sexually transmitted diseases; and (2) measures of actual behavior, such as whether youth have remained sexually abstinent.

Potential Mediators of Teen Sexual Activity. These outcomes include youths' support for abstinence, their relations with peers and parents, their perceptions of the consequences of teen sex, their self-concept and refusal skills, and their expectations to abstain. In addition, they include youths' knowledge of the risks associated with teen sex and perceptions of the effectiveness of condoms and birth control for preventing pregnancy and STDs.

Sexual Abstinence and Teen Risk Behaviors. These measures include rates of abstinence; rates of unprotected sex; number of sexual partners; age at first sex; reported rates of pregnancy, births, and STDs; and cigarette, alcohol, and marijuana use.

IMPACTS ON POTENTIAL MEDIATORS OF TEEN SEXUAL ACTIVITY

The Life Skills Education Component had positive impacts on several intermediate outcomes hypothesized to mediate teen sexual activity (Table 3). Relative to youth in the control AE group, youth in the Life Skills AE group reported views more supportive of abstinence and less supportive of teen sex, stronger refusal skills, and greater expectations to abstain until marriage. The component had no impact on several other intermediate outcomes examined, including peer support for abstinence or peer pressure to have sex, self-concept, or perceived consequences of teen sex. These findings differ from the impacts estimated one year after youth enrolled in the study (Clark and Devaney 2006), which showed a positive impact on friends' support for abstinence but no impacts on any of the other intermediate outcomes examined.

The Life Skills Education Component had some impact on knowledge of risks associated with teen sex. Namely, it increased the proportion of diseases, from a list of 13, which youth were able to identify correctly as STDs. Youth in the Life Skills AE group identified an average of 71 percent of these diseases correctly (Table 3). This rate is 3 percentage points higher than the average among youth in the control AE group, and the difference is statistically significant. The component did not affect two additional knowledge measures—risks of unprotected sex and potential health risks from STDs.

The Life Skills Education Component had no significant impact on perceptions about the effectiveness of condoms or birth control pills for pregnancy and STD prevention. For example, with respect to condoms, about 30 percent of the youth in both groups reported that, when used correctly, condoms usually prevent pregnancy, and most of the rest, about 55 percent, reported that condoms sometimes prevent pregnancy (Table 4; top panel). A test of the difference in the distributions between the two groups is not statistically significant. Many youth reported that condoms were never effective for preventing STDs or reported being unsure (Table 4; lower panels). For example, with respect to prevention of HIV, close to 40 percent of youth in both groups reported that condoms are never effective and around 20 percent reported being unsure. A test of the difference in the distributions between the two groups is not statistically significant.

Table 3. Estimated Impacts on Potential Mediators of Teen Sexual Activity

	Life Skills AE Group (Mean)	Control AE Group (Mean)	Difference	Effect Size[a]	*p*-value
Views Toward Abstinence, Teen Sex, and Marriage					
Views supportive of abstinence [0,3]	2.00	1.91	0.09	0.12	0.10*
Views unsupportive of teen sex [0,3]	2.42	2.34	0.08	0.19	0.02**
Views supportive of marriage [0,3]	2.53	2.50	0.04	0.07	0.39
Peer Influences and Relations					
Friends' support for abstinence [0,5]	2.64	2.77	-0.13	-0.08	0.30
Peer pressure to have sex [0,3]	0.34	0.31	0.03	0.04	0.64
Self-Concept and Refusal Skills					
Refusal skills [0,2]	1.56	1.49	0.07	0.13	0.06*
Self-esteem and -control [0,3]	2.12	2.13	-0.02	-0.03	0.69
Perceived Consequences of Teen and Nonmarital Sex					
General consequences of teen sex [0,3]	2.07	2.06	0.01	0.01	0.85
Personal consequences of teen sex [0,2]	1.13	1.07	0.06	0.10	0.15
Expectations to Abstain from Sexual Intercourse					
Expect to abstain until marriage	61%	51%	10	0.20	0.01**
Expect to abstain through high school[b]	78%	67%	11	0.30	0.01***
Expect to abstain as a teenager	58%	55%	4	0.07	0.38
STD Identification					
Overall identification of STDs [0,100]	71	68	3	0.15	0.02**
Knowledge of Pregnancy and STD Risks					
Knowledge of unprotected sex risks [0,100]	87	87	0	0.00	0.95
Knowledge of STD consequences [0,100]	58	56	2	0.08	0.29

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: Difference in means for the Life Skills AE and control AE groups may not equal the difference shown due to rounding.

[a]The effect size measure is calculated as the ratio of the mean difference to the standard deviation of the outcome measure for the control AE group.

[b]Estimates exclude the high school cohort, since all were interviewed just prior to high school graduation.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (of difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Table 4. Estimated Impacts on Perceived Effectiveness of Condoms for Preventing Pregnancy and STDs

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Difference	*p*-value
Condoms Prevent Pregnancy				
Usually	28	33	-5	
Sometimes	58	55	3	
Never	7	4	3	
Unsure	7	7	-1	
	Chi-squared test of distributional differences			0.65
Condoms Prevent HIV				
Usually	11	11	0	
Sometimes	37	29	8	
Never	36	39	-4	
Unsure	16	21	-5	
	Chi-squared test of distributional differences			0.78
Condoms Prevent Chlamydia and Gonorrhea				
Usually	11	9	2	
Sometimes	33	26	7	
Never	34	36	-3	
Unsure	22	29	-7	
	Chi-squared test of distributional differences			0.10
Condoms Prevent Herpes and HPV				
Usually	10	10	0	
Sometimes	28	24	4	
Never	42	44	-2	
Unsure	20	22	-3	
	Chi-squared test of distributional differences			0.83

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: Difference in means for the Life Skills AE and control AE groups may not equal the difference shown due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

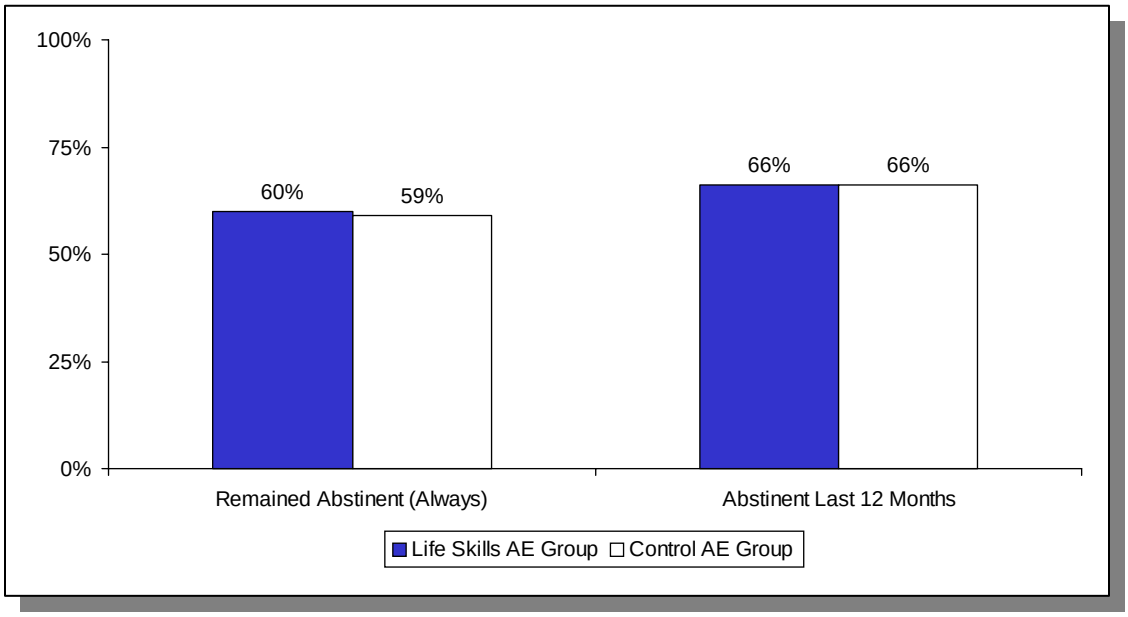
***p-value (of test of distributional differences) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

IMPACTS ON SEXUAL ABSTINENCE AND TEEN RISK BEHAVIORS

Findings indicate that the Life Skills Education Component had little or no impact on sexual abstinence or activity. Youth in the Life Skills AE group and control AE group reported similar rates of sexual abstinence, number of sexual partners, and age at first sex. Life Skills AE group youth were also no more likely than control AE group youth to have engaged in unprotected sex.

Sexual Abstinence. Youth in the Life Skills AE and control AE groups were equally likely to have remained abstinent (Figure 2). About 60 percent of youth in both groups reported remaining sexually abstinent. A slightly higher proportion (66 percent of both groups) reported having been abstinent within the 12 months prior to the final follow-up survey.

Figure 2. Estimated Impacts on Sexual Abstinence[a]



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

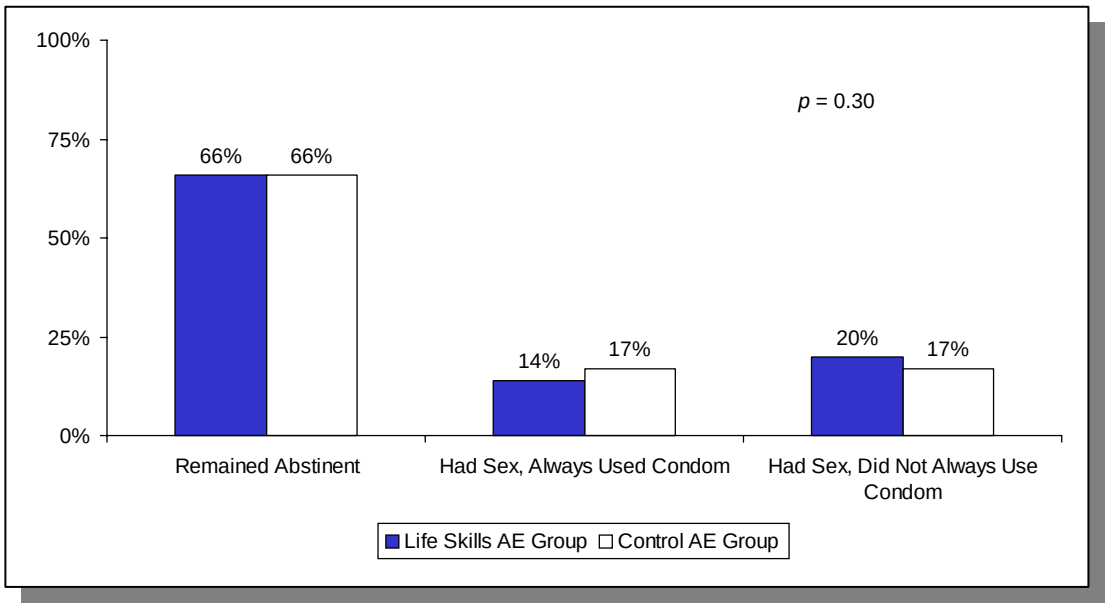
[a]Estimates exclude the 2003 middle school cohort because of their young ages at the time of the final follow-up survey.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Unprotected Sex. Youth in the Life Skills AE group were no more likely than youth in the control AE group to have unprotected sex (Figure 3). Among youth who reported having sex in the last year, roughly equal proportions (14 percent of youth in the Life Skills AE group and 17 percent of youth in the control AE group) reported having used a condom every time, and the difference in the distribution of responses is not statistically significant.

Figure 3. Estimated Impacts on Unprotected Sex, Last 12 Months[a]



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

[a]Estimates exclude the 2003 middle school cohort because of their young ages at the time of the final follow-up survey.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Age at First Sex. Youth in the Life Skills AE and control AE groups were of similar ages when they first had sex (Figure 4). For example, 10 percent of youth in the Life Skills AE group, compared with 13 percent of youth in the control AE group, reported having had sex by age 14, a difference that is not statistically significant. Both groups of youth were also equally likely to have had sex by ages 15, 16, and 17.

Number of Sexual Partners. Youth in the Life Skills AE and control AE groups did not differ in the number of partners with whom they had sex. Comparing the two groups, the distributions of the number of reported sex partners are similar (Figure 5). About one-fifth of all youth in both groups had sex with three or more partners, and 11 to 15 percent

Figure 4. Estimated Impacts on Age at First Sex[a]

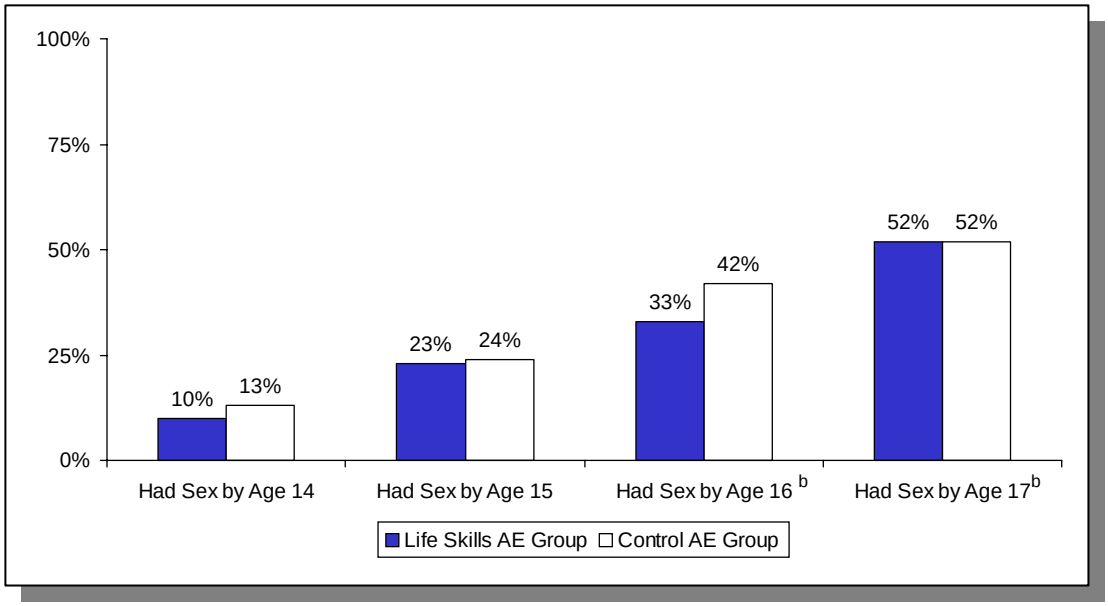
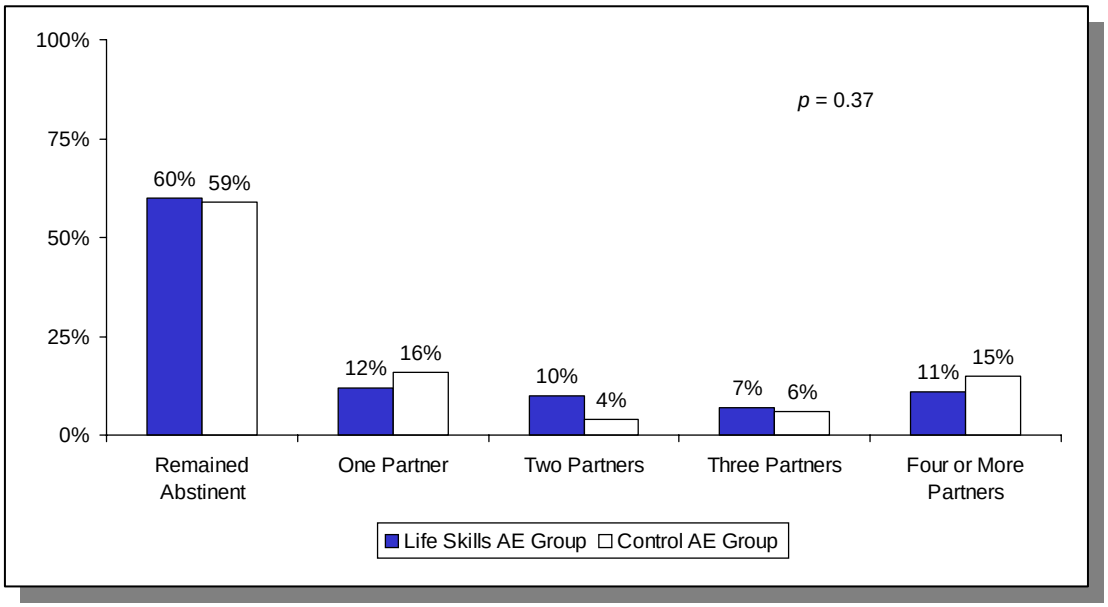


Figure 5. Estimated Impacts on Reported Number of Sexual Partners[a]



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

[a]Estimates exclude the 2003 middle school cohort because of their young ages at the time of the final follow-up survey.

[b]Estimated for high school cohort only.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

had sex with four or more; differences in the distribution of number of partners between youth in the Life Skills AE and control AE groups are not statistically significant.

Pregnancy, Births, and Reported STDs. Nine percent of youth in the Life Skills AE group reported having ever been pregnant or gotten someone pregnant, compared with 7 percent of youth in the control AE group, a difference that is not statistically significant (Table 5). Despite similar rates of pregnancy, youth in the Life Skills AE group were more likely to report that they (or their partner) had had a baby. Overall, 5 percent of youth in the Life Skills AE group reported having had a baby, compared with 1 percent of youth in the control AE group, a difference that is statistically significant. (No information is available on pregnancy outcomes other than live births.) Only 4 percent of youth in both groups reported ever having had an STD.

Other Risk Behaviors. There are no differences between youth in the Life Skills AE and control AE groups in cigarette, alcohol, or marijuana use (Table 6). About 25 percent of both groups reported smoking cigarettes in the past month, and the difference between the two groups is not statistically significant. Thirty percent of the Life Skills AE group reported drinking alcohol at least once a month, compared with only 24 percent of the control AE group; this difference is also not statistically significant. Similarly, 30 percent of Life Skills AE group youth reported having ever smoked marijuana, compared with 26 percent of the control AE group, and again this difference is not statistically significant.

Table 5. Estimated Impacts on Other Behavioral Outcomes

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Difference (Percentage Points)	*p*-value
Pregnancy, Childbirth, and STDs				
Ever been pregnant	9	7	2	0.48
Ever had a baby	5	1	3	0.07*
Ever had a (reported) STD	4	4	0	0.96
Cigarette, Alcohol, and Drug Use				
Smoked cigarettes (past month)	25	26	-2	0.66
Drinks alcohol (at least once a month)	30	24	6	0.14
Used marijuana (ever)	30	26	4	0.33

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: Difference in means for the Life Skills AE and control AE groups may not equal the difference shown due to rounding. Estimates exclude the 2003 middle school cohort because of their young ages at the time of the final follow-up survey.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

DISCUSSION

The Life Skills Education Component affected several potential mediators of teen sexual activity, including views toward abstinence and expectations to abstain, but it had no impact on sexual abstinence, sexual activity, or most other risk behaviors examined. Counter to concerns raised by some policymakers and health educators that Title V, Section 510 programs might, through their exclusive focus on abstinence, put youth at increased risk of unprotected sex, the component also had no impact on condom use among sexually active youth.

The positive impacts on potential mediators of teen sexual activity were driven primarily by the 2003 middle school cohort—the youngest at the time of the final follow-up survey (averaging just 13 years of age) and the one that had most recently enrolled in the program. This cohort was also fully exposed to several changes made to the Life Skills Education Component curriculum in 2003, which were designed to strengthen the component's implementation. Given their young ages, very few youth in this cohort would be expected to have engaged in sexual activity, with or without Life Skills Education, by the time of the final follow-up survey. As a result, youth in this cohort could not be included in the analysis of behavioral impacts.

The favorable impacts on several potential mediators of sexual activity for this 2003 middle school cohort raise the question of whether Life Skills Education Component might have eventual positive impacts on sexual abstinence for youth in this cohort. Without behavioral data on these youth as they reach older ages, there is no way to answer this question, and the timeframe for this evaluation did not allow for longer term data collection for youth in this cohort.

In sum, this study estimates the incremental impacts of providing a voluntary abstinence-focused life skills program to youth already receiving a mandatory classroom-based abstinence education curriculum as well as a community-wide initiative to promote abstinence. The study provides important complementary evidence to a previous study in the evaluation of Title V, Section 510 Abstinence Education Programs, which estimated the full effects of four other abstinence education programs. Results indicate that the Life Skills Education Component had positive impacts on potential mediators of teen sexual activity, particularly among the component's most recent cohort, but provide no evidence that the component had incremental effects on behavior among youth already receiving the other components of the *Heritage Keepers*® Program.

The results from this study suggest the need for continued research on how to combat the high rate of teen sexual activity and its negative consequences. In particular, they highlight the importance of continued evaluation both of full programs designed to address the high rates of teen sexual activity and of specific program components, such as the Life Skills Education Component, which aim to enhance the effectiveness of an underlying program model. The stronger impacts on potential mediators of teen sex among the 2003 middle school cohort illustrate how programs may evolve over time, and suggest how rigorous evaluation can help programs assess their ongoing effectiveness.

CHAPTER I

INTRODUCTION

The *Heritage Keepers*® Life Skills Education Component is a character-based program designed to enhance life skills thought to be supportive of sexual abstinence and to empower students to avoid sexual activity and other risky behaviors. Life Skills Education is one of three main components of the *Heritage Keepers*® abstinence education program, which also includes a core Abstinence Education Component as well as a Community Education Component. In Edgefield, South Carolina, Life Skills Education is delivered as a voluntary supplement to the mandatory Abstinence Education Component that all middle and high school youth receive and is intended to reinforce that component's message of abstinence from sexual activity as the expected standard for school-age children.

This report examines the impact of the Life Skills Education Component on middle and high school youth in Edgefield. All youth participating in Life Skills Education had also participated in the core Abstinence Education Component and may have participated in the Community Education Component. Thus, this report examines the incremental impact of the Life Skills Education Component on youth already exposed to the other components of *Heritage Keepers*®. It does not examine the impact of the full *Heritage Keepers*® Program. The report presents estimates of the incremental impacts of Life Skills Education on potential mediators of teen sexual activity as well as on teens' sexual abstinence, their risks of pregnancy and of contracting sexually transmitted diseases (STDs), and other behavioral outcomes two to four years after study enrollment.

The report is based on survey data collected in 2005–2006 from more than 600 teens, initially enrolled in two middle schools and one high school. The youth had been randomly assigned to either (1) a "Life Skills Abstinence Education (AE) group" that was given the opportunity to participate in the Life Skills Education Component or (2) a "control AE group" that could not. Youth in both groups participated in the mandatory Abstinence Education Component and may have been exposed to the Community Education Component.

THE *HERITAGE KEEPERS*® PROGRAM

Heritage Keepers® is an abstinence education program developed by Heritage Community Services of South Carolina. The program is funded by the Title V, Section 510 Abstinence Education Program—one of the major sources of federal funding for abstinence education. Since 1998 the Title V, Section 510 Abstinence Education Program has allocated $50 million annually for abstinence education through a matching block grant program administered by the U.S. Department of Health and Human Services (DHHS). States must match this federal funding at 75 percent, which results in a total of up to $87.5 million annually for Title V, Section 510 abstinence education programs from combined state and federal funds. As with all these programs, *Heritage Keepers*® must be consistent with all eight points of the "A-H" definition of abstinence education prescribed in the Social Security Act of 1996 (Table I.1). In particular, the program cannot promote the use of condoms or other forms of birth control.

Table I.1. A-H Definition of Abstinence Education

A	Have as its exclusive purpose teaching the social, psychological, and health gains to be realized by abstaining from sexual activity
B	Teach abstinence from sexual activity outside marriage as the expected standard for all school-age children
C	Teach that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems
D	Teach that a mutually faithful, monogamous relationship in the context of marriage is the expected standard of sexual activity
E	Teach that sexual activity outside the context of marriage is likely to have harmful psychological and physical effects
F	Teach that bearing children out of wedlock is likely to have harmful consequences for the child, the child's parents, and society
G	Teach young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances
H	Teach the importance of attaining self-sufficiency before engaging in sexual activity

Source: Title V, Section 510 (b)(2)(A-H) of the Social Security Act (P.L. 104-193).

Heritage Keepers® uses a systemic approach to abstinence education that involves schools, parents, and other community stakeholders in promoting sexual abstinence until marriage. The program in Edgefield targets middle and high school students, beginning in sixth grade and continuing through twelfth, through its three main components: (1) the mandatory core Abstinence Education Component, (2) the voluntary Life Skills Education Component, and (3) the Community Education Component.

The Abstinence Education Component is delivered by Heritage Community Services staff to middle and high school students, beginning in sixth grade and continuing through

high school. In Edgefield, the Abstinence Education Component is mandatory for all students in the middle and high schools. The classes are scheduled to accommodate student schedules, and are typically delivered by Heritage Community Services staff over five consecutive days in 90-minute sessions, although they are sometimes spread over as many as nine consecutive days in 50-minute sessions. Students are divided into single-sex groups of 10 to 20, and each group attends the Abstinence Education classes at some point during the school year. The 7.5-hour curriculum used in the Abstinence Education Component aims to increase knowledge and awareness of pregnancy and STD risks and to empower adolescents to abstain from sexual activity. Appendix A provides an overview of the Abstinence Education curriculum.

The Life Skills Education Component, the focus of this evaluation, is a multiyear, character-based program intended to enhance life skills believed to support abstinence. It is designed to foster personal responsibility, with the goal of empowering students to avoid risky behaviors and maximize their potential and opportunities. Each lesson focuses on a specific character trait (for example, integrity) and includes a story about utilizing this trait, as well as self-control and personal responsibility, to overcome adversity and challenges. The component is intended to create a positive peer culture within the school and, over time, change the overall school and peer culture to be more supportive of abstinence. Appendix A provides an overview of the Life Skills Education curriculum.

Youth normally apply to participate in the Life Skills Education Component in sixth grade and can choose to continue through middle and high school. (This study also includes a group of students who applied to participate in the component beginning in ninth grade.) Program staff typically select participants from among the applicants. Because program staff want participating youth to encourage abstinence among their peers, they attempt to include a broad representation of the youth in the schools as well as students who are seen as trendsetters. For this evaluation, however, youth who applied to the component were randomly assigned to a Life Skills AE group that was offered the opportunity to participate in Life Skills Education or to a control AE group that was not eligible for Life Skills Education (but was exposed to the other components of the *Heritage Keepers*® Program).

The Life Skills Education Component is delivered by Heritage Community Services staff and is implemented in some schools during regular class hours and in others as an after-school club. As discussed previously, in Edgefield, the sessions are voluntary, and are offered after school in the middle schools and during lunch periods in the high school. The sessions meet weekly throughout the school year and typically last at least 45 minutes, although when delivered during the lunch period, sessions are limited by the length of the period.

The Community Education Component includes several elements. The Parent Education Element is designed to educate parents about the benefits of their children abstaining from sexual activity outside marriage. The program can be delivered in parents' homes, small-group settings, or public meetings. Parents are encouraged to form a network to discourage risky behaviors and support abstinence until marriage. The Faith Community Element identifies and educates religious workers and leaders and provides abstinence

education materials for program expansion. The Media Element educates media personnel about the benefits of abstinence outside marriage and uses various media—including in-school communications systems—to promote abstinence among students and the public. Family Assets and Character Councils are developed through regional training for community leaders representing various public and private institutions. The Community Education Component also fosters collaborations and partnerships with public and private institutions as well as with initiatives that share similar goals and objectives, such as an entertainment initiative called *Message in the Music,* a statewide effort promoting rap music that provides positive messages.

THE EVALUATION OF THE *HERITAGE KEEPERS*® LIFE SKILLS EDUCATION COMPONENT

This study of the impacts of the *Heritage Keepers*® Life Skills Education Component is part of a broader, Congressionally authorized multiyear evaluation of selected abstinence education programs funded by the Title V, Section 510 Abstinence Education Program. This broader evaluation comprises (1) an implementation and process analysis that documented the experiences of 11 organizations and communities that applied for and received Title V, Section 510 block grants; and (2) a rigorous, experimentally based evaluation of the impacts of five selected Title V, Section 510 abstinence education programs, including the Life Skills Education Component, on sexual abstinence and related outcomes.

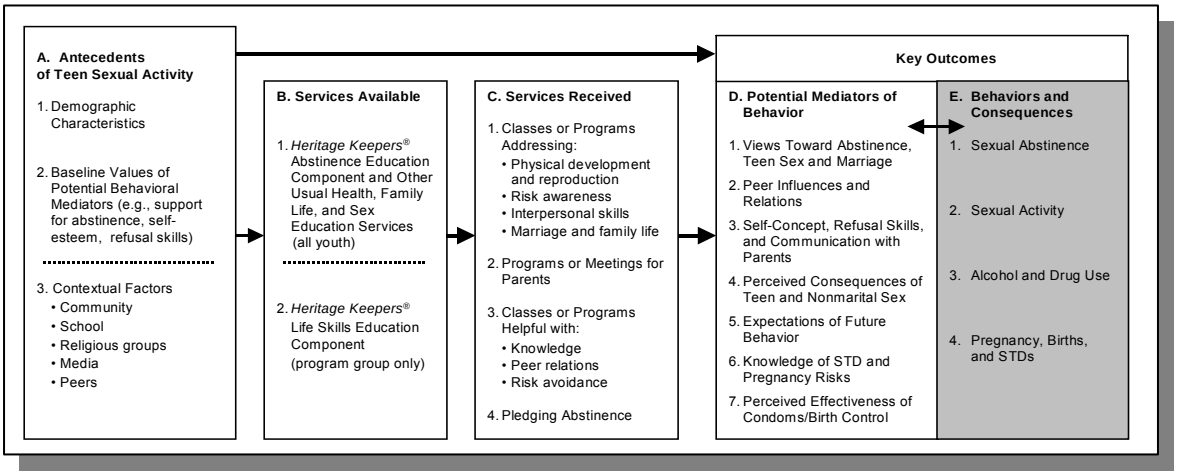
Site Selection. Sites for the broader evaluation of the Title V, Section 510 Abstinence Education Program were purposefully selected by the study team, who met with state officials and experts across the country to identify promising programs, and collected additional information from grant applications and program documents. The team then visited and observed 28 abstinence education programs. Eleven of these, representing a range of program models and target populations, were invited and agreed to participate in the evaluation and were included in the implementation and process analysis (Devaney et al. 2001). Five, including *Heritage Keepers*®, were selected for the impact evaluation because they had program features and staff capable of supporting its rigorous experimental design. A recent DHHS report presented long-term impacts on behavioral outcomes for the other four programs (Trenholm et al. 2007).

Evaluation Design. The design of the impact evaluation of the Life Skills Education Component differed considerably from that of the other four sites included in the overall impact evaluation, which is why its findings are presented in a separate report. In the other four sites, the impact evaluation measured the difference in outcomes between "program group" youth who received an abstinence education curriculum and control group youth who did not. Thus, in each of those four sites, the estimated program impacts reflect the effect of providing abstinence education versus "services as usual," which typically did not include school-based abstinence education or community-wide initiatives to promote abstinence.

In contrast, the evaluation of the Life Skills Education Component is designed to assess the impact of *adding,* to a classroom-based abstinence education curriculum delivered over one to two weeks each school year, an abstinence-focused life skills component that meets throughout the school year. All students in the grade levels examined in the study participated in the mandatory core Abstinence Education Component, and were exposed to the Community Education Component as well. A subset of these students applied to participate in the Life Skills Education Component, and of these applicants, students were randomly assigned to either (1) a Life Skills AE group that was given the opportunity to participate in the Life Skills Education Component, or (2) a control AE group that could not participate in Life Skills Education but was exposed to the remaining two components of the *Heritage Keepers*® Program.

Study Framework and Research Questions. Guiding the evaluation of the *Heritage Keepers*® Life Skills Education Component is a logic model describing how the component aims to reduce teen sexual activity, related risks, and risk behaviors (Figure I.1). Beginning in Box A, the logic model assumes that decision-making by adolescents with regard to risk behavior is influenced by numerous antecedents, including their own backgrounds and experiences and the characteristics of their schools and communities. In addition, as shown in Box B, the decision-making of youth may be influenced by the formal education services they receive, including the Abstinence Education Component and, for some, the Life Skills Education Component. For students who do participate in the Life Skills Education Component, the component aims to improve the level and nature of the education they would otherwise have received about health, family life, and sex (summarized in Box C) and to reinforce the messages of the Abstinence Education Component all youth received. In turn, this change is hypothesized to have favorable impacts on several intermediate outcomes that might serve as mediators of behaviors (see Box D). For example, participating youth might develop stronger refusal skills or improve their knowledge of the risks of sexual activity. Through these and other channels, programs are hypothesized ultimately to affect longer-term behavioral outcomes (Box E), which include sexual abstinence as well as sexual activity and associated risks, such as pregnancy and contracting STDs.

Figure I.1. Logic Model for Evaluating the Impact of the *Heritage Keepers*® Life Skills Education Component



A series of evaluation reports has studied the pre-behavioral components of the logic model, spanning boxes A through D. An initial DHHS report (Devaney et al. 2002) examined boxes A and B of the logic model, describing the populations served by *Heritage Keepers*® and 10 other Title V, Section 510 Abstinence Education programs, as well as the characteristics and implementation experiences of these programs. A subsequent DHHS report (Clark and Devaney 2006) examined boxes C and D of the logic model—measuring the first-year impacts of *Heritage Keepers*® Life Skills Education on the services youth received and on selected intermediate outcomes that could influence risk behavior.

Building on these earlier findings, the current report focuses on the longer-term outcomes of youth in the Life Skills Education Component of the *Heritage Keepers*® Program. The report addresses two main questions:

1. **What are the longer-term impacts of the Life Skills Education Component on potential mediators of behavior?**

   - ***Intermediate outcomes related to teen sexual activity.*** Does the component affect views toward abstinence; relations with peers; self-concept and refusal skills; perceived consequences of teen sex; or expectations to abstain (Box D, items 1-5)? Early impacts on these intermediate outcomes were a focus of the first-year impact report; this report will examine impacts on these outcomes two to four years after study enrollment.

   - ***Knowledge and perceptions of risks associated with teen sex.*** Does the component influence knowledge of pregnancy and STD risks, knowledge of the health consequences of STDs, and perceptions of the effectiveness of condoms and birth control pills for preventing pregnancy and STDs (Box D, items 6 and 7)? The report examines these outcomes two to four years after enrollment; in contrast to the mediators above, they have not been previously examined.

2. **What impact does the Life Skills Education Component have on sexual abstinence and teen risk behaviors?** Does the component affect behavioral outcomes summarized by Box E—for example, rates of sexual abstinence and sexual activity and risks of STDs and pregnancy?

Chapter II describes the research design and analytic methods used to measure the impacts of the Life Skills Education Component. Chapters III through V present the study findings—Chapter III presents impacts on intermediate outcomes related to teen sexual activity, Chapter IV presents impacts on knowledge and perceptions of risks associated with teen sex, and Chapter V presents impacts on sexual abstinence and teen risk behaviors. Finally, Chapter VI summarizes the main study findings and considers their implications for future policy and research.

CHAPTER II

DESIGN AND METHODS FOR THE IMPACT EVALUATION

The impact evaluation of the Life Skills Education Component relies on an experimental design under which youth in the study sample were assigned to either (1) a "Life Skills Abstinence Education (AE) group" that was given the opportunity to participate in the Life Skills Education Component and the other two components of the *Heritage Keepers*® Program (Abstinence Education and Community Education), or (2) a "control AE group" that could not participate in Life Skills Education but was exposed to the remaining two components of *Heritage Keepers*®. When coupled with sufficiently large sample sizes, longitudinal surveys conducted by independent data collectors, and appropriate statistical methods, this design is able to produce rigorous estimates of the incremental impact of the Life Skills Education Component on youth already exposed to the other two components of *Heritage Keepers*® .

IMPACT STUDY DESIGN

Obtaining reliable estimates of a program's impacts requires determining what the outcomes of youth in the program would have been in the absence of that program (known as the counterfactual). Because the counterfactual cannot be observed directly, it must be estimated. Randomly assigning members of the study sample to either a "program group" that receives the program or a control group that does not is considered the best approach for comparing the effects of a program to an appropriate counterfactual. Because of random assignment, these two groups are similar in all respects except their access to the program. As a result, unbiased estimates of program impacts can be generated by simply comparing mean values of outcome measures (such as sexual abstinence) for the program group with those for the control group, which serves as the counterfactual.

Implementing an experimental design to evaluate the full *Heritage Keepers*® Program was not possible, because both program and school staff felt strongly that all students should participate in the core Abstinence Education Component. Program staff felt that the Abstinence Education Component was a critical part of their efforts to alter the school environment to be more supportive of abstinence. They believed that if only a subset of youth received the core Abstinence Education curriculum, the underlying *Heritage Keepers*® message would be diluted. The Edgefield school district also requested that the Abstinence

Education Component serve all youth in selected grades; as a result, school and program staff were willing to support the evaluation only if that component was delivered to all students.

For this reason, and to provide evidence on methods for enhancing a core abstinence education curriculum, the evaluation was designed to examine the incremental impact of the Life Skills Education Component on youth already exposed to the other components of *Heritage Keepers*®. Youth were randomly assigned to either (1) a Life Skills AE group that was given the opportunity to participate in the Life Skills Education Component and the other two components of *Heritage Keepers*®, or (2) a control AE group that could not participate in Life Skills Education but was exposed to the remaining two components of *Heritage Keepers*®. Since both groups were exposed to the mandatory Abstinence Education Component and the Community Education Component, the results presented here represent the incremental impacts of the Life Skills Education Component on youth already exposed to the other components of *Heritage Keepers*®. They do not represent the impact of the full *Heritage Keepers*® Program relative to no exposure to abstinence education.

Despite the strengths of the experimental design, its application to the Life Skills Education Component has two potential limitations. First, given that the Life Skills Education Component encourages participating youth to promote abstinence among their peers, the component could result in "spillover" effects for students in the control AE group, possibly leading impact estimates to be understated. Second, program staff at *Heritage Keepers*® expressed concern that the design may have altered the selection process for the Life Skills Component in ways that could have undermined the component's effectiveness. In a typical setting, the component attempts to reach a broad representation of the school youth, but with a focus on selecting "trendsetters" who can most effectively influence the school culture. For the purposes of the impact evaluation, however, all youth who applied for the Life Skills Education Component were randomly assigned to the Life Skills AE group or to the control AE group, a process that differs from a more purposeful-selection approach. There is no way to determine how, or even whether, the random assignment process ultimately changed the mix or attendance of students that were selected to participate in the Life Skills Component, or what effect such a change might have had on the impact estimates presented in this report. As a result, caution should be used when generalizing the findings from this study to use of the Life Skills Education Component in a more typical setting.

Program and Study Enrollment

In the summer before each enrollment year, school and program staff gave students an application packet for the Life Skills Education Component that included a description of the component and of the study, as well as an application and consent form to be signed by a parent or guardian indicating whether the child could participate in the study. Roughly 40 to 60 percent of students in each school returned consent forms and applied to join the Life Skills Education Component each year. Once the consent-gathering was completed, youth who applied to join the Life Skills Education Component were randomly assigned either to a Life Skills AE group that was allowed to participate or to a control AE group that was not.

Youth enrolled in the study sample and the Life Skills Education Component in three separate cohorts (Table II.1). An initial cohort of sixth grade students (the "2001 middle school cohort") enrolled in spring and fall 2001. A second cohort of sixth graders (the "2003 middle school cohort") enrolled in fall 2003. In addition, although the Life Skills Education Program was designed to begin in sixth grade, for the purposes of the study an additional cohort of ninth grade students enrolled in the study in fall 2001 (the "high school cohort"). These three cohorts vary on several important dimensions, including (1) differences in participation rates and program exposure, (2) curriculum and staffing differences over the course of the enrollment period, and (3) differences in the ages of the cohorts at the time of data collection.

Table II.1. Differences Between the Three Cohorts of the Life Skills AE Group

	2003 Middle School Cohort	2001 Middle School Cohort	High School Cohort
Study/Life Skills Education Component Enrollment Date	Fall 2003	Spring or Fall 2001	Fall 2001
Percentage of Life Skills AE Group Attending at Least One Life Skills Education Component Session	94%	96%	86%
Percentage Attending 1 to 20 Sessions	36%	28%	36%
Percentage Attending 21 to 40 Sessions	58%	52%	20%
Percentage Attending 40 or More Sessions	0%	16%	30%
Percentage of Life Skills AE Group Exposed to Revised Life Skills Education Component Curriculum	94%	89%	81%
Maximum Exposure to Life Skills Education Component	2 years	4 to 4.5 years	4 years
Age at Study Entry	11.4	11.5	14.2
Age at Final Data Collection	13.4	15.9	18.6

Source: *Heritage Keepers*® Attendance Records and Wave 1 and Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 1999 and 2005), administered to youth at baseline and 18 to 55 months after enrolling in the Life Skills Education Component study sample.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

Participation and exposure. Unlike the mandatory Abstinence Education Component, which all middle and high school students in Edgefield received, participation and attendance in the Life Skills Education Component was voluntary. Youth in the Life Skills AE group could attend as many component sessions as they wished and could even stop attending altogether at any point during the evaluation. Staff reported particular difficulty with attendance among the high school cohort, in part because the only available space for the lunchtime meetings was a portable classroom that was a long walk for many students, leaving them limited time to participate in the meetings and eat lunch. As seen in Table II.1, 85 percent of this cohort attended at least one of the Life Skills Education Component classes, a rate that is lower than both middle school cohorts. Because of changes in school policy, program staff in the high school also had significant difficulty

securing an appropriate meeting place for the first half of the component's fourth school year (2004-2005). Therefore, during their fourth year of enrollment, youth in the Life Skills AE group in the high school cohort and the 2001 middle school cohort (who were in high school by that time) were able to participate in the component for only four months.

Given their later enrollment in the study sample, the 2003 middle school cohort had the opportunity to participate in only two years of the component by the time final data were collected for this evaluation. As a result, all youth in the Life Skills AE group of this cohort participated in fewer than 40 sessions (as seen in Table II.1). In contrast, both the 2001 middle school cohort and the high school cohort had the opportunity to participate in the component for at least four years, resulting in a much wider distribution of classroom attendance

Curriculum and staffing. In fall 2003, a substantive change was made to the Life Skills Education Component in Edgefield, aimed at improving its implementation. The curriculum was modified to connect every topic directly to the underlying message of abstinence until marriage. While all the youth in the 2003 middle school cohort who attended any Life Skills Education Component sessions received the revised curriculum for the entirety of their participation in the component, youth in the other two cohorts received the revised curriculum only if they continued to participate in the component through fall 2003. According to attendance records provided by program staff, between 81 and 89 percent of the youth in the 2001 middle and high school cohorts attended at least one session during or after the 2003–2004 school year, and thus received at least some exposure to the updated curriculum (see Table II.1).

The Life Skills Education Component in Edgefield also experienced a number of staffing changes throughout the study period. At least one of the classroom teachers needed to be replaced in most years, reflecting the challenge of maintaining quality teaching staff in rural areas. In addition, in fall 2004, a new interim director of the Edgefield *Heritage Keepers*® Program was named, who was replaced the following year by a new, permanent director. These staffing changes may also have affected component implementation.

Age of study youth. At the time of study enrollment and enrollment into the Life Skills Education Component, the average age of youth in the high school cohort was 14, compared with 11 to 12 among the middle school cohorts. This led to substantial age differences at the time of final data collection for the evaluation (2005), when youth were asked about their sexual abstinence and activity. Youth in the high school cohort were on average almost 19 years old by this time, and youth in the 2001 middle school cohort were on average 16. At these ages, many youth in the community had begun to make decisions about sexual activity and abstinence, and one might expect any impacts of the component to be evident by this time. In contrast, youth in the 2003 middle school cohort were only 13 on average at the time of the final follow-up survey, an age by which few of their peers in the control AE group had begun to engage in sexual activity.

Given their relatively young age at the time of final data collection, few youth in the 2003 middle school cohort would be expected to have engaged in sexual activity (with or without the Life Skills Education Component). As a result, any early impacts the

component might have on sexual activity and other risk behaviors would be too small for the study to detect. For this reason, the study does not examine impacts on sexual abstinence and activity for the 2003 middle school cohort. It does, however, examine impacts on potential mediators of teen sexual activity for this cohort, as well as for the 2001 middle and high school cohorts.

Study Sample and Data Collection

The initial study sample included 709 youth, enrolled between spring 2001 and fall 2003 (Table II.2). Slightly more than half (53 percent) were assigned to the Life Skills AE group; the other 47 percent were assigned to the control AE group. The 2003 middle school cohort includes 175 youth from two schools, the 2001 middle school cohort includes 353 from these same two schools, and the high school cohort includes 181 from one school.

Data were collected from the study sample through a baseline survey administered near the time that youth began participating in the study, and two follow-up surveys. The surveys were administered either in school with a pen-and-paper instrument or by telephone for those not in school at that time.

Table II.2. Study Sample, Survey Response Rates, and Final Impact Analysis Sample for the Life Skills Education Component, Overall and by Cohort

	Enrolled in Study Sample	Final Follow-up Survey Response Rate (Percentage)	Final Impact Analysis Sample
Overall (All Cohorts)	**709**	**85**	**604**
Life Skills AE Group	368	87	320
Control AE Group	341	83	284
2003 Middle School Cohort	**175**	**91**	**160**
Life Skills AE Group	95	92	87
Control AE Group	80	91	73
2001 Middle School Cohort	**353**	**85**	**300**
Life Skills AE Group	181	88	159
Control AE Group	172	82	141
High School Cohort	**181**	**80**	**144**
Life Skills AE Group	92	80	74
Control AE Group	89	79	70

Source: Tracking System for the *Survey of Teen Activities and Attitudes* (Mathematica Policy Research, Inc.).

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

The impact findings presented in this report are based on data collected from the final follow-up survey, which was administered to study youth between spring and fall 2005. This reflects a follow-up period of 18 to 55 months after youth began participating in the study, depending on the year they began and the exact timing of the survey. Response rates for the

final follow-up survey were above 90 percent for the 2003 middle school cohort and 85 percent for the 2001 middle school cohort. Response rates were 80 percent for the high school cohort, some of whom had graduated before completing the final follow-up survey and could not be located.

For each cohort, the sample size available for this report is given by the product of the number of youth in the study sample and their corresponding response rate on the final follow-up survey. As seen in the final column of Table II.2, the resulting sample size for this report is 160 for the 2003 middle school cohort, 300 for the 2001 middle school cohort, and 144 for the high school cohort. The total sample size across the three cohorts is 604.

Evidence suggests that the Life Skills AE and control AE groups are well matched, as would be expected with an experimental design. Across a wide range of baseline measures derived from the baseline survey, there were a minimal number of significant differences between the Life Skills AE and control AE group analysis samples—no more than expected by random chance. For example, of nearly 40 measures based on baseline data (see Appendix Table B.1), no more than 2 in each cohort show a significant difference between the Life Skills AE and control AE groups.

Table II.3 displays baseline characteristics for the final analysis sample. The 2003 middle school cohort is 60 percent female, compared with 51 percent in the 2001 middle school cohort and 53 percent in the high school cohort. About half the students in all three cohorts reported that their parents were unmarried, and roughly 8 percent reported that they had an unmarried sister who had gotten pregnant.

Table II.3. Characteristics of the Final Analysis Sample (Percentages)

	2003 Middle School Cohort	2001 Middle School Cohort	High School Cohort	Overall
Gender (Percentage Female)	60	51	53	54
Baseline Family Situation				
Parents married	46	52	50	50
Has mother figure	98	99	94	97
Has father figure	89	90	82	88
Unmarried sister got pregnant	8	7	8	8
Sibling dropped out of school	1	6	4	4
Race/Ethnicity[a]				
Black, non-Hispanic	57	55	68	59
White, non-Hispanic	38	40	29	37
Hispanic	5	5	3	5
Sample Size	**160**	**300**	**144**	**604**

Source: *Wave 1 Survey of Teen Activities and Attitudes* (Mathematica Policy Research, Inc. 1999) administered at or near the time of sample enrollment to youth in the Title V, Section 510 Abstinence Education Program study sample.

[a]Estimates exclude youth who did not report a race/ethnicity or who reported a mixed or other race/ethnicity.

Across all three cohorts, the racial/ethnic composition of youth in the study sample is fairly similar to the composition of all students in their grade level in the study schools as a whole. For the study sample, just over half the youth (59 percent) reported being black, non-Hispanic; 37 percent reported being white, non-Hispanic; and 5 percent reported being Hispanic. For the students in those grade levels as a whole, a slightly lower percentage (52 percent) are black, non-Hispanic; 46 percent are white, non-Hispanic; and 2 percent are Hispanic (tabulations based on school-level data from National Center for Education Statistics 2003 and 2006). Across the three cohorts, the largest difference in composition is for youth in the 2003 middle school sample, who are much more likely to be black, non-Hispanic and less likely to be white, non-Hispanic as compared to their grade level. The youth in this cohort are also more likely to be female than their grade level as a whole, among whom roughly 50 percent are female.

OUTCOME VARIABLES

All outcome measures were based on data from the final follow-up survey and fall into two broad categories (see Table II.4):

1. **Potential Mediators of Teen Sexual Activity.** These measures include factors that might mediate sexual abstinence, sexual activity, and other risk behaviors.

   - ***Intermediate outcomes related to teen sexual activity.*** This first set of mediators includes youths' support for abstinence, their relations with peers and parents, their perceptions of the consequences of teen sex, and their expectations to abstain (Table II.4, top panel). An earlier DHHS report (Clark and Devaney 2006) measured impacts on these potential mediators one year after study enrollment; this report examines more recent on these outcomes two to four years after study enrollment.

   - ***Knowledge and perceptions of risks associated with teen sex.*** Several other potentially important mediators of behavior, shown in the middle panel of Table II.4, were not available until the final follow-up survey. This new set of measures spans two broad categories: (1) knowledge, and (2) perceptions of birth control and condom efficacy. Measures of knowledge include the ability to identify STDs, understanding of potential risks of unprotected sex, and awareness of potential health consequences of STDs. Measures of perceptions focus on whether youth believe condoms or birth control pills are effective for preventing pregnancy and various STDs.

2. **Sexual Abstinence and Teen Risk Behaviors.** These include the measures that are most central to the evaluation, including whether youth remained abstinent or engaged in "unprotected" sex—sex without a condom (Table II.4; bottom panel). They also include measures of potential consequences of teen sexual activity, such as pregnancy or reported STDs, and important behavioral correlates of teen sexual activity, such as alcohol and drug use. As discussed above, these behavioral measures are not analyzed for the 2003 middle school cohort, because of their young ages at the time of the final follow-up survey.

Table II.4. Outcome Variables

Variable	Definition
Intermediate Outcomes Related to Teen Sexual Activity	
Views on Abstinence, Teen Sex, and Marriage	
Views Supportive of Abstinence	Average of five survey items: (a) having sexual intercourse is something only married people should do; (b) it is against my values to have sexual intercourse as an unmarried teen; (c) it would be ok for teens who have been dating for a long time to have sexual intercourse [reversed]; (d) it is ok for teenagers to have sexual intercourse before marriage if they plan to get married [reversed]; and (e) it is ok for unmarried teens to have sexual intercourse if they use birth control [reversed]. Responses coded from 0 (strongly disagree) to 3 (strongly agree) and averaged.
Views Unsupportive of Teen Sex	Average of six survey items: (a) petting can lead to sex; (b) in a relationship, there are many more important things than sex; (c) it is ok to say no to touching; (d) the best way to avoid unwanted pregnancy is to wait until marriage to have sex; (e) it is likely that teens who have sex will get an STD; and (f) it is likely that teens who have sex before marriage will get pregnant. Responses coded from 0 (strongly disagree) to 3 (strongly agree) and averaged.
Views Supportive of Marriage	Average of two survey items: (a) having a good marriage is important to me; and (b) having a good marriage is not realistic for me [reversed]. Responses are coded from 0 (strongly disagree) to 3 (strongly agree) and averaged.
Peer Influences and Relations	
Friends' Support for Abstinence	Average of three items: (a) number of five closest friends who think sex at your age is ok [reversed]; (b) number who think someone should wait until marriage to have sex; (c) number who have had sexual intercourse [reversed]. Responses recoded to four interval measures: 0 (none), 1 (one or two); 3 (three of four); 5 (all of them) and averaged.
Peer Pressure to Have Sex	Categorical variable: respondent reported feeling no pressure, a little pressure, some pressure, or a lot of pressure to have sex.
Self-Concept and Refusal Skills	
Self-Esteem and – Control	Average of two scales: (a) self-esteem, and (b) self-control. Responses coded 0 to 3 and averaged.
Refusal Skills	Average of five items asking whether the respondent could (a) stick with decision not to have sexual intercourse; (b) talk with (girl/boy)friend about the decision; (c) avoid getting into a situation that might lead to sexual intercourse; (d) say no to having sexual intercourse, and explain reasons; and (e) stop seeing (girl/boy)friend if s/he keeps pushing. Responses coded from 0 (no), 1 (maybe), or 2 (yes) and averaged.
Perceived Consequences of Teen and Nonmarital Sex	
Perceived General Consequences of Teen Sex	Average of three items (a) sexual relationships create more problems than they are worth for teens; (b) sexual relations make life too difficult for teens; (c) a teen who has had sex outside of marriage is better off waiting until marriage to have it again. Responses coded from 0 (strongly disagree) to 3 (strongly agree) and averaged.
Perceived Personal Consequences of Teen Sex	Average of four items: The extent to which sex as an unmarried teen makes it hard to (a) study and stay in school, (b) have a good marriage and a good family life in the future, (c) develop emotionally and grow morally; and (d) whether sex as an unmarried teen is a problem if no pregnancy results. Responses coded from 0 (not hard/no problem) to 2 (very hard/big problem) and averaged.
Expectations for Future Behavior	
Expect to Abstain Through High School	Binary variable: equals 1 if youth reported expecting to abstain through high school (including those who have previously had sex); equals 0 otherwise. Youth who were 18 or older at the time of the survey were dropped from the measure.
Expect to Abstain as a Teenager	Binary variable: equals 1 if youth reported expecting to abstain until age 20 (including those who have previously had sex); equals 0 otherwise. Youth who were 20 or older at the time of the survey were dropped from the measure.
Expect to Abstain Until Marriage	Binary variable: equals 1 if youth reported expecting to abstain until married (including those who have previously had sex); equals 0 otherwise. Youth who reported being married at the time of the survey were dropped from the measure.

Table II.4 ***(continued)***

Variable	Definition
Knowledge and Perceptions of Risk Associated with Teen Sex	
Ability to Identify STDs	
Overall Identification of STDs	Continuous (scale) variable: the percentage of 13 diseases that are correctly identified as actual STDs (such as chlamydia) or false STDs (such as diabetes).
Identification of True STDs	Continuous (scale) variable: the percentage of the 9 actual STDs correctly identified.
Identification of False STDs	Continuous (scale) variable: the percentage of the 4 non-STDs correctly identified.
Understanding of Pregnancy and STD Risks	
Knowledge of Unprotected-Sex Risks	Continuous (scale) variable: the percentage correct of two items, which asked the respondent whether one instance of unprotected sex can result in (1) a pregnancy, (2) an STD.
Knowledge of STD Consequences	Continuous (scale) variable: the percentage correct of three items, which asked the respondent whether STDs can cause (1) cancer, (2) fertility problems, (3) increased risk for asthma.
Perceived Effectiveness of Condoms	
Perceived Effectiveness at Preventing Pregnancy	Categorical variable: respondent reported that when used correctly, condoms either usually, sometimes, or never prevent pregnancy, or that s/he was unsure.
Perceived Effectiveness at Preventing HIV	Categorical variable: respondent reported that when used correctly, condoms either usually, sometimes, or never prevent HIV, or that s/he was unsure.
Perceived Effectiveness at Preventing Chlamydia and Gonorrhea	Categorical variable: respondent reported that when used correctly, condoms either usually, sometimes, or never prevent chlamydia and gonorrhea, or that s/he was unsure.
Perceived Effectiveness at Preventing Herpes and HPV	Categorical variable: respondent reported that when used correctly, condoms either usually, sometimes, or never prevent herpes and HPV, or that s/he was unsure.
Perceived Effectiveness of Birth Control Pills	
Perceived Effectiveness at Preventing Pregnancy	Categorical variable: respondent reported that when used correctly, birth control pills either usually, sometimes, or never prevent pregnancy, or that s/he was unsure.
Perceived Effectiveness at Preventing HIV	Categorical variable: respondent reported that when used correctly, birth control pills either usually, sometimes, or never prevent HIV, or that s/he was unsure.
Perceived Effectiveness at Preventing Chlamydia and Gonorrhea	Categorical variable: respondent reported that when used correctly, birth control pills either usually, sometimes, or never prevent chlamydia and gonorrhea, or that s/he was unsure.
Perceived Effectiveness at Preventing Herpes and HPV	Categorical variable: respondent reported that when used correctly, birth control pills either usually, sometimes, or never prevent herpes and HPV, or that s/he was unsure.

Table II.4 *(continued)*

Variable	Definition
Sexual Abstinence and Teen Risk Behaviors	
Sexual Abstinence and Sexual Activity	
Remained Abstinent	Binary variable: equals 1 if youth reported never having had sexual intercourse; equals 0 if youth reported having had sexual intercourse (ever).
Abstinent Last 12 Months	Binary variable: equals 1 if youth reported not having had sex in last 12 months; equals 0 if youth reported having had sex in last 12 months.
Number of Sexual Partners	Categorical variable, with five categories: (1) remained abstinent; (2) one sexual partner ever; (3) two sexual partners ever; (4) three sexual partners ever; and (5) four or more sexual partners ever.
Age at First Intercourse	Set of four binary variables, based on reported age at first sex. Variables indicate whether the youth reported having had sex by age 14, by age 15, by age 16, and by age 17. Youth who were either older than the specified age at time of study enrollment or younger than the specified age at the time of the final follow-up survey are assigned missing values (dropped from the analysis).
Risks of STDs and Pregnancy	
Unprotected Sex at First Intercourse	Categorical variable, with three categories: (1) remained abstinent; (2) had sex and reported using a condom the first time; (3) had sex and reported not using a condom the first time.
Unprotected Sex Last 12 Months	Categorical variable, with four categories: (1) abstinent last 12 months; (2) had sexual intercourse last 12 months and always used condom; (3) had sexual intercourse last 12 months and sometimes used condom; and (4) had sexual intercourse last 12 months and never used condom.
Birth Control at First Intercourse	Categorical variable, with three categories: (1) remained abstinent; (2) had sex and reported using birth control the first time; (3) had sex and reported not using birth control the first time.
Birth Control Last 12 Months	Categorical variable, with four categories: (1) abstinent last 12 months; (2) had sexual intercourse last 12 months and always used birth control; (3) had sexual intercourse last 12 months and sometimes used birth control; and (4) had sexual intercourse last 12 months and never used birth control.
Possible Consequences of Teen Sex	
Ever Been Pregnant	Binary variable: equals 1 if respondent reported having ever been (or gotten someone) pregnant; equals 0 otherwise (including youth who have remained abstinent).
Ever Had a Baby	Binary variable: equals 1 if respondent reported ever having had a baby (or that their partner ever had a baby); equals 0 otherwise.
Ever Had a (Reported) STD	Binary variable: equals 1 if youth reported that a doctor said s/he had an STD; equals 0 otherwise.
Other Risk Behaviors	
Smoked Cigarette (Past Month)	Binary variable: equals 1 if respondent reported having smoked a cigarette at least once in last month; equals 0 otherwise.
Drinks Alcohol (at Least Once a Month)	Binary variable: equals 1 if youth reported drinking alcohol at least once a month; equals 0 otherwise.
Used Marijuana (Ever)	Binary variable: equals 1 if youth reported having ever used marijuana; equals 0 otherwise.

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: See Appendix C for the wording of the individual survey questions (and responses) on which the measures are based.

HIV = human immunodeficiency virus; HPV = human papillomavirus; STD = sexually transmitted disease.

ANALYTIC METHODS

For each outcome measure, impacts were estimated as the difference in regression-adjusted mean values between the Life Skills AE and control AE groups (both overall and for each of the three cohorts individually). The overall estimate was computed as an unweighted average of the estimated impacts for each of the three cohorts; thus, each cohort was given equal importance when computing the overall impact estimate. This approach was preferred to pooling all students together to compute an overall impact estimate, as this approach would have weighted each cohort-level impact by the sample size in that cohort, a somewhat arbitrary number.

At the time of the final follow-up survey, the 2003 middle school cohort was too young for impacts to be estimated on their behavioral outcomes. As a result, behavioral impacts were estimated only for the two other cohorts (2001 middle school and high school), and the overall impact was computed as the average of these two.

Multivariate Estimation

The regression analysis used weighted least squares models and pooled data across all three cohorts. Each regression model included a series of binary variables reflecting the interaction between an indicator for each cohort and an indicator for whether the student was assigned to the Life Skills AE group. Each cohort-specific impact estimate is obtained from the coefficient on the interaction term corresponding to that cohort. The pooled impact estimate for a given outcome is obtained from the average of each cohort impact. The sample weights used in the regressions accounted for the variability in the probability of selection to the Life Skills AE group or control AE group as well as for youth who did not complete the final follow-up survey.[1] Standard errors from the models were calculated taking into account the variability associated with these weights.

In addition to these variables, the regression models included a large number of variables to control for individual demographic and background characteristics measured at baseline, including influences of family, school, and religion; prior health and sex education services; and views or attitudes thought to be predictive of teen sex (Table II.5). For the small fraction of sample members who did not complete a baseline survey (fewer than 5 percent), a supplemental survey was administered at Wave 2 to collect key demographic information such as age, gender, and race/ethnicity. For other covariates, missing data were imputed using the mean for the sample by grade level.

[1] Selection weights were calculated as the inverse probability of selection to the group of assignment. Nonresponse weights were calculated using standard modeling techniques to estimate the probability of survey nonresponse as a function of baseline covariates.

Table II.5. Explanatory (Control) Variables Used in the Final Impact Analysis

Demographics and Background Characteristics	Baseline Contextual Factors	Baseline Measures of Behavior and Potential Mediators of Teen Sex
Date of interview	Communication with parents	Had sex
Responded to previous surveys	Unmarried sister got pregnant	Perceived consequences of sex
Gender	Sibling dropped out of school	Views on abstinence
Age	Religiosity	Ability to resist pressure for sex
Race/ethnicity		Expectations to have sex
Presence of mother figure		Knowledge of STDs
Presence of father figure		
Parents married		

Missing Outcomes Data

Although nonresponse on the individual survey questions was generally low, typically just 1 or 2 percent, for certain outcomes it could still result in slightly biased estimates of average outcomes if left unaddressed. The first set of these questions pertains to knowledge—for example, "Can you get pregnant if you have sexual intercourse only once?"—where there is a single correct answer. For these questions, it is likely that youth who completed most of the survey section on knowledge, but skipped an individual question or two, did so because they did not know the correct answer. Thus, in order not to understate the proportion of youth who were unsure of a correct answer, the response on individually skipped knowledge questions was categorized as "don't know/unsure." In contrast, youth who skipped an entire section are excluded from the analysis for that set of outcomes.

A more serious form of missing data pertains to conditional questions—those answered by youth only if they provide a particular response on a prior question or questions. For example, to answer the question on the number of sexual partners, the respondent must first indicate on the survey that he or she has had sexual intercourse. Since youth who have not had sexual intercourse can correctly be assigned a value of zero partners, this conditional wording means that all missing values for the question will pertain to youth who have had sexual intercourse. In turn, unless there are no missing data, the reported mean value for the full sample will be incorrect—in this case understating the mean number of sexual partners. To correct for this conditional item nonresponse, missing values were imputed following a commonly used "hot-deck procedure" (Rubin 1987) that assigns a value on the item that was missing based on the reported values of youth with characteristics similar to those of the item nonrespondents. Through this method, the estimates for the Life Skills AE and control AE groups preserve the natural variability of the sample.

Nonparticipation

As shown previously in Table II.1, the percentage of Life Skills AE group youth attending at least one session of the component ranged from 86 percent in the high school cohort to 96 percent in the 2001 middle school cohort. Given that not all youth participated, impact estimates are presented two ways in the report. The first is for the full

Life Skills AE group. These estimates reflect the average effect of *having the opportunity* to participate in the program, whether or not the youth actually chose to participate. These estimates are featured throughout the report since they generalize to the youth who were given the opportunity to participate, and reflect the fact that participation is unlikely to be universal in any voluntary school-based program. The second set of estimates is for only those youth in the program group who actually participated. These estimates are derived following the procedure developed by Bloom (1984), which divides the full-sample estimate by the participation rate. Because the standard errors and significance levels associated with the participant-only estimates are roughly similar to those for the full Life Skills AE group, conclusions from the study do not differ substantively when based on one set of estimates or the other.

Statistical Power

For the full analysis sample, the statistical power of the study to detect impacts is fairly high. Based on the observed explanatory power of the regression models, the study sample for all three cohorts combined supports detection of true overall impacts of roughly 0.14 standard deviations. (This is based on standard assumptions of 80 percent statistical power and 90 percent statistical confidence, two-tailed.) For a proportional outcome with a mean of 50 percent, this reflects an estimated impact of roughly 7 percentage points. The study sample for the 2001 middle school and high school cohorts combined (the sample included in the analysis of behavioral outcomes) is somewhat lower because of the smaller sample size; it supports detection of true overall impacts of 0.17 standard deviations, or 8 percentage points for a proportional outcome with a mean of 50 percent. Smaller impacts may also be detected from the study sample, but the likelihood of doing so is below the 80 percent probability (power level) that is commonly preferred.

For the individual cohorts, statistical power is naturally lower. This is true particularly for the high school cohort, which includes only 144 youth, and the 2003 middle school cohort, which includes 160. The small sizes of these cohorts provide a high likelihood of detecting (that is, stating as statistically significant) true impacts only if they are fairly large—around 0.28 standard deviations. For the 2001 middle school cohort, which includes 300 youth, detectable impacts (at 80 percent power) are better—roughly 0.20 standard deviations.

Hypothesis and Sensitivity Testing

For binary and continuous variables, a two-tailed *t*-statistic tests the null hypothesis that there is no difference between the regression-adjusted means for the Life Skills AE and control AE groups. The associated *p*-value, which reflects the probability of obtaining the observed impact estimate when the null hypothesis of no effect is true, is used to judge the likelihood that the Life Skills Education Component had a measurable (statistically significant) impact. For categorical outcome variables, a chi-squared statistic tests the null

hypothesis that there is no difference in the distribution of responses between the two experimental groups.[2]

Impact estimates with *p*-values less than 0.10, on two-tailed tests, are denoted in the report by asterisks and referred to in the text as statistically significant (Table II.6). While researchers sometimes use a lower *p*-value, 0.05 or less, to determine significance, this higher threshold allows a careful assessment of the findings across the range of outcomes being examined. The adoption of this threshold, however, does raise the likelihood of detecting significant impacts that have resulted merely by chance. Therefore, when interpreting the findings, attention is paid to whether significant impact estimates are isolated or whether they are part of a pattern of significant estimates that would point more strongly to a true effect of the component.

Additional analyses were conducted to examine the robustness of the impact estimates presented in the report. These included estimating impacts through logistic regression models (for binary outcomes) rather than linear probability models, and estimating impacts dropping various combinations of regression adjustment, data imputation, and sample weights used in the regression analysis. Unless otherwise noted, findings based on these alternative estimates were consistent with those presented in the report.

Table II.6. Conventions for Describing Statistical Significance of Impact Estimates

p-value of Impact Estimate	Symbol Used to Denote *p*-value	Impact Estimate Is Considered Statistically Significant from Zero
$p < 0.01$	***	Yes
$0.01 \leq p < 0.05$	**	Yes
$0.05 \leq p < 0.10$	*	Yes
$p \geq 0.10$	[none]	No

[2] The chi-squared statistic was used because the small sample sizes in some cohorts did not support reliable estimation of multinomial models. With the exception of one outcome (noted in Chapter V), significance tests based on the chi-squared statistics for the full sample are similar to those based on *F*-statistics derived from multinomial logistic regressions (of the categorical outcome variable on an indicator for whether the student was assigned to the Life Skills AE group and covariates from the main regression models).

CHAPTER III

INTERMEDIATE OUTCOMES RELATED TO TEEN SEXUAL ACTIVITY

A previous DHHS report examined first-year impacts of the Life Skills Education Component on intermediate outcomes hypothesized to lower rates of teen sexual activity (Clark and Devaney 2006). That report found that, overall, the component had no impact on any of the intermediate outcomes examined one year after program enrollment. First-year impacts were evident, however, among youth in the 2003 middle school cohort. After the first year, the Life Skills Education Component had positive impacts on three of eight intermediate outcomes examined for this cohort: friends' support for abstinence, views supportive of abstinence, and perceptions of the personal consequences of teen sex.

Given that youth could participate in the Life Skills Education Component beyond one year, and most youth in the Life Skills AE group did so, it is valuable to reexamine the impacts on intermediate outcomes over a longer duration. Using more recent data from the final follow-up survey, this chapter examines impacts on intermediate outcomes two to four years after study enrollment. Specifically, it assesses the impact of the Life Skills Education Component on 12 potential mediators of teen sexual activity, grouped into five major areas: (1) views on abstinence, teen sex, and marriage; (2) peer influences and relations; (3) self-concept and refusal skills; (4) perceived consequences of teen and nonmarital sex; and (5) expectations to abstain.[1] Since all youth received the mandatory Abstinence Education Component and some were exposed to the Community Education Component, these estimates represent the incremental effects of the Life Skills Education Component among youth already exposed to the other components of *Heritage Keepers*®.

The analysis finds that youth in the Life Skills AE group had views more supportive of abstinence and less supportive of teen sex than their peers in the control AE group at the time of the final follow-up survey. In addition, youth in the Life Skills AE group reported

[1] Some measures examined in this chapter differ from those originally examined in the first-year impacts report because of differences in the questions asked on the first-year and final follow-up surveys. Table II.4 contains definitions of the measures used in this latest analysis.

stronger refusal skills than those in the control AE group and reported higher expectations to abstain from sex until marriage. Consistent with findings from the first-year impact report, these overall results are driven largely by the 2003 middle school cohort. Youth in the Life Skills AE group of this cohort reported significantly higher views toward abstinence, refusal skills, and expectations to abstain than their control AE group counterparts. The Life Skills Education Component had no significant impact on the remaining intermediate outcomes examined.

VIEWS ON ABSTINENCE, TEEN SEX, AND MARRIAGE

► **Youth in the Life Skills AE group reported views more supportive of abstinence and less supportive of teen sex than did their counterparts in the control AE group.**

Overall, the Life Skills Education Component had the intended positive effect on youths' views toward abstinence and teen sex (Table III.1).[2] Youth in the Life Skills AE group averaged 2.00 on a scale measure of views supportive of abstinence, which corresponds to a mean response of "agree" to a series of statements such as "having sexual intercourse is something only married people should do." The mean among youth in the control AE group was lower, 1.91, a significant difference attributable to the Life Skills Educational Component (effect size = 0.12 standard deviations; *p*-value = 0.10). Similarly, on a scale measuring views *unsupportive* of teen sex, the mean among youth in the Life Skills AE group was 0.08 points (or 0.19 standard deviations) higher than the mean among the control AE group, a difference that is statistically significant (*p*-value = 0.02). On average, youth in the Life Skills AE and control AE groups did not differ in their views toward marriage, based on a scale measuring the importance they placed on having a good marriage and whether they felt a good marriage was realistic for them. In both groups, views were relatively positive, around 2.5 on a scale ranging from 0 (least supportive) to 3 (most supportive).

The pattern of impacts varied considerably across the three cohorts. For the 2003 middle school cohort, the Life Skills AE and control AE groups differed only in their views toward abstinence, with youth in the Life Skills AE group reporting significantly stronger support for abstinence (effect size = 0.28 standard deviations; *p*-value = 0.05). For the other two cohorts, the component had no significant impact on this measure. It did, however, have an impact on views unsupportive of teen sex—youth in the Life Skills AE group in both these cohorts reported views less supportive of teen sex than their counterparts in the control AE group (effect size = 0.19 and *p*-value = 0.10 for the 2001 middle school cohort; effect size = 0.37 and *p*-value = 0.01 for the high school cohort).

[2] The tables in this and the following chapter present impact estimates for the full sample as well as for each of the three cohorts separately. The cohorts are ordered from youngest to oldest average age at the time of the final follow-up survey: the 2003 middle school cohort, followed by the 2001 middle school cohort, followed by the high school cohort.

Table III.1. Estimated Impacts on Views Toward Abstinence, Teen Sex, and Marriage

	Life Skills AE Group (Mean)	Control AE Group (Mean)	Life Skills AE-Control AE Difference	Effect Size[a]	*p*-value
Overall (All Cohorts)					
Views supportive of abstinence [0,3]	2.00	1.91	0.09	0.12	0.10*
Views unsupportive of teen sex [0,3]	2.42	2.34	0.08	0.19	0.02**
Views supportive of marriage [0,3]	2.53	2.50	0.04	0.07	0.39
2003 Middle School Cohort					
Views supportive of abstinence [0,3]	2.33	2.14	0.19	0.28	0.05*
Views unsupportive of teen sex [0,3]	2.46	2.46	0.01	0.01	0.94
Views supportive of marriage [0,3]	2.53	2.53	0.00	0.00	1.00
2001 Middle School Cohort					
Views supportive of abstinence [0,3]	1.99	1.88	0.11	0.16	0.14
Views unsupportive of teen sex [0,3]	2.37	2.28	0.08	0.19	0.10*
Views supportive of marriage [0,3]	2.49	2.49	0.00	0.00	0.98
High School Cohort					
Views supportive of abstinence [0,3]	1.69	1.72	-0.03	-0.04	0.78
Views unsupportive of teen sex [0,3]	2.44	2.29	0.16	0.37	0.01**
Views supportive of marriage [0,3]	2.58	2.47	0.11	0.22	0.18

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]The effect size measure is calculated as the ratio of the mean difference to the standard deviation of the outcome measure for the control AE group.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

PEER INFLUENCES AND RELATIONS

►Youth in the Life Skills AE and control AE groups did not differ in the support for abstinence among their friends or in the perceived peer pressure to have sex.

For the three cohorts combined, youth in the Life Skills AE and control AE groups reported similar levels of support for abstinence among their five closest friends (Table III.2). The mean of 2.77 among the control AE group indicates that, on average, these youth reported that just over half of their closest friends were supportive of abstinence. Friends' support for abstinence within the Life Skills AE group was slightly lower, but the difference was not statistically significant (effect size = -0.08; p-value = 0.30). The second measure of peer influences—peer pressure to have sex—also displays no significant difference between the Life Skills AE and control AE groups. In both groups, youth

reported similarly low levels of pressure from friends to have sex. Across all three cohorts, there are likewise no significant differences on either measure.

Table III.2. Estimated Impacts on Peer Influences and Relations

	Life Skills AE Group (Mean)	Control AE Group (Mean)	Life Skills AE-Control AE Difference	Effect Size[a]	*p*-value
Overall (All Three Cohorts)					
Friends' support for abstinence [0,5]	2.64	2.77	-0.13	-0.08	0.30
Peer pressure to have sex [0,3]	0.34	0.31	0.03	0.04	0.64
2003 Middle School Cohort					
Friends' support for abstinence [0,5]	3.70	3.68	0.02	0.02	0.92
Peer pressure to have sex [0,3]	0.51	0.34	0.18	0.20	0.17
2001 Middle School Cohort					
Friends' support for abstinence [0,5]	2.54	2.64	-0.11	-0.07	0.53
Peer pressure to have sex [0,3]	0.29	0.29	0.00	0.00	0.98
High School Cohort					
Friends' support for abstinence [0,5]	1.70	1.99	-0.29	-0.19	0.26
Peer pressure to have sex [0,3]	0.20	0.29	-0.08	-0.12	0.50

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]The effect size measure is calculated as the ratio of the mean difference to the standard deviation of the outcome measure for the control AE group.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (of Life Skills AE-control AE difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

SELF-CONCEPT AND REFUSAL SKILLS

► **Youth in the Life Skills AE group reported greater confidence than the control AE group in their skills for refusing sex. The two groups reported equivalent levels of self-esteem and -control.**

Relative to the Abstinence and Community Education Components of *Heritage Keepers*®, the Life Skills Education Component placed greater emphasis on improving youths' abilities to control their own impulses and resist external pressures to have sex. While the component as a whole did not affect youths' self-esteem and -control, it did lead to an increase in their refusal skills (Table III.3). Youth in the Life Skills AE group averaged 1.56 on the measure of refusal skills, a scale ranging from 0 to 3, significantly higher than youth in the control AE group (effect size = 0.13; *p*-value = 0.06). This difference indicates that

youth in the Life Skills AE group had more confidence in their ability to, for example, stand by a decision not to have sex or avoid situations that might lead to intercourse. The overall effect on refusal skills is driven mainly by youth in the 2003 middle school cohort—Life Skills AE group youth in this cohort reported refusal skills nearly a third of a standard deviation higher than their counterparts in the control AE group (effect size = 0.31; *p*-value = 0.05).

Table III.3. Estimated Impacts on Self-Concept and Refusal Skills

	Life Skills AE Group (Mean)	Control AE Group (Mean)	Life Skills AE-Control AE Difference	Effect Size[a]	*p*-value
Overall (All Three Cohorts)					
Refusal skills [0,2]	1.56	1.49	0.07	0.13	0.06*
Self-esteem and -control [0,3]	2.12	2.13	-0.02	-0.03	0.69
2003 Middle School Cohort					
Refusal skills [0,2]	1.64	1.49	0.15	0.31	0.05*
Self-esteem and -control [0,3]	2.03	2.07	-0.04	-0.07	0.61
2001 Middle School Cohort					
Refusal skills [0,2]	1.49	1.49	0.00	0.00	0.96
Self-esteem and -control [0,3]	2.06	2.12	-0.06	-0.14	0.23
High School Cohort					
Refusal skills [0,2]	1.55	1.49	0.06	0.11	0.36
Self-esteem and -control [0,3]	2.27	2.21	0.06	0.15	0.32

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]The effect size measure is calculated as the ratio of the mean difference to the standard deviation of the outcome measure for the control AE group.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*** (of Life Skills AE-control AE difference) < 0.01; ***p*** < 0.05; ***p*** < 0.10, two-tailed test.

Youth in the Life Skills AE and control AE groups reported similar levels of self-esteem and -control. Youth in both groups averaged about 2.13 on the measure of self-esteem and -control, a scale ranging from 0 to 3. This corresponds to a mean response of "agree a little" to statements such as "I have a lot to be proud of" and "I like myself just the way I am." Differences show no consistent pattern across the three cohorts: in the two middle school cohorts, the Life Skills AE group reported lower self-esteem and -control than the control AE group; in the high school cohort, they reported higher self-esteem and -control, but none of these differences is statistically significant.

PERCEIVED CONSEQUENCES OF TEEN AND NONMARITAL SEX

► **Youth in the Life Skills AE and control AE groups did not differ in their perception of the negative consequences of engaging in sex as a teen.**

On average, study youth agreed, though not strongly, with statements about the general consequences of teen sex such as "sexual relationships make life too difficult for teens" (Table III.4). They also typically agreed that teen sex would make personal achievements such as studying and staying in school "somewhat harder" but not "much harder." Though youth in the Life Skills AE group reported, on average, higher values than youth in the control AE group on both measures, the differences are not statistically significant. Across the individual cohorts, means on both measures varied considerably; however, none displayed a significant difference between the Life Skills AE and control AE groups.

Table III.4. Estimated Impacts on Perceived Consequences of Teen and Nonmarital Sex

	Life Skills AE Group (Mean)	Control AE Group (Mean)	Life Skills AE-Control AE Difference	Effect Size[a]	*p*-value
Overall (All Three Cohorts)					
General consequences of teen sex [0,3]	2.07	2.06	0.01	0.01	0.85
Personal consequences of teen sex [0,2]	1.13	1.07	0.06	0.10	0.15
2003 Middle School Cohort					
General consequences of teen sex [0,3]	2.28	2.26	0.02	0.04	0.81
Personal consequences of teen sex [0,2]	1.43	1.35	0.08	0.15	0.28
2001 Middle School Cohort					
General consequences of teen sex [0,3]	2.04	2.03	0.02	0.03	0.78
Personal consequences of teen sex [0,2]	1.12	1.06	0.06	0.10	0.34
High School Cohort					
General consequences of teen sex [0,3]	1.88	1.90	-0.01	-0.02	0.92
Personal consequences of teen sex [0,2]	0.85	0.80	0.05	0.09	0.59

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]The effect size measure is calculated as the ratio of the mean difference to the standard deviation of the outcome measure for the control AE group.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (of Life Skills AE-control AE difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

EXPECTATIONS TO ABSTAIN FROM SEXUAL INTERCOURSE

► **Youth in the Life Skills AE group reported higher expectations to abstain than their counterparts in the control AE group. Youth in the two middle school cohorts were responsible for this difference.**

Overall, 61 percent of youth in the Life Skills AE group reported that they expected to abstain from sex until marriage, compared with only 51 percent of youth in the control AE group (Table III.5), a difference that is statistically significant (*p*-value = 0.01). Similarly, 78 percent of the Life Skills AE group, compared with 67 percent of the control AE group, reported that they expected to abstain through high school (*p*-value = 0.01). In contrast, expectations to abstain from sex as a teenager did not differ significantly between the Life Skills AE and control AE groups (58 percent and 55 percent, respectively; *p*-value = 0.38).

Table III.5. Estimated Impacts on Expectations to Abstain from Sexual Intercourse

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Expect to abstain until marriage	61	51	10	0.01**
Expect to abstain through high school[a]	78	67	11	0.01***
Expect to abstain as a teenager	58	55	4	0.38
2003 Middle School Cohort				
Expect to abstain until marriage	84	62	22	0.00***
Expect to abstain through high school	91	75	17	0.01***
Expect to abstain as a teenager	83	62	21	0.01***
2001 Middle School Cohort				
Expect to abstain until marriage	57	46	11	0.05*
Expect to abstain through high school	65	59	6	0.28
Expect to abstain as a teenager	51	51	0	0.98
High School Cohort				
Expect to abstain until marriage	41	43	-2	0.79
Expect to abstain through high school	n.a.	n.a.	n.a.	n.a.
Expect to abstain as a teenager	41	51	-10	0.25

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]Average excludes high school cohort, since all were interviewed just prior to high school graduation.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

n.a. = not available. Expectations to abstain through high school were not analyzed for youth in the high school cohort, since all were interviewed just prior to high school graduation.

****p*-value (of Life Skills AE-control AE difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Overall impacts were driven largely by youth in the 2003 middle school cohort. Probably because of their relatively young ages, expectations to abstain were high even among the control AE group in this cohort, and the Life Skills Education Component further increased these expectations. For example, 84 percent of the Life Skills AE group reported that they expected to abstain until marriage, compared with only 62 percent of the control AE group, a significant difference of 22 percentage points (p-value < 0.01). Youth in the Life Skills AE group in this cohort were also more likely than their counterparts in the control AE group to report that they expected to abstain through high school (91 percent versus 75 percent; p-value = 0.01) and that they expected to abstain as a teenager (83 percent versus 62 percent; p-value = 0.01).

For the 2001 middle school cohort, expectations to abstain were generally lower, most likely a function of their older average age, and program impacts were less pronounced. For example, 57 percent of the Life Skills AE group, compared with 46 percent of the control AE group, reported that they expected to abstain until marriage, and this difference is statistically significant (p-value = 0.05). There are no significant differences in the proportion of the Life Skills AE and control AE groups who reported expecting to abstain through high school (65 versus 59 percent, respectively; p-value = 0.28) or as a teenager (51 percent for both groups; p-value = 0.98).

For the high school cohort, there are no significant differences between the Life Skills AE and control AE groups in expectations to abstain until marriage or as a teenager. On both measures, expectations to abstain were lower than for the two middle school samples, again likely a function of their older average age. For example, 43 percent of the control AE group in the high school cohort reported expecting to abstain until marriage, compared with 62 percent of the control AE group in the younger, 2003 middle school cohort. (Expectations to abstain through high school were not analyzed for this cohort, since the final follow-up surveys were conducted just prior to high school graduation.)

CHAPTER IV

KNOWLEDGE AND PERCEPTIONS OF RISKS ASSOCIATED WITH TEEN SEX

One important approach used by the Life Skills Education Component to promote sexual abstinence is to discuss the risks associated with teen sex. The component emphasizes that abstinence is the only sure way to avoid both risks of pregnancy and risks of STDs. This chapter examines the impact of the Life Skills Education Component on youths' knowledge and perceptions of the risks associated with teen sex and on their perceptions of the effectiveness of condoms and birth control for preventing pregnancy and STDs.[3] Again, since all youth received the Abstinence Education Component and some participated in the Community Education Component, these estimates represent the incremental effects of the Life Skills Education Component among youth already exposed to the other components of *Heritage Keepers*®.

Findings indicate that youth in the Life Skills AE group were able to correctly identify more STDs from a list of diseases than were their counterparts in the control AE group. The two groups did not differ in their understanding of the risks of pregnancy and STDs. There were also no significant differences between the two groups in the perceptions of the effectiveness of condoms or birth control pills for preventing pregnancy and STDs.

KNOWLEDGE OF STD AND PREGNANCY RISKS

► **Youth in the Life Skills AE group correctly identified more STDs from a list of diseases than did their counterparts in the control AE group.**

On the final follow-up survey, youth were given a list of 13 diseases and asked to identify the ones that were sexually transmitted (9 were STDs and 4 were not; see Appendix C for the exact questions). Youth in the Life Skills AE group identified an average of 71 percent of these diseases correctly, as STDs or not, compared with an average of 68 percent among control AE group youth (Table IV.1). This impact is equivalent to

[3] These potential mediators of sexual abstinence (knowledge and perceptions) were not measured until the final follow-up survey. Therefore, this is the first report to examine them.

about a third of an additional question answered correctly on average and is statistically significant (*p*-value = 0.02).

Table IV.1. Estimated Impacts on Identification of STDs

	Life Skills AE Group (Mean Percentage)	Control AE Group (Mean Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Overall identification of STDs	71	68	3	0.02**
Identification of true STDs	79	74	5	0.00***
Identification of false STDs	53	54	-1	0.70
2003 Middle School Cohort				
Overall identification of STDs	65	57	7	0.02**
Identification of true STDs	77	65	11	0.00***
Identification of false STDs	37	38	-2	0.68
2001 Middle School Cohort				
Overall identification of STDs	72	73	-1	0.62
Identification of true STDs	80	81	-1	0.55
Identification of false STDs	56	56	0	0.91
High School Cohort				
Overall identification of STDs	77	73	4	0.15
Identification of true STDs	81	76	6	0.08*
Identification of false STDs	68	68	-1	0.89

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, means for the Life Skills AE and control AE groups may not reflect the difference shown.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Findings also suggest that the Life Skills Education Component increased youths' identification of true STDs without simply raising the likelihood that youth believed *any* disease was transmitted sexually. Overall, youth in the Life Skills AE group correctly identified 79 percent of true STDs correctly, compared with 74 percent among their counterparts in the control AE group, and this difference is statistically significant (p-value < 0.01). There is no difference between the two groups in the correct identification of false STDs.

The overall difference between the two groups in STD identification is driven by the 2003 middle school cohort. On average, Life Skills AE group youth in the 2003 middle school cohort correctly identified 65 percent of the STDs, compared with 57 percent

among their counterparts in the control AE group, and this difference is statistically significant (p-value = 0.02). Differences between the two groups in STD identification are smaller and not statistically significant for the 2001 middle school and high school cohorts. As might be expected, among both the Life Skills AE and control AE groups, the percentage of STDs correctly identified generally increased with age, and was lower among the 2003 middle school cohort than the (older) 2001 middle school and high school cohorts.

► **Youth in the Life Skills AE and control AE groups reported similar levels of knowledge about the risks of pregnancy and STDs.**

Most study youth in both the Life Skills AE and control AE groups were aware of the risks of unprotected sex. Youth in both groups scored an average of 87 on a two-item scale measuring their knowledge of these risks, which indicates that most correctly answered both questions in this scale (Table IV.2) (see Appendix C for the questions). Life Skills AE group youth in the two middle school cohorts had slightly lower levels of knowledge according to this measure than their control AE group counterparts, but these differences are not statistically significant. Among the high school cohort, however, the Life Skills AE group had higher levels of knowledge than the control AE group (scores of 97 and 89, respectively, and this difference is statistically significant [p-value = 0.03]).

Youth were also asked about their knowledge of the consequences of STDs, measured as a three-item scale (see Appendix C for the questions). Scores on this scale were generally lower than for the knowledge of unprotected sex risks, with youth answering an average of about 60 percent (or less than two of three) of the questions correctly. Across the individual cohorts, differences between the Life Skills AE and control AE groups are small, ranging from zero to 4 points, and not statistically significant.

PERCEPTIONS OF CONDOM AND BIRTH CONTROL PILL EFFECTIVENESS

► **Life Skills AE and control AE group youth did not differ in their perceptions of the effectiveness of condoms for preventing pregnancy.**

About a third of the overall study sample responded that, when used correctly, condoms usually prevent pregnancy, and just over half reported that they are sometimes effective (Figure IV.1). Although youth in the Life Skills AE group were slightly less likely than their counterparts in the control AE group to report that condoms are usually effective at preventing pregnancy and slightly more likely to report that they are sometimes effective, differences are small, and a chi-squared test indicates no significant difference in the distribution of responses across the two groups (p-value = 0.65).[4] Among the high school cohort, the Life Skills AE group was less likely than the control AE group to report that condoms are usually effective, and more likely to report that they are sometimes effective (p-value = 0.06) (Appendix Table B.4). There is no consistent pattern of results among the two

[4] This and other tests of distributional differences throughout this chapter include the "unsure" category in the distribution; however, results are similar when the "unsure" category is excluded.

middle school cohorts, and differences in the distribution of responses among these two cohorts are not statistically significant.

Table IV.2. Estimated Impacts on Knowledge of Pregnancy and STD Risks

	Life Skills AE Group (Mean Percentage)	Control AE Group (Mean Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Knowledge of unprotected sex risks	87	87	0	0.95
Knowledge of STD consequences	58	56	2	0.29
2003 Middle School Cohort				
Knowledge of unprotected sex risks	77	82	-6	0.28
Knowledge of STD consequences	56	53	4	0.41
2001 Middle School Cohort				
Knowledge of unprotected sex risks	88	90	-2	0.46
Knowledge of STD consequences	58	58	0	0.98
High School Cohort				
Knowledge of unprotected sex risks	97	89	8	0.03**
Knowledge of STD consequences	61	57	4	0.37

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, means for the Life Skills AE and control AE groups may not reflect the difference shown.

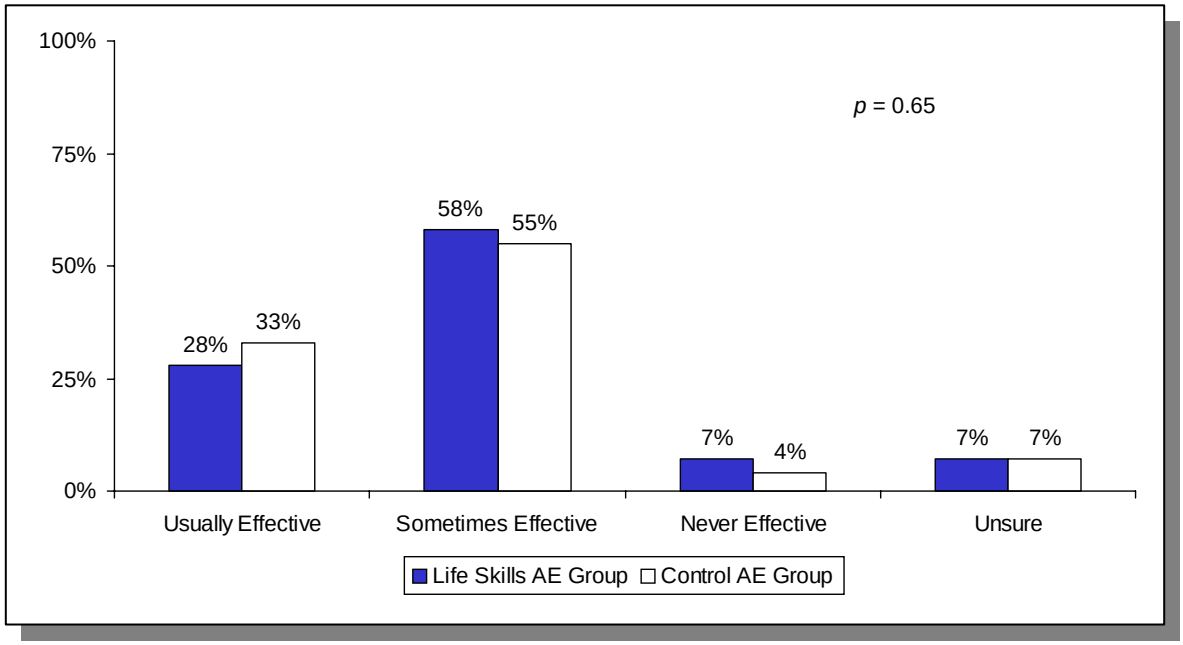
AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (of Life Skills AE-control AE difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

► **Life Skills AE and control AE group youth did not differ in their perceptions of the effectiveness of condoms for preventing STDs.**

A number of youth in both the Life Skills AE and control AE groups reported being unsure about the effectiveness of condoms at preventing STDs (Figure IV.2). Roughly one-fifth of youth in both groups reported being unsure about how effective condoms are at preventing human immunodeficiency virus (HIV), chlamydia and gonorrhea, or herpes and human papillomavirus (HPV). Close to 40 percent of youth in both groups reported that condoms never prevent STDs, and around 30 percent reported that they are sometimes effective. Only about 10 percent of both groups reported that they are usually effective.

Figure IV.1. Estimated Impacts on Perceived Effectiveness of Condoms for Preventing Pregnancy



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

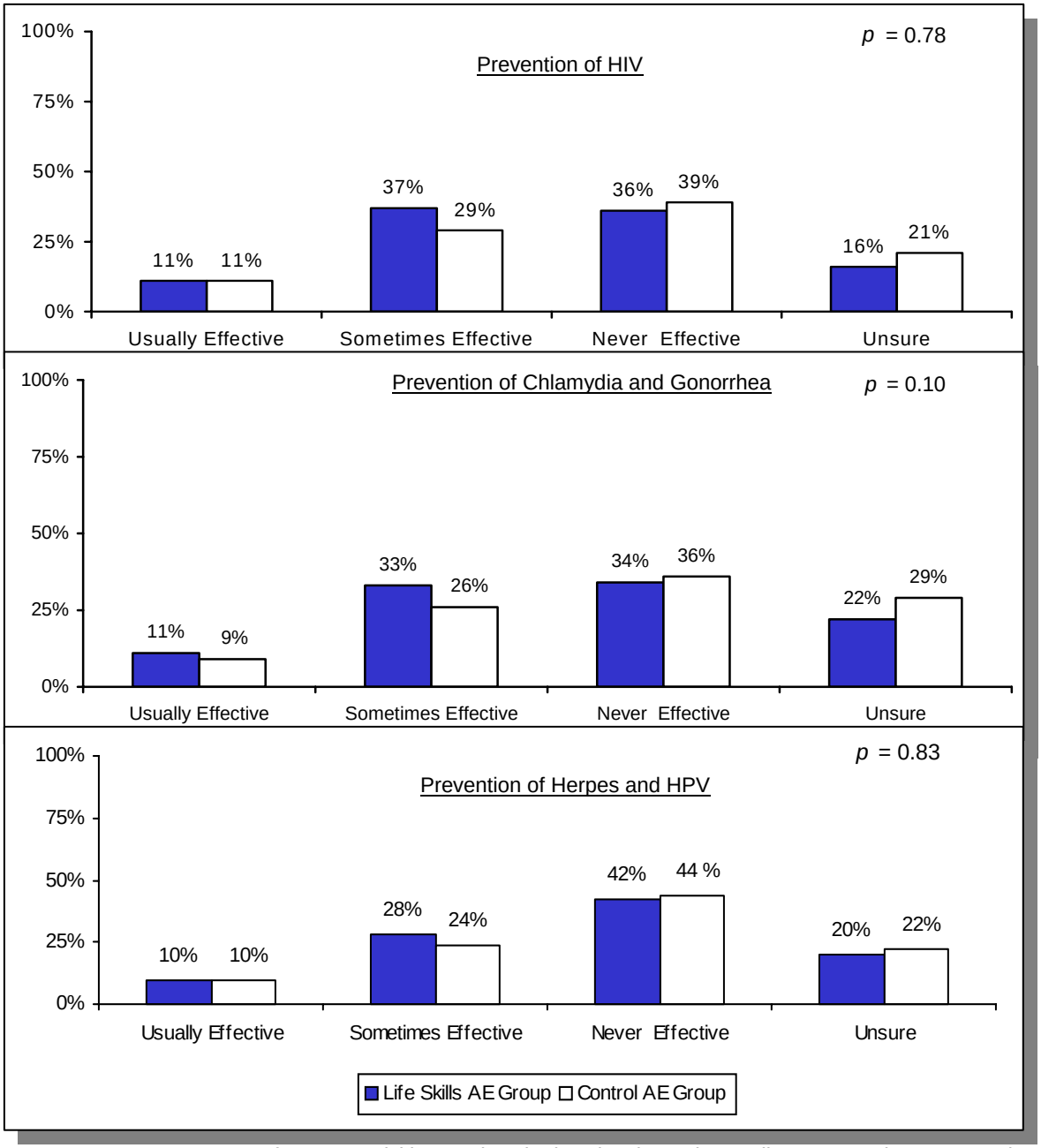
Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.4.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Across all three sets of STDs examined, responses were similar between youth in the Life Skills AE and control AE groups. There are no significant differences in the distribution of responses on effectiveness of condoms for preventing HIV (p-value = 0.78), chlamydia and gonorrhea (p-value = 0.10), or herpes and HPV (p-value = 0.83). Findings for the three cohorts individually, detailed in Appendix Tables B.5 through B.7, likewise show no significant differences in the distribution of responses between the Life Skills AE and control AE groups.

Figure IV.2. Estimated Impacts on Perceived Effectiveness of Condoms for Preventing Sexually Transmitted Diseases



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Tables B.5 through B.7.

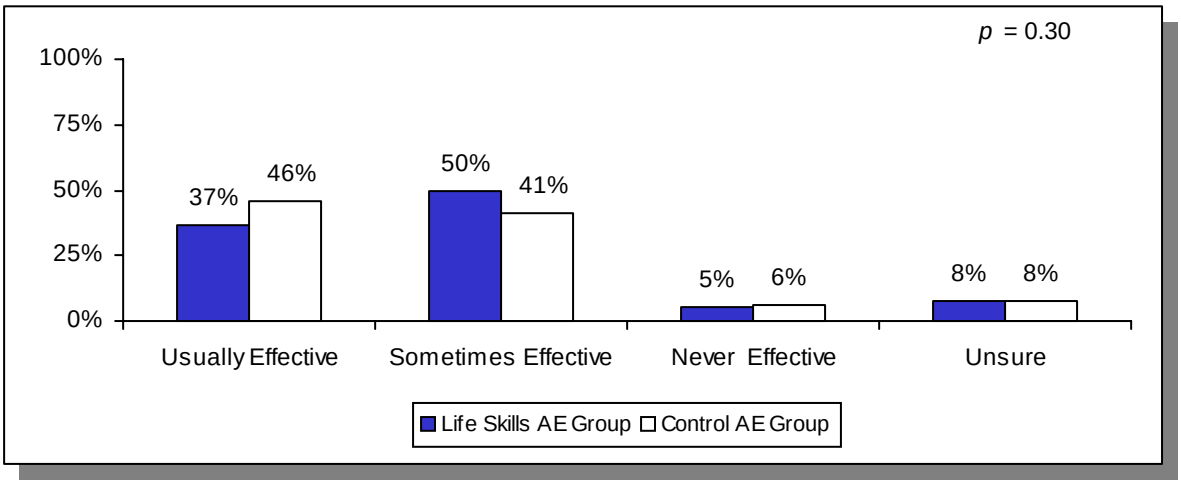
AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (from chi-squared test of distributional differences) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

► **Life Skills AE and control AE group youth did not differ in their perceptions of the effectiveness of birth control pills for preventing pregnancy.**

As Figure IV.3 shows, roughly 40 percent of the overall study sample reported that birth control pills are usually effective for preventing pregnancy, and slightly more reported that they are sometimes effective. Perceptions were similar among the Life Skills AE and control AE groups. Youth in the Life Skills AE group were slightly less likely than their counterparts in the control AE group to report that birth control pills are usually effective for preventing pregnancy, and slightly more likely to report that they are sometimes effective, but differences in the distribution of responses are not statistically significant (*p*-value = 0.30). Across the three cohorts individually, there are likewise no significant differences in the distribution of responses between the Life Skills AE and control AE groups (Appendix Table B.8).

Figure IV.3. Estimated Impacts on Perceived Effectiveness of Birth Control Pills for Preventing Pregnancy



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.8.

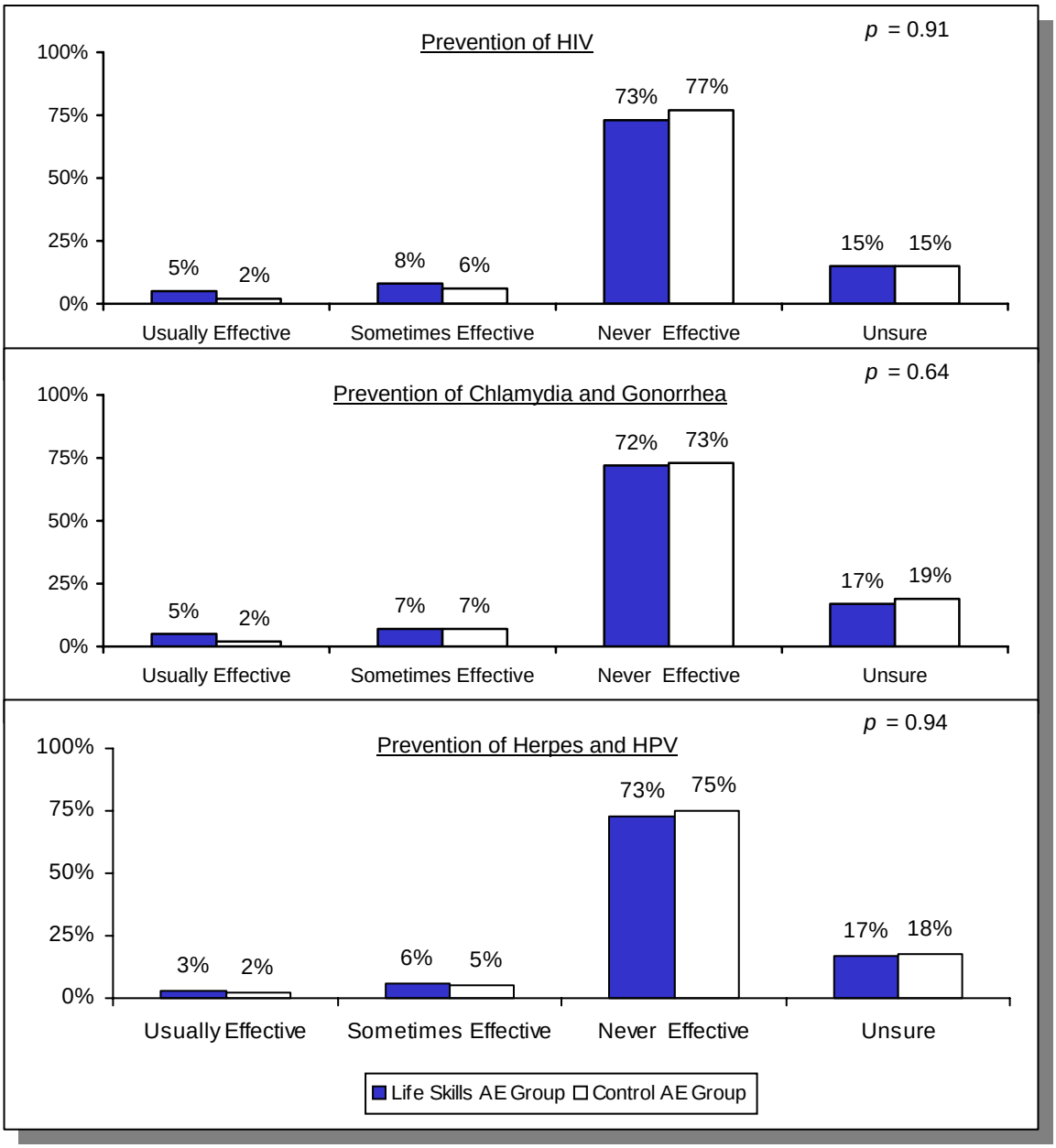
AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

► **Life Skills AE and control AE group youth did not differ in their perceptions of the effectiveness of birth control pills for preventing STDs.**

For each STD examined, about 75 percent of study participants reported, correctly, that birth control pills are never effective at preventing STDs (Figure IV.4). Less than 10 percent reported that birth control pills were sometimes effective at preventing the STDs examined, and 5 percent or fewer reported that birth control pills usually prevent STDs. Differences in the distribution of responses between the Life Skills AE and control AE groups are not statistically significant for any of the three sets of STDs examined (p-value = 0.91 for HIV; 0.64 for chlamydia and gonorrhea; and 0.94 for herpes and HPV). Across the three cohorts individually, there are no significant differences in the distribution of responses between the Life Skills AE and control AE groups for any of the STDs examined (Appendix Tables B.9 through B.11).

Figure IV.4. Estimated Impacts on Perceived Effectiveness of Birth Control Pills for Preventing Sexually Transmitted Diseases



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Tables B.9 through B.11.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

CHAPTER V

IMPACTS ON SEXUAL ABSTINENCE AND TEEN RISK BEHAVIORS

The ultimate goal of the Life Skills Education Component is to increase sexual abstinence among youth by providing them with life skills thought to be supportive of sexual abstinence and reinforcing the messages of the Abstinence Education Component of the *Heritage Keepers*® Program. This chapter presents the impacts of the Life Skills Education Component on sexual abstinence, sexual activity, and other risk behaviors. It is again important to keep in mind that these results reflect the incremental impacts of the Life Skills Education Component on youth already exposed to the other two components of *Heritage Keepers*®.

As discussed in Chapter II, youth in the 2003 middle school cohort averaged only about 13 years of age at the time of the final follow-up survey, an age at which sexual activity rates in their community are still relatively low. At such a young age, the rate of sexual activity even in the absence of the *Heritage Keepers*® Program can be expected to be small, and any impacts the Life Skills Education Component might have on sexual activity and related risk behaviors are unlikely to be detected in these data. Therefore, the findings in this chapter focus only on youth in the 2001 middle school cohort and the high school cohort, who were on average 16 and 19, respectively, at the time of the final follow-up survey.

Findings indicate that the Life Skills Education Component had little or no impact on behavior. Youth in the Life Skills AE and control AE groups reported no significant difference in their rates of sexual abstinence, either overall or in the past 12 months; their number of sexual partners; or their age at first sex. The two groups also did not differ in rates of unprotected sex (sex without a condom), and there is little evidence of differences in birth control use. There were no differences between the two groups in most other behavioral outcomes examined, including pregnancies, reported STDs, or alcohol and marijuana use. Despite similar rates of pregnancies, youth in the Life Skills AE group were more likely than their counterparts in the control AE group to report having had a baby, although rates in both groups were below 5 percent.

IMPACTS ON ABSTINENCE AND SEXUAL BEHAVIOR

►Youth in the Life Skills AE and control AE groups reported similar rates of sexual abstinence.

As seen in Table V.1, about 60 percent of youth in both the Life Skills AE and control AE groups reported having remained sexually abstinent, and the small difference between the two groups is not statistically significant. A slightly higher proportion, 66 percent, reported having been abstinent during the past 12 months (prior to the survey), but there is again no difference between the two groups. Rates of abstinence among both groups are higher than both the national average and the state average for South Carolina.[5]

Table V.1. Estimated Impacts on Abstinence from Sexual Intercourse

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Remained abstinent (always)	60	59	1	0.77
Abstinent last 12 months	66	66	0	0.96
2001 Middle School Cohort				
Remained abstinent (always)	73	72	1	0.77
Abstinent last 12 months	82	78	4	0.40
High School Cohort				
Remained abstinent (always)	47	46	1	0.89
Abstinent last 12 months	50	54	-3	0.65

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

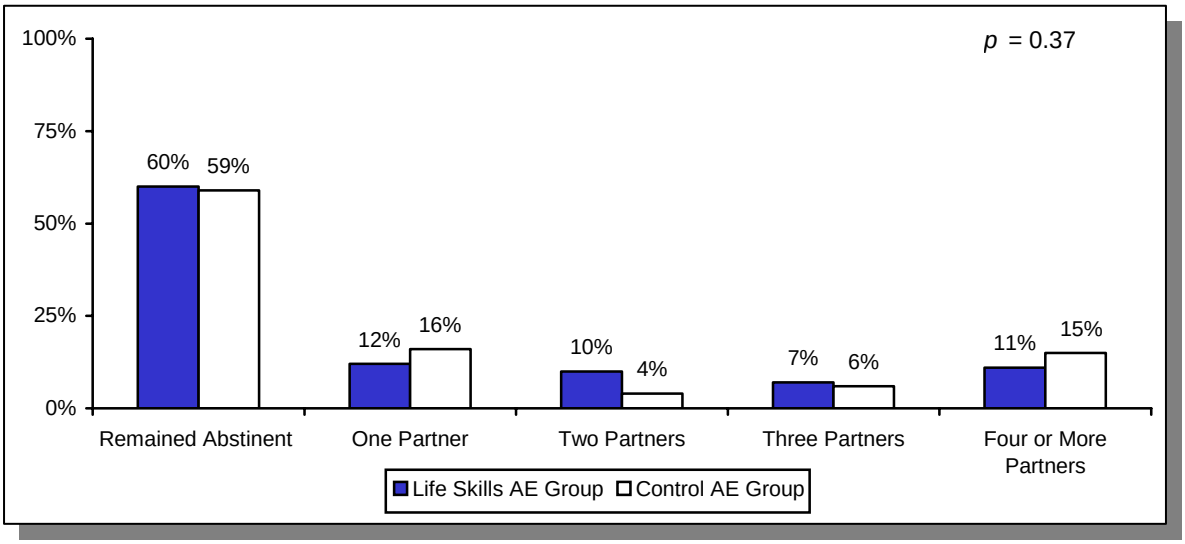
Not surprisingly given their younger ages, rates of sexual abstinence were higher among the 2001 middle school cohort than among the high school cohort. Around 70 percent of the middle school cohort reported having remained abstinent, as compared with only around

[5] Among youth in grades nine through twelve, 53 percent nationally had remained abstinent, and 48 percent in South Carolina had remained abstinent (Centers for Disease Control and Prevention 2006).

50 percent of the high school cohort. However, for both cohorts, there are no significant differences between the Life Skills AE and control AE groups in either the rate of sexual abstinence always or the rate of sexual abstinence in the past 12 months.

Youth in the Life Skills AE and control AE groups also did not differ in the number of partners with whom they had sex (Figure V.1). A chi-squared test of the overall distribution indicates no significant difference between the two groups (*p*-value = 0.37). For each cohort, the distributions of number of sex partners likewise show no significant differences between the two groups (see Appendix Table B.12).

Figure V.1. Estimated Impacts on Reported Number of Sexual Partners Ever



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.12.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

►Youth in the Life Skills AE and control AE groups did not differ in reported age at first sex.

Overall, there are no significant differences in the age at which sexually active youth in the Life Skills AE and control AE groups first had sex (Table V.2). Ten percent of the Life Skills AE group reported having had sex by age 14, compared with 13 percent of the control AE group (*p*-value = 0.27). By age 15, 23 percent of the Life Skills AE group and 24 percent of control AE group youth had had sex (*p*-value = 0.79).

Table V.2. Estimated Impacts on Age at First Sex

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)[a]				
Had sex by age 14	10	13	-3	0.27
Had sex by age 15	23	24	-1	0.79
Had sex by age 16	n.a.	n.a.	n.a.	n.a.
Had sex by age 17	n.a.	n.a.	n.a.	n.a.
2001 Middle School Cohort				
Had sex by age 14	15	12	3	0.46
Had sex by age 15	27	23	4	0.43
Had sex by age 16	n.a.	n.a.	n.a.	n.a.
Had sex by age 17	n.a.	n.a.	n.a.	n.a.
High School Cohort[a]				
Had sex by age 14	5	14	-9	0.04**
Had sex by age 15	19	25	-6	0.34
Had sex by age 16	33	42	-10	0.22
Had sex by age 17	52	52	1	0.86

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

[a]Estimates exclude youth who were older than the specified age at the time of study enrollment, since the Life Skills Education Component could not have influenced youth behavior prior to participating. For example, youth who were 15 or older at the time of study enrollment are excluded from estimates of "had sex by age 14." Likewise, estimates exclude youth who were younger than the specified age at the time of the final follow-up survey, since the outcome is not defined for these youth. For example, youth in the 2001 middle school sample who were under age 15 at the time of the final follow-up survey are excluded from estimates of "had sex by age 15."

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

n.a. = not available. Sex by ages 16 and 17 was not analyzed for the 2001 middle school cohort, since most youth (60 percent) in this cohort were age 15 or younger at the time of the final follow-up survey.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

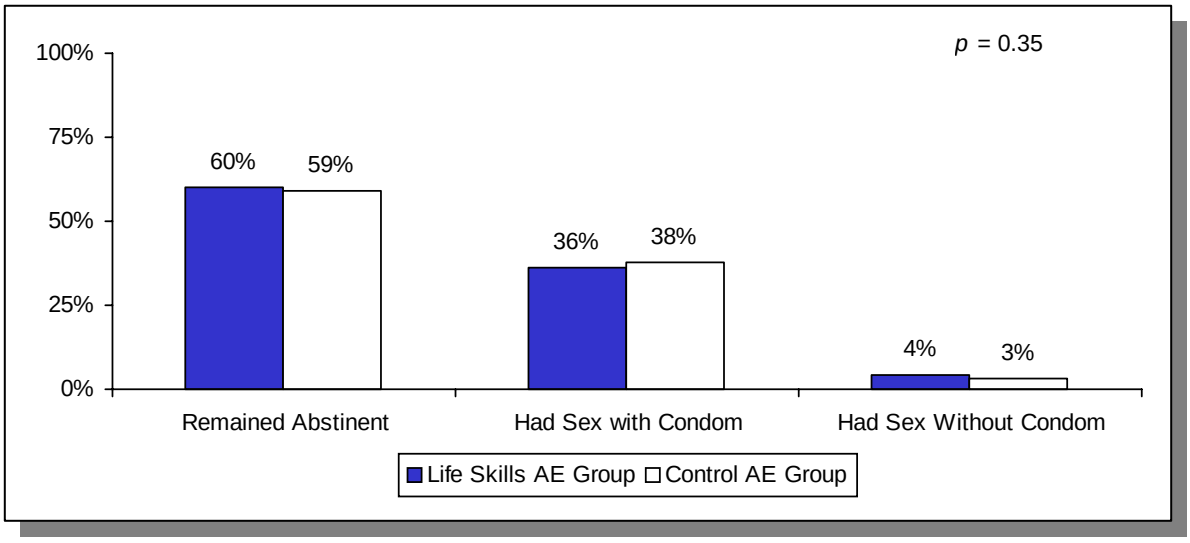
Among the 2001 middle school cohort, there are no statistically significant differences in sex either by age 14 or by age 15, the only two age groups that could be examined for this cohort since most were under 16 at the time of the final follow-up survey. Among the high school cohort, 5 percent of the Life Skills AE group reported having had sex by age 14, compared with 14 percent of the control AE group, a difference that is statistically

significant (p-value = 0.04).[6] However, the differences between the two groups in the percentage who reported having had sex by ages 15 and 16 are smaller and are not statistically significant, and 52 percent of youth in both groups reported having had sex by age 17.

► **Youth in the Life Skills AE group were no more likely than youth in the control AE group to have unprotected sex, and there is little evidence of differences in birth control use.**

Overall, only about 4 percent of youth in both the Life Skills AE and control AE groups reported having had sexual intercourse and not using a condom the first time (Figure V.2). The difference in the distribution of responses across the two groups is not statistically

Figure V.2. Estimated Impacts on Unprotected Sex at First Intercourse



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.13.

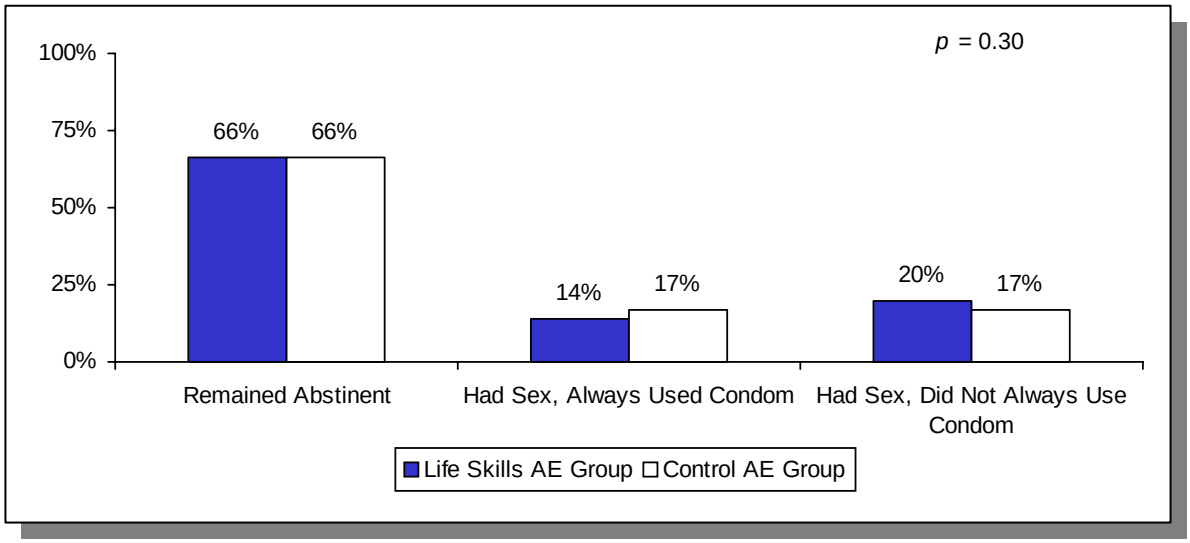
AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (from chi-squared test of distributional differences) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

[6]Findings for the high school cohort on percent having had sex by age 14 are sensitive to the construction of the measure. For example, some sexually active youth reported a different age at first intercourse on the first-year follow-up survey, and when these data are used to construct the measure, the difference between the Life Skills AE and control AE groups falls from –9 to –2 percentage points and is not statistically significant.

significant (p-value = 0.35). There is similarly no significant difference in the proportion of youth who had unprotected sex in the past 12 months (Figure V.3). For example, 14 percent of the Life Skills AE group and 17 percent of the control AE group reported having sex and always using a condom in the past 12 months, and the difference in the distribution of responses is not significant (p-value = 0.30). Findings are similar for both of the two cohorts individually (Appendix Tables B.13 and B.14).

Figure V.3. Estimated Impacts on Unprotected Sex, Last 12 Months



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

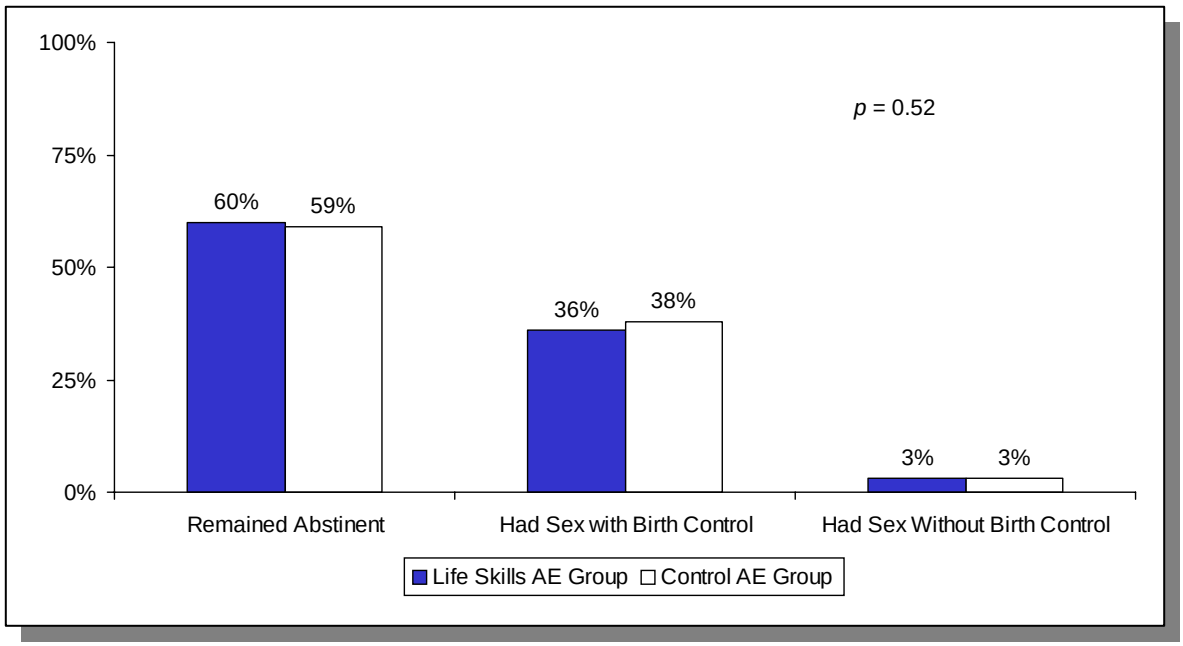
Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.14.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (from chi-squared test of distributional differences) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

When considering other forms of birth control (including those that protect only against pregnancy), such as birth control pills or Depo-Provera, there were no significant differences in rates of unprotected sex at first intercourse (Figure V.4). Roughly 60 percent of both the Life Skills AE and control AE groups reported remaining abstinent, roughly 37 percent reported having had sex but used some form of birth control at first intercourse, and only 3 percent in both groups reported not having used any form of birth control at first intercourse. The difference in the distribution of responses across the Life Skills AE and control AE groups is not statistically significant (p-value = 0.52). Findings are similar for both of the two cohorts individually (Appendix Tables B.15).

Figure V.4. Estimated Impacts on Birth Control Use at First Intercourse



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.15.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

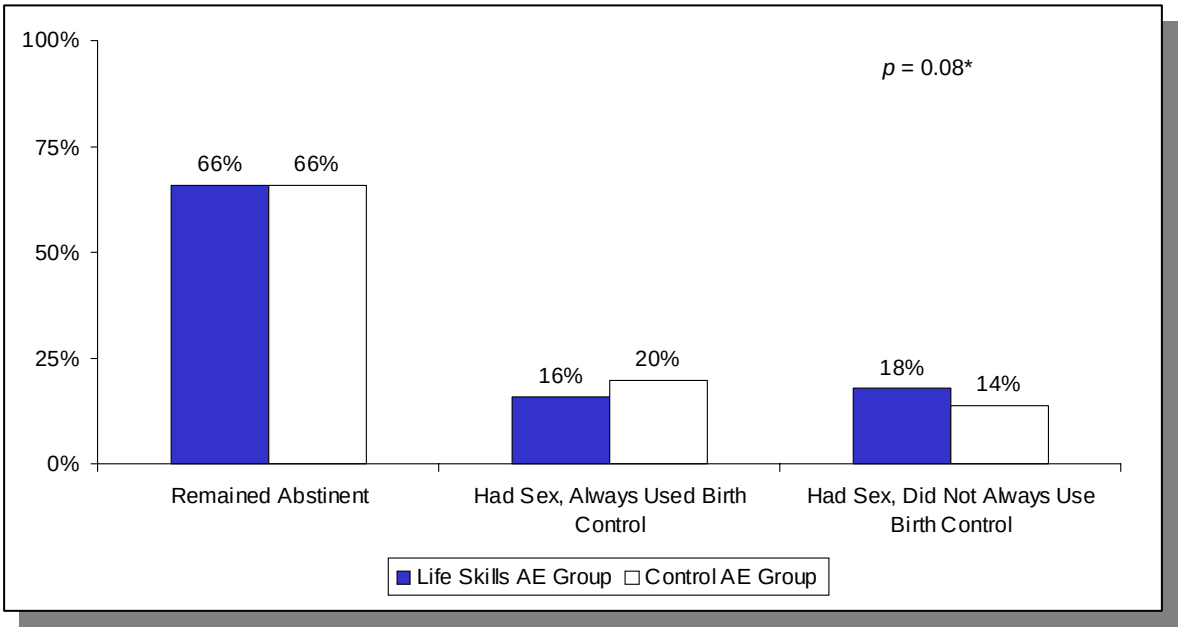
****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Youth in the Life Skills AE group were more likely than those in the control AE group to report having sex without birth control in the past 12 months (Figure V.5). Eighteen percent of the Life Skills AE group, compared with 14 percent of the control AE group, reported having had sex without any form of birth control at least once in the past year, and the difference in the distribution of responses is statistically significant (*p*-value = 0.08). This impact is isolated among the four measures of condom and birth control use, and may be due to chance rather than to true effects of the Life Skills Education Component, as discussed in Chapter II.[7] Differences are driven by the high school cohort, among whom 26

[7]This finding is driven largely by the high school cohort (see Appendix Table B.16) and, like the finding on the number of sexual partners for this cohort, it is not robust. For example, tests of distributional differences based on multinomial logit models that adjust for differences in covariates indicate no significant difference in the distributions for the two groups. Similarly, an individual *t*-test of the difference in the proportion of program and control AE group youth reporting that they had sex without a condom in the past 12 months is not statistically significant (*p*-value = 0.32).

percent of the Life Skills AE group, compared with 20 percent of the control AE group, reported having had sex without birth control at least once in the past 12 months (*p*-value of distributional difference = 0.06), as shown in Appendix Table B.16. There is no significant difference in this outcome between the Life Skills AE and control AE groups in the 2001 middle school cohort.

Figure V.5. Estimated Impacts on Birth Control Use, Past 12 Months



Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Findings by cohort are in Appendix Table B.15.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

****p*-value (from chi-squared test of distributional differences) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

►Youth in the Life Skills AE and control AE groups were equally likely to report having been pregnant; youth in the Life Skills AE group were more likely to report having had a baby.

Nine percent of youth in the Life Skills AE group reported having ever been pregnant or gotten someone pregnant, compared with 7 percent of youth in the control AE group, a difference that is not statistically significant (Table V.3). Youth in the Life Skills AE group were more likely, however, to report that they (or their partner) had had a baby. Overall, 5 percent of the Life Skills AE group reported having had a baby, compared with 1 percent of

the control AE group, a difference that is statistically significant (p-value = 0.07). No information is available on pregnancy outcomes other than live births.

Table V.3. Estimated Impacts on Pregnancy, Childbirth, and Reported STDs

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Ever been pregnant	9	7	2	0.48
Ever had a baby	5	1	3	0.07*
Ever had a (reported) STD	4	4	0	0.96
2001 Middle School Cohort				
Ever been pregnant	1	3	-2	0.12
Ever had a baby	0	0	0	--
Ever had a (reported) STD	2	2	0	0.81
High School Cohort				
Ever been pregnant	18	11	6	0.27
Ever had a baby	9	3	6	0.07*
Ever had a (reported) STD	6	5	0	0.96

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

--Standard error and p-value not estimated since no students in either group reported having had a baby.

The significant difference in the birth rate are driven by the high school cohort. Among this cohort, 9 percent of the Life Skills AE group report having had a baby, compared with 3 percent of the control AE group, a significant difference (p-value = 0.07).[8] Among the 2001 middle school cohort, there were no reported births. Only about 2 percent reported having been pregnant, and the difference in pregnancy rates between the Life Skills AE and control AE groups is small and not statistically significant.

[8] Because birth is a rare event in the sample and the sample size of the high school cohort is only 144, this difference is driven by fewer than 10 youth in the cohort sample. A change in reporting by only a few of the study youth in this cohort could thus result in a smaller difference that is no longer statistically significant (for the high school cohort or overall).

There are no significant differences in reported rates of STDs between the Life Skills AE and control AE groups. Overall, 4 percent of youth in both groups reported ever having had an STD (Table V.3). Rates of reported STDs were low for both the 2001 middle and high school cohorts individually (around 2 percent and 5 percent, respectively). Note, however, that these estimates may underestimate the true rate of STDs among this population, as some youth may be unaware that they have an STD.

IMPACTS ON OTHER RISK BEHAVIOR

►There were no differences between the Life Skills AE and control AE groups in reported cigarette, alcohol, or marijuana use.

Overall, about 25 percent of youth in both the Life Skills AE and control AE groups reported smoking cigarettes in the last month, and the difference between the two groups is not statistically significant (Table V.4). Thirty percent of the Life Skills AE group reported drinking alcohol at least once a month, compared with only 24 percent of the control AE group; this difference is also not statistically significant. Similarly, 30 percent of the Life Skills AE group reported having ever smoked marijuana, compared with 26 percent of the control AE group, a difference that is also not statistically significant.

Table V.4. Estimated Impacts on Other Risk Behaviors

	Life Skills AE Group (Percentage)	Control AE Group Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Smoked cigarettes (past month)	25	26	-2	0.66
Drinks alcohol (at least once a month)	30	24	6	0.14
Used marijuana (ever)	30	26	4	0.33
2001 Middle School Cohort				
Smoked cigarettes (past month)	21	24	-3	0.55
Drinks alcohol (at least once a month)	19	18	0	0.95
Used marijuana (ever)	18	18	0	0.93
High School Cohort				
Smoked cigarettes (past month)	28	29	-1	0.89
Drinks alcohol (at least once a month)	42	29	12	0.09*
Used marijuana (ever)	42	34	8	0.28

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Sample sizes and R-squared statistics are in Appendix Tables B.2 and B.3, respectively. Because of rounding, Life Skills AE-control AE difference may not equal difference in percentages.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Across the two cohorts, there is only one significant difference between the Life Skills AE and control AE groups on the three measures: in the high school cohort, 42 percent of the Life Skills AE group, compared with 29 percent of the control AE group, reported drinking alcohol at least once a month (p-value = 0.09). For the middle school cohort, rates of recent alcohol use are nearly identical for the two groups (just under 20 percent).

IMPACTS ON PARTICIPANTS ONLY

As discussed in Chapter II, rates of nonparticipation differed between the 2001 middle and high school cohorts in the Life Skills AE group—only 4 percent of the 2001 middle school cohort attended no sessions of the Life Skills Education Component, compared with 14 percent of the high school cohort. In any experimental study, standard adjustments for nonparticipation produce impact estimates for the subsample of participants that are somewhat larger than estimates for the entire sample (examined throughout this report). However, because there is a corresponding loss of statistical power when estimating impacts for the smaller, participant-only sample, the statistical significance associated with these participant-only impacts is roughly equal to that for the full sample. Thus, the benefit of examining impacts for the participants-only sample is merely in identifying any notable program-control group differences, regardless of statistical significance, that might have been less evident for the full sample.

As shown in Table V.5, for both cohorts, impact estimates for participants-only differ little from estimates for the full sample. For instance, among the 2001 middle school cohort, which experienced relatively little nonparticipation, impacts for participants-only are nearly identical to those for the full sample. Among the high school cohort, which had somewhat higher nonparticipation, differences in impacts between participants and the full study sample are more evident but remain small. For example, high school youth in the full Life Skills AE group were 3 percentage points less likely to have remained abstinent in the last 12 months than their counterparts in the control AE group, while among participants this difference was 4 percentage points. Neither estimate is statistically significant. (For complete results of the participant-only impact analysis, see Appendix Table B.17.)

Table V.5. Estimated Impacts on Selected Behavioral Outcomes, Participants Only

	2001 Middle School Cohort	High School Cohort	Overall
Estimated Impacts for Full Life Skills AE Group (Percentage Point Difference)			
Sexual Abstinence			
Remained abstinent (always)	1	1	1
Abstinent last 12 months	4	-3	0
Unprotected Sex			
Had sex without a condom at first intercourse	0	2	1
Had sex without a condom in last 12 months	0	6	3
Estimated Impacts for Participants Only (Percentage Point Difference)			
Sexual Abstinence			
Remained abstinent (always)	2	1	2
Abstinent last 12 months	4	-4	0
Unprotected Sex			
Had sex without a condom at first intercourse	0	3	2
Had sex without a condom in last 12 months	0	7	4
Sample Size Total	**300**	**144**	**444**
Life Skills AE Group Total	159	74	233
Life Skills AE Group Participants	153	63	216

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrollment in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates, see Appendix Table B.1. Study youth are counted as participants if they attended at least one Life Skills Education Component session. For complete results, see Appendix Table B.17.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

CHAPTER VI

CONCLUSIONS

The *Heritage Keepers*® Life Skills Education Component is a character-based program designed to enhance life skills thought to be supportive of sexual abstinence and to empower students to avoid sexual activity and other risky behaviors. Life Skills Education is one of three main components of the *Heritage Keepers*® abstinence education program, which also includes a core Abstinence Education Component and a Community Education Component. In Edgefield, South Carolina, Life Skills Education is delivered as a supplement to the mandatory *Heritage Keepers*® Abstinence Education Component that all youth receive, and is intended to reinforce that component's message of abstinence from sexual activity as the expected standard for school-age children.

This report uses a rigorous experimental design to examine the impacts of the Life Skills Education Component on potential mediators of teen sex and on sexual abstinence, sexual activity, and other risk behaviors. Since all youth in the study sample participated in the mandatory Abstinence Education Component, and some may have been exposed to the Community Education Component, the report estimates the incremental impact of the Life Skills Education Component among youth already exposed to the other components of *Heritage Keepers*®. As discussed below, the report finds that the Life Skills Education Component had positive impacts on youths' expectations to abstain from sex and on some other potential mediators of teen sex. However, it does not find evidence that the component affected most behavioral outcomes examined, including rates of abstinence, number of sexual partners, and rates of unprotected sex.

SUMMARY OF IMPACT RESULTS

The Life Skills Education Component had positive impacts on several potential mediators of teen sexual activity. Relative to youth in the control AE group, youth in the Life Skills AE group reported views more supportive of abstinence and less supportive of teen sex, stronger refusal skills, and greater expectations to abstain. These impacts were driven primarily by the 2003 middle school cohort—the youngest of the three study cohorts at the time of the final data collection. The component had no impact on other intermediate outcomes examined, including peer support for abstinence or peer pressure to have sex, self-concept, or perceived consequences of teen sex.

The Life Skills Education Component had some impact on knowledge of the risks associated with teen sex. Youth in the Life Skills AE group were able to correctly identify more STDs (from a list of 13 diseases) than were their counterparts in the control AE group, but youth in both groups demonstrated similar levels of knowledge on questions about the risks of pregnancy and STDs. Contrary to concerns raised by some policymakers and health educators that Title V, Section 510 abstinence education programs might create inaccurate perceptions of the effectiveness of condoms or birth control, youth in the Life Skills AE and control AE groups reported similar perceptions of the effectiveness of condoms and birth control pills for preventing pregnancy and STDs.

The Life Skills Education Component had no impact on sexual abstinence or activity. Youth in the Life Skills AE and control AE groups did not differ in reported rates of sexual abstinence, number of sexual partners, or age at first sex. However, youth in the Life Skills AE group were also no more likely than their counterparts in the control AE group to engage in unprotected sex (sex without a condom), contrary to concerns that Title V, Section 510 programs might, through their exclusive focus on abstinence, put youth at increased risk of unprotected sex. There is also little evidence that the two groups differed in their use of birth control more generally. The two groups did not differ in most other behavioral outcomes examined, including pregnancies, reported STDs, or alcohol and marijuana use. Despite similar rates of reported pregnancies, youth in the Life Skills AE group were more likely than their counterparts in the control AE group to report having had a baby, although rates in both groups were below 5 percent. No information is available on pregnancy outcomes other than live births.

STRENGTHS AND LIMITATIONS OF THE STUDY

The impact evaluation of the Life Skills Education Component relies on an experimental design in which youth in the study sample were assigned either to a Life Skills AE group that was given the opportunity to participate in the Life Skills Education Component; or to a control AE group that could not participate in that component but received the Abstinence Education and Community Education Components as well as other usual services available to youth in Edgefield. This design is able to produce rigorous estimates of the incremental impact of the Life Skills Education Component on youth already exposed to the other components of *Heritage Keepers*®.

While this study does not find evidence that the Life Skills Education Component affected youth behavior, it can draw no conclusions about the impact of the full *Heritage Keepers*® Program. Because both program and school staff in Edgefield felt strongly that all students (in targeted age ranges) should participate in the core Abstinence Education Component, and the Community Education Component was made available to all students, it was not possible to form an experimental control group against which to measure the impacts of the full *Heritage Keepers*® Program. Given this constraint, the study was designed to estimate the incremental impact of the Life Skills Education Component on youth already exposed to the other components of *Heritage Keepers*®, rather than to examine the impact of the full *Heritage Keepers*® Program.

Despite the strengths of the experimental design, its application to the Life Skills Education Component has two potential limitations. First, given that the Life Skills Education Component encourages participating youth to promote abstinence among their peers, the component could result in "spillover" effects for students in the control AE group, possibly leading impact estimates to be understated. Second, program staff at *Heritage Keepers®* expressed concern that the design may have altered the selection process for the Life Skills Component in ways that could have undermined the component's effectiveness. In a typical setting, the component attempts to reach a broad representation of the student population, but with a focus on selecting "trendsetters" who can most effectively influence the school culture. For the purposes of the impact evaluation, however, all youth who applied for the Life Skills Education Component were randomly assigned to the Life Skills AE group or to the control AE group, a process that differs from a more purposeful-selection approach. There is no way to determine how, or even whether, the random assignment process ultimately changed the mix or attendance of students who were selected to participate in the Life Skills Component, or what effect such a change might have had on the impact estimates presented in this report. As a result, caution should be used when generalizing the findings from this study to use of the Life Skills Education Component in a more typical setting.

Despite the lack of impacts on sexual abstinence and other behaviors, the Life Skills Education Component affected several potential mediators of teen sex, including views toward abstinence and expectations to abstain. These impacts were driven primarily by the 2003 middle school cohort—the youngest cohort at the time of the final follow-up survey (averaging just 13 years of age) and the cohort that had most recently enrolled in the component. This cohort was also fully exposed to several changes made to the Life Skills Education Component curriculum in 2003, which were designed to strengthen the component's implementation. Given their young ages, very few youth in this cohort would be expected to have engaged in sexual activity, with or without the Life Skills Education Component, by the time of the final follow-up survey. As a result, youth in this cohort could not be included in the analysis of behavioral impacts.

The favorable impacts on several potential mediators of sexual activity for this 2003 middle school cohort raise the question of whether the Life Skills Education Component might have eventual positive impacts on sexual abstinence for youth in this cohort. Without behavioral data on these youth as they become older, there is no way to answer this question, and the timeframe for this evaluation did not allow for longer-term data collection for youth in this cohort.

INTERPRETING THE RESULTS

This study is part of a broader national evaluation of Title V, Section 510 abstinence education programs that has been conducted over a period of nine years. In addition to the impact analysis of the Life Skills Education Component, this evaluation included an implementation and process analysis as well as an impact analysis of four other abstinence education programs. The evaluation of the other four programs estimated the full impact of these programs on youth in communities that typically did not offer school-based abstinence

education or community-wide initiatives to promote abstinence. The evaluation of the Life Skills Education Component provides important complementary evidence to the evaluation of the other four programs, in that it estimates the incremental effects of providing an abstinence-focused life skills program to youth already exposed to a mandatory classroom-based abstinence education curriculum and a community-wide initiative to promote abstinence. Results indicate that the Life Skills Education Component had positive impacts on some potential mediators of teen sexual activity, particularly among the component's most recent cohort, but provide no evidence that the component had incremental effects on behavior among youth already exposed to the other components of the *Heritage Keepers*® Program.

The results from this study suggest the need for continued research on how to combat the high rate of teen sexual activity and its negative consequences. In particular, they highlight the importance of continued evaluation both of full programs designed to address the high rates of teen sexual activity and of specific program components, such as the Life Skills Education Component, which aim to enhance the effectiveness of an underlying program model. The stronger impacts on potential mediators of teen sex among the 2003 middle school cohort illustrate how programs may evolve over time, and suggest how rigorous evaluation can help programs assess their ongoing effectiveness.

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APPENDIX A

OUTLINE OF *HERITAGE KEEPERS*® ABSTINENCE EDUCATION AND LIFE SKILLS EDUCATION CURRICULA

Heritage Keepers® Abstinence Education I and II Curricula

Abstinence Education I

Section One
- Abstinence: The New Revolution
- Getting to Know You
- No Apologies video
- My Values
- Rolling the Dice game

Section Two
- Family Formation
- Male Reproductive System
- Female Reproductive System (internal and external)
- Preview of a Birth video
- Sex Is Like Fire
- Marriage
- The Marriage Union

Section Three
- Just Thought You Oughta Know video
- STD Facts (Interactive DVD presentation by the Medical Institute for Sexual Health)
- Pink Water/STD Game
- How to Abstain from Sexual Activity
- Perfect Boyfriend/Girlfriend vs. Perfect Husband/Wife

Section Four
- Love, Lust and Infatuation
- Building Relationships Without Having Sex
- Thinking of the Opposite Sex as People
- The Making of a Man/Woman

Section Five
- The SAFE Plan
- Role-playing Resistance Skills
- Imagine Your Wedding
- Your Commitment

Abstinence Education II

Section One
- Remember Abstinence?
- Starting Over (secondary virginity)
- Stress-provoking Sex vs. Joy-provoking Sex
- Sex is Not a Game video

Refuting Reasons for Having Sex
Reject the Message (STD Review)

Section Two
Your Social Life Without Drugs and Alcohol and Sex
Popularity and You: How Far Are You Willing to Go
Learning Balance Between Popularity and Your Values, Boundaries and Goals
Young Love Can Be Too Hard (study)
Dealing with the Opposite Sex
When Are You Ready to Date
Keeping Dating Casual
Being Ladies and Gentleman
Love vs. Infatuation
Unhealthy and Dangerous Dating Relationships
Keeping SAFE

Section Three
What Is Marriage?
What Happened to Marriage?
Cohabitation vs. Marriage
Wedding vs. Marriage
Taking Responsibility for Your Future
Pornography
Refusal Skills

Section Four
What Is Communication?
Clearly Communicating Values, Boundaries and Goals
Communication Do's and Don'ts
Why Communication?
Practicing Listening
Building Stronger Relationships Through Communication
Broadcasting a Standard

Section Five
The Power of the Media
Media's Profit Motive
Thinking About the Message
Media and Sex
Standing Up Against Negative Media Influence

Heritage Keepers® Life Skills Education Curriculum

Life Skills Education I

Welcome to Heritage Keepers!/What Is a Heritage Keeper
- Important Facts About Heritage Keepers
- Heritage Keepers and Abstinence

Your Attitude
- Character Trait: Respect
- Our Heritage: Clebe McClary
- Your Attitude and Abstinence

Understanding Yourself
- Feelings, Thoughts and Actions
- Character Trait: Benevolence
- Our Heritage: Margaret of New Orleans
- Understanding Yourself and Abstinence

Boundaries Are the Key
- My Boundaries
- Character Trait: Virtue
- Our Heritage: Pee Wee Reese
- Boundaries and Abstinence

Good Character and Risky Behavior
- Reaching Your Full Potential
- Drinking
- Smoking
- Drugs
- Sexual Activity
- Character Trait: Responsibility
- Our Heritage: Justin Armour
- Good Character and Abstinence

Examining My Values
- Media
- Peers
- Family
- Character Trait: Integrity
- Our Heritage: Strong Values, Then and Now
- Examining My Values and Abstinence

Determining My Goals
- How About You?
- Lifetime Goals
- Educational and Career Goals

Goals for This Year
Staying Away from Risky Behaviors
Character Trait: Wisdom
Our Heritage: John Goddard
Determining My Goals and Abstinence

Making Wise Decisions
Decision Making Worksheet
Character Trait: Truthfulness
Our Heritage: Rebecca and Abigail Bates
Making Wise Decisions and Abstinence

Who's in Control of Me?
Personal Control Scorecard
Character Trait: Self-control
Our Heritage: Kay Coles James
Who's in Control of Me and Abstinence

Friends and Peer Pressure
Character Trait: Sincerity
Our Heritage: Clebe and Deanna McClary
Friends, Peer Pressure and Abstinence

Guarding My Body
Character Trait: Self-motivation
Our Heritage: The American Boy
Guarding My Body and Abstinence

Resisting Temptation
The SAFE Plan
Character Trait: Cautiousness
Our Heritage: Jackie Robinson
Resisting Temptation and Abstinence

Young Adult Contract

Life Skills Education II

Your School
Your School and Abstinence
Our Heritage: Make a Difference Day

School PRIDE
School PRIDE and Abstinence
Character Trait: Citizenship

Learning to Communicate
Learning to Communicate and Abstinence
Our Heritage: Helen Keller

Clearly Communicating Values, Boundaries & Goals
- Values
- Boundaries
- Goals
- Setting Values, Boundaries and Goals and Abstinence
- Character Trait: Caring

Standing Up for Myself
- The Real Deal: Stand Up for Your Values, Boundaries and Goals
- Standing Up for Myself and Abstinence
- Our Heritage: Shoeless Joe Jackson

Handling Challenges
- Discouraging People
- Discouraging Situations
- The True Exception
- Handling Challenges and Abstinence
- Character Trait: Courage

Representing
- Representing and Abstinence
- Our Heritage: Teddy Roosevelt

Using Self-discipline
- Self-discipline and Abstinence
- Character Trait: Personal Responsibility

Your Potential
- Your Potential and Abstinence
- Our Heritage: Lakita Garth

Goal Setting
- Family
- Academic
- Personal
- Goal Setting and Abstinence
- Character Trait: Patience

Commitment
- Commitments and Abstinence
- Our Heritage: Joe McIlhaney, MD

Keeping Commitments
- Not Keeping Commitments vs. Keeping Commitments
- Commitments and Abstinence
- Character Trait: Dependability

Life Skills Education III

Using Proper Manners
- Telephone Manners
- Our Heritage: Pocahontas
- Using Proper Manners and Abstinence
- Thank You Notes
- Manners at Home
- Introductions
- Conversational Manners
- Respecting Elders
- Manners in Sports
- Manners in Public Places
- Table Manners
- Using Proper Manners and Abstinence
- Character Trait: Courteousness

Learning to Apologize
- Our Heritage: Cheryl Wood
- Apologizing and Sexual Activity

Forgiving Yourself
- Forgiving Yourself and Abstinence
- Character Trait: Genuineness

Building Lasting Relationships (Friends and Family)
- Building Relationships with Friends and Family and Abstinence
- Our Heritage: Quaddy and Lucy Jones

Building Lasting Relationships (Authority Figures)
- Building Relationships with Authority and Abstinence
- A Good Relationship Takes...
- Character Trait: Fidelity

Proud to Be Me
- Proud to Be Me and Abstinence
- Our Heritage: Alex Haley

Family Formation
- Family Formation and Abstinence
- Character Trait: Gratefulness

Proud of My Government
- Proud of My Government and Abstinence
- Our Heritage: Patrick Henry
- Proud of My Government and Abstinence
- Character Trait: Justice

Proud to Be an American
- Proud to Be and American and Abstinence
- Our Heritage: Hallie Meetze Brantley
- Proud to Be and American and Abstinence
- Character Trait: Foresight

Life Skills Education IV

Developing Strong Character
- Fitting in
- The "You" at School
- The Social "You"
- Sex
- Drugs and Alcohol
- Violence
- Putting It All in Perspective
- Taking a Stand, Becoming an Advocate
- Developing Strong Character and Abstinence
- Our Heritage: Booker T. Washington

Dealing with Hormones
- What You Can Expect as You Transition into an Adult
- What Are Hormones?
- Hormones and Abstinence
- Character Trait: Mindfulness

Your Boundaries: What Will You Let in Your Heart and Mind
- Who Controls You?
- Media Affects Your Life
- Don't Buy into the Message
- Media and Abstinence
- Our Heritage: Susan B. Anthony

Your Boundaries
- Phrases to Help You Stand Up to Sexual Peer Pressure
- Secondary Virginity
- Your Boundaries and Abstinence
- Character Trait: Discernment

Compassion
- Ways to Be a Compassionate Citizen
- Compassion and Abstinence
- Our Heritage: Abraham Lincoln

- Communications Review
  - Review
  - Steps of Communication
  - Communication and Abstinence
  - Practice Listening
  - Character Trait: Gentleness
- The History of the Dating Process
  - Learning from the Past
  - Courtship, from Colonial Times to 1830
  - 1830–1880
  - 1880–1920
  - 1920–1945
  - 1945–1960
  - 1960–2000
  - The History of Dating and Abstinence
  - Our Heritage: Abigail Adams
- Dating Today
  - Current
  - Dating Today and Abstinence
  - Character Trait: Knowledge
- Are You Ready to Date?
  - Are You Ready
  - A Special Note to the Girls
  - A Special Note to the Guys
  - Waiting to Date Shows Maturity
  - A Dating Checklist
  - Tips for Girls and Guys
  - Ready to Date and Abstinence
  - Our Heritage: Katie Beckham
- While Dating
  - Healthy Relationships
  - Dress for Respect
  - Plan Your Dates
  - Show Your Date Manners
  - Relationships Are Hard Enough Without Sex
  - Love, Lust and Infatuation
  - Dr. Laura's "Is It Love" Test
  - Character Trait: Honor
- Saying No to Sex Outside of Marriage
  - Sex Before Marriage Is Risky
  - Did You Know?
  - Rejecting Sexual Advances
  - Saying No to Sexual Activity and Abstinence
  - NIH Condom Report
  - Our Heritage: Lisa Kudrow

Understanding and Protecting Your Body
- Be a Whole Person
- Your Body Systems
- Protecting Your Reproductive System
- Protecting Your Skeletal System
- Protecting Your Muscular System
- Protecting Your Nervous System
- Protecting Your Respiratory System
- Protecting Your Digestive System
- Protecting Your Circulatory System
- Protecting Your Body and Abstinence
- Character Trait: Individuality

Life Skills Education V

Dealing with Stress and Emotions
- Deal with Your Emotions
- Stress
- Stress and Abstinence
- Our Heritage: Jesse Owens

Factors of Stress
- Stress-related Health Risks
- How to Cope with Stress
- How to Stop Stress Ahead of Time

Introduction to Risky Behaviors
- Abstaining from Risky Behaviors
- The Dangers of Smoking
- Risky Behaviors and Abstinence
- Our Heritage: Antonia C. Novello

The Dangers of Alcohol and Pornography
- Alcohol and Sex
- You Have a Problem with Alcohol if
- Health Risks Associated with Alcohol
- Why Pornography Is Dangerous
- Alcohol and Abstinence
- Drugs, Alcohol and Sex—-A Dangerous Combination
- Character Trait: Boldness

Saying "No" to Drugs
- Drugs: How Can they Affect Me?
- MDMA
- Steroids
- LSD
- Ketamine

- Rohypnol
- Methamphetamine
- Drugs and Abstinence
- Our Heritage: Robert Ellington

Saying "No" to Drugs
- GHB
- PCP
- Cocaine
- Heroin
- Marijuana
- Inhalants
- Drugs and Abstinence
- Character Trait: Judgment

Saying "No" to Violence
- What Is Violence?
- Why Are Some People Violent?
- You Can Control Your Feelings
- Abstinence and Saying "No" to Violence
- Our Heritage: Erika Harold

Protecting Yourself from Violence
- Date Rape
- Some Possible Hazards
- Some Tips for Ending Conflict
- Conflict Resolution Steps
- Abstinence and Protecting Yourself from Violence
- Character Trait: Discretion

Fueling Your Body
- USDA Guidelines
- Food Pyramid
- What Counts as a Serving?
- Nutrition and Abstinence
- Our Heritage: Jerry Raymond

Managing Your Weight
- Losing Weight
- Gaining Weight
- Eating Healthy
- Proper Brushing
- Proper Flossing
- Managing Your Weight and Abstinence
- Fitness Plan
- Character Trait: Self-restraint

Keeping Your Body Healthy
- Anorexia Nervosa
- Bulimia Nervosa
- Binge Eating

- Overeating
- Warning Signs of Eating Disorders
- If You Know Someone with an Eating Disorder
- Keeping Your Body Healthy and Abstinence
- Our Heritage: Arnold Schwarzenegger

Living Healthy
- Screenings/Immunizations
- What You Need to Have Checked in the Future
- Living Healthy and Abstinence
- My Boundaries
- My Goals
- My Best Refusal Line
- Character Trait: Contentment

APPENDIX B

SUPPORTING TABLES FOR THE IMPACT ANALYSIS

Table B.1. Ranges, Means, and Standard Deviations of Covariates for the Impact Analysis

2003 Middle School Cohort

Variable Descriptor	Range	Means: Control AE Group	Means: Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Child Demographics					
Gender: female	{0,1}	0.68	0.60	0.35	--
Enrollment cohort: spring 2001	{0,1}	0.00	0.00	--	--
Enrollment cohort: fall 2001	{0,1}	0.00	0.00	--	--
Enrollment cohort: fall 2003 ^	{0,1}	1.00	1.00	--	--
Age 13 or younger (at followup)	{0,1}	0.81	0.74	0.30	--
Age 14 (at followup)	{0,1}	0.16	0.26	0.13	--
Age 15 (at followup) ^	{0,1}	0.01	0.00	0.31	--
Age 16 (at followup)	{0,1}	0.00	0.00	--	--
Age 17 (at followup)	{0,1}	0.00	0.00	--	--
Age 18 (at followup)	{0,1}	0.00	0.00	--	--
Age 19 or older (at followup)	{0,1}	0.00	0.00	--	--
Age (at followup): not known	{0,1}	0.01	0.00	0.31	--
Race/ethnicity: white	{0,1}	0.41	0.31	0.18	--
Race/ethnicity: Hispanic	{0,1}	0.06	0.04	0.52	--
Race/ethnicity: black ^	{0,1}	0.47	0.57	0.20	--
Race/ethnicity: other	{0,1}	0.06	0.08	0.55	--
Major Life Events					
Unmarried sister got pregnant in the past year	{0,1}	0.05	0.10	0.23	--
Sibling dropped out of school in the past year	{0,1}	0.02	0.01	0.73	--
Views Toward Abstinence					
Normative and personal values toward abstinence	[1,4]	1.80	1.84	0.73	0.64
Cultural Influences					
Religiosity: low	{0,1}	0.01	0.06	0.08*	--
Religiosity: medium ^	{0,1}	0.62	0.53	0.27	--
Religiosity: high	{0,1}	0.36	0.41	0.49	--
Health and Sex Education					
Knowledge of STDs	[0,11]	2.34	2.60	0.54	2.60
Household Demographics and Familial Influences					
Parents married	{0,1}	0.44	0.45	0.89	--
Presence of mother figure	{0,1}	0.99	0.98	0.72	--
Presence of father figure	{0,1}	0.89	0.90	0.80	--
Comfortable talking to parents about sex	{0,1}	0.28	0.40	0.11	--
Norms, Values, and Intentions					
Consequences of having sex: high	{0,1}	0.34	0.16	0.01**	--
Consequences of having sex: medium ^	{0,1}	0.46	0.60	0.07*	--
Consequences of having sex: low	{0,1}	0.21	0.24	0.69	--

Table B.1 *(continued)*

Variable Descriptor	Range	Means: Control AE Group	Means: Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Chance will have sex next year	{0,1,2}	--	--	--	--
Chance will have sex before end of high school	{0,1,2}	--	--	--	--
Ability to resist pressure for sex	[0,2]	--	--	--	--
Risk-Related Behaviors					
Had sex	{0,1}	--	--	--	--
Involved in petting	{0,1}	--	--	--	--
Baseline Data					
Baseline data collected at Wave 2	{0,1}	0.00	0.00	--	--
Missing baseline data	{0,1}	0.01	0.00	0.31	--
Month of Final Follow-Up Interview					
January or February	{0,1}	0.00	0.00	--	--
March or April	{0,1}	0.93	0.93	0.96	--
May or June	{0,1}	0.00	0.00	--	--
July or August ^	{0,1}	0.05	0.04	0.87	--
September or October	{0,1}	0.02	0.02	0.90	--
November or December	{0,1}	0.00	0.00	--	--

Table B.1 *(continued)*

2001 Middle School Cohort					
		Means			
Variable Descriptor	Range	Control AE Group	Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Child Demographics					
Gender: female	{0,1}	0.51	0.51	0.94	--
Enrollment cohort: spring 2001	{0,1}	0.49	0.48	0.95	--
Enrollment cohort: fall 2001	{0,1}	0.51	0.52	0.95	--
Enrollment cohort: fall 2003 ^	{0,1}	0.00	0.00	--	--
Age 13 or younger (at followup)	{0,1}	0.00	0.00	--	--
Age 14 (at followup)	{0,1}	0.13	0.13	0.84	--
Age 15 (at followup) ^	{0,1}	0.46	0.48	0.83	--
Age 16 (at followup)	{0,1}	0.35	0.30	0.35	--
Age 17 (at followup)	{0,1}	0.04	0.06	0.41	--
Age 18 (at followup)	{0,1}	0.01	0.01	0.50	--
Age 19 or older (at followup)	{0,1}	0.00	0.01	0.32	--
Age (at followup): not known	{0,1}	0.00	0.01	0.16	--
Race/ethnicity: white	{0,1}	0.41	0.37	0.44	--
Race/ethnicity: Hispanic	{0,1}	0.06	0.05	0.77	--
Race/ethnicity: black ^	{0,1}	0.53	0.52	0.91	--
Race/ethnicity: other	{0,1}	0.01	0.07	0.00***	--
Major Life Events					
Unmarried sister got pregnant in the past year	{0,1}	0.07	0.07	0.97	--
Sibling dropped out of school in the past year	{0,1}	0.09	0.05	0.15	--
Views Toward Abstinence					
Normative and personal values toward abstinence	[1,4]	1.78	1.76	0.72	0.57
Cultural Influences					
Religiosity: low	{0,1}	0.05	0.04	0.69	--
Religiosity: medium ^	{0,1}	0.52	0.46	0.31	--
Religiosity: high	{0,1}	0.43	0.47	0.46	--
Health and Sex Education					
Knowledge of STDs	[0,11]	3.97	3.72	0.46	2.89
Household Demographics and Familial Influences					
Parents married	{0,1}	0.43	0.61	0.00***	--
Presence of mother figure	{0,1}	0.98	0.99	0.29	--
Presence of father figure	{0,1}	0.88	0.92	0.20	--
Comfortable talking to parents about sex	{0,1}	0.37	0.39	0.75	--
Norms, Values, and Intentions					
Consequences of having sex: high	{0,1}	0.25	0.27	0.69	--
Consequences of having sex: medium ^	{0,1}	0.60	0.59	0.85	--
Consequences of having sex: low	{0,1}	0.15	0.14	0.82	--

Table B.1 *(continued)*

Variable Descriptor	Range	Means: Control AE Group	Means: Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Chance will have sex next year	{0,1,2}	--	--	--	--
Chance will have sex before end of high school	{0,1,2}	--	--	--	--
Ability to resist pressure for sex	[0,2]	--	--	--	--
Risk-Related Behaviors					
Had sex	{0,1}	--	--	--	--
Involved in petting	{0,1}	--	--	--	--
Baseline Data					
Baseline data collected at Wave 2	{0,1}	0.00	0.00	--	--
Missing baseline data	{0,1}	0.00	0.01	0.32	--
Month of Final Follow-Up Interview					
January or February	{0,1}	0.00	0.00	--	--
March or April	{0,1}	0.72	0.75	0.49	--
May or June	{0,1}	0.00	0.00	--	--
July or August ^	{0,1}	0.23	0.23	0.87	--
September or October	{0,1}	0.05	0.02	0.21	--
November or December	{0,1}	0.00	0.00	--	--

Table B.1 *(continued)*

High School Cohort					
		Means			
Variable Descriptor	Range	Control AE Group	Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Child Demographics					
Gender: female	{0,1}	0.56	0.54	0.81	--
Enrollment cohort: spring 2001	{0,1}	0.00	0.00	--	--
Enrollment cohort: fall 2001	{0,1}	1.00	1.00	--	--
Enrollment cohort: fall 2003 ^	{0,1}	0.00	0.00	--	
Age 13 or younger (at followup)	{0,1}	0.00	0.00	--	--
Age 14 (at followup)	{0,1}	0.00	0.00	--	--
Age 15 (at followup) ^	{0,1}	0.00	0.00	--	--
Age 16 (at followup)	{0,1}	0.00	0.00	--	--
Age 17 (at followup)	{0,1}	0.29	0.29	0.95	--
Age 18 (at followup)	{0,1}	0.39	0.37	0.78	--
Age 19 or older (at followup)	{0,1}	0.25	0.28	0.66	--
Age (at followup): not known	{0,1}	0.06	0.06	0.90	--
Race/ethnicity: white	{0,1}	0.27	0.25	0.83	--
Race/ethnicity: Hispanic	{0,1}	0.01	0.05	0.26	--
Race/ethnicity: black ^	{0,1}	0.65	0.63	0.76	--
Race/ethnicity: other	{0,1}	0.06	0.07	0.86	--
Major Life Events					
Unmarried sister got pregnant in the past year	{0,1}	0.05	0.12	0.13	--
Sibling dropped out of school in the past year	{0,1}	0.07	0.00	0.01**	--
Views Toward Abstinence					
Normative and personal values toward abstinence	[1,4]	1.84	1.84	0.96	0.53
Cultural Influences					
Religiosity: low	{0,1}	0.01	0.03	0.48	--
Religiosity: medium ^	{0,1}	0.49	0.48	0.91	--
Religiosity: high	{0,1}	0.43	0.43	0.96	--
Health and Sex Education					
Knowledge of STDs	[0,11]	7.98	7.66	0.39	2.28
Household Demographics and Familial Influences					
Parents married	{0,1}	0.54	0.47	0.41	--
Presence of mother figure	{0,1}	0.94	0.94	0.90	--
Presence of father figure	{0,1}	0.80	0.84	0.57	--
Comfortable talking to parents about sex	{0,1}	0.45	0.54	0.26	--
Norms, Values, and Intentions					
Consequences of having sex: high	{0,1}	0.16	0.07	0.06	--
Consequences of having sex: medium ^	{0,1}	0.57	0.54	0.72	
Consequences of having sex: low	{0,1}	0.26	0.39	0.11	--

Table B.1 *(continued)*

Variable Descriptor	Range	Means: Control AE Group	Means: Life Skills AE Group	*p*-value (Life Skills AE-Control AE)	Standard Deviation
Chance will have sex next year	{0,1,2}	0.54	0.64	0.42	--
Chance will have sex before end of high school	{0,1,2}	0.61	0.79	0.16	--
Ability to resist pressure for sex	[0,2]	0.58	0.57	0.90	--
Risk-Related Behaviors					
Had sex	{0,1}	0.27	0.38	0.17	--
Involved in petting	{0,1}	0.56	0.59	0.74	--
Baseline Data					
Baseline data collected at Wave 2	{0,1}	0.00	0.00	--	--
Missing baseline data	{0,1}	0.06	0.06	0.90	--
Month of Final Follow-Up Interview					
January or February	{0,1}	0.00	0.00	--	--
March or April	{0,1}	0.72	0.58	0.08*	--
May or June	{0,1}	0.00	0.00	--	--
July or August ^	{0,1}	0.25	0.30	0.56	
September or October	{0,1}	0.03	0.12	0.03**	--
November or December	{0,1}	--	--	--	--

Source: Wave 1 and Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 1999 and 2005), administered to youth at baseline and 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Notes: Statistics based on weighted sample. All covariates measured at baseline except variables pertaining to the timing of the final follow-up interview and age, which are measured at the final follow-up interview. Numbers in { } denote values of binary or categorical variables; numbers in [ ] denote range of continuous variables. Standard deviation not displayed for binary and categorical variables.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

STDs = sexually transmitted diseases.

^ Base category (omitted from the regressions).

****p*-value (of Life Skills AE-control AE difference) < 0.01; ***p*-value < 0.05; **p*-value < 0.10, two-tailed test.

Table B.2. Sample Sizes for Analysis of Selected Outcome Measures

Outcome Measure Category	2003 Middle School Cohort	2001 Middle School Cohort	High School Cohort
Views toward abstinence, teen sex, and marriage	160	300	144
Peer influences and relations	160	300	144
Self-concept and refusal skills	160	300	144
Perceived consequences of teen and nonmarital sex	160	300	144
Expect to abstain until marriage	159	300	144
Expect to abstain through high school	159	296	n.a.
Expect to abstain as a teenager	159	300	134
Identification of STDs	159	298	144
Knowledge of STD consequences	160	299	144
Perceived effectiveness of condoms	160	299	144
Perceived effectiveness of birth control pills	159	298	144
Knowledge of the consequences of unprotected sex	160	300	144
Sexual abstinence, number of sexual partners, and unprotected sex	n.a.	300	144
Sex by age 14[a]	n.a.	298	84
Sex by age 15[a]	n.a.	258	121
Sex by age 16[a]	n.a.	n.a.	133
Sex by age 17[a]	n.a.	n.a.	134
Ever been pregnant	n.a.	299	142
Ever had a baby	n.a.	299	141
Ever had (reported) STD	n.a.	300	144
Smoking	n.a.	297	143
Alcohol use	n.a.	300	143
Marijuana use	n.a.	298	143

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

[a]Estimates exclude youth who were older than the specified age at the time of study enrollment, because the Life Skills Education Component could not have influenced whether youth had sex before component exposure. Likewise, estimates exclude youth who were younger than the specified age at the time of the final follow-up survey, because the outcome is not defined for these youth.

n.a. = not available. These outcomes were not examined for students in the 2003 middle school cohort due to their young ages at the time of the final follow-up survey.

Table B.3. R-Squared Statistics for Selected Outcome Variables

	R^2 for Full Estimation Sample
Intermediate Outcomes Related to Teen Sexual Activity	
Views Toward Abstinence, Teen Sex, and Marriage	
Views supportive of abstinence	0.92
Views unsupportive of teen sex	0.98
Views supportive of marriage	0.97
Peer Influences and Relations	
Friends' support for abstinence	0.81
Peer pressure to have sex	0.27
Self-Concept and Refusal Skills	
Refusal skills	0.94
Self-esteem and -control	0.91
Perceived Consequences of Teen and Nonmarital Sex	
General consequences of teen sex	0.93
Personal consequences of teen sex	0.84
Expectations for Future Behavior	
Expect to abstain until marriage	0.63
Expect to abstain through high school	0.77
Expect to abstain as a teenager	0.64
Knowledge and Perceptions of Risks Associated with Teen Sex	
Ability to Identify STDs	
Overall identification of STDs	0.96
Identification of true STDs	0.95
Identification of false STDs	0.85
Understanding of Pregnancy and STD Risks	
Knowledge of unprotected sex risks	0.94
Knowledge of STD consequences	0.86
Perceived Effectiveness of Condoms	
Never effective for preventing pregnancy	0.17
Never effective for preventing HIV	0.48
Never effective for preventing chlamydia and gonorrhea	0.45
Never effective for preventing herpes and HPV	0.52
Perceived Effectiveness of Birth Control Pills	
Never effective for preventing pregnancy	0.23
Never effective for preventing HIV	0.85
Never effective for preventing chlamydia and gonorrhea	0.83
Never effective for preventing herpes and HPV	0.84

Table B.3 *(continued)*

	R^2 for Full Estimation Sample
Sexual Abstinence and Teen Risk Behaviors[a]	
Sexual Abstinence and Sexual Activity	
Remained abstinent (always)	0.64
Abstinent last 12 months	0.59
Four or more sexual partners ever	0.46
Had sex by age 14	0.39
Had sex by age 15	0.49
Unprotected Sex and Birth Control	
Unprotected sex at first intercourse	0.30
Unprotected sex at least once during the last 12 months	0.52
Birth control not used at first intercourse	0.28
Sex without birth control at least once during the last 12 months	0.47
Possible Consequences of Teen Sex	
Ever been pregnant	0.40
Ever had a baby	0.35
Ever had a (reported) STD	0.33
Other Risk Behaviors	
Smoked cigarettes (past month)	0.46
Drinks alcohol (at least once a month)	0.51
Used marijuana (ever)	0.51

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

[a]Estimation sample for sexual abstinence and teen risk behaviors excludes 2003 middle school cohort.

HIV = human immunodeficiency virus; HPV = human papillomavirus.

Table B.4. Impacts on Perceived Effectiveness of Condoms for Preventing Pregnancy

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	28	33	-5	0.18
Sometimes	58	55	3	0.54
Never	7	4	3	0.12
Unsure	7	7	-1	0.80
		Chi-squared test of distributional differences		0.65
2003 Middle School Cohort				
Usually	13	18	-5	0.40
Sometimes	62	68	-6	0.42
Never	15	5	9	0.06*
Unsure	10	9	2	0.69
		Chi-squared test of distributional differences		0.62
2001 Middle School Cohort				
Usually	32	28	4	0.45
Sometimes	52	64	-12	0.04**
Never	8	3	5	0.05**
Unsure	8	5	3	0.36
		Chi-squared test of distributional differences		0.43
High School Cohort				
Usually	39	54	-15	0.08*
Sometimes	60	34	26	0.00***
Never	0	4	-5	0.06*
Unsure	2	8	-6	0.13
		Chi-squared test of distributional differences		0.06*

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.5. Impacts on Perceived Effectiveness of Condoms for Preventing HIV

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	11	11	0	0.93
Sometimes	37	29	8	0.04**
Never	36	39	-4	0.40
Unsure	16	21	-5	0.17
		Chi-squared test of distributional differences		0.78
2003 Middle School Cohort				
Usually	6	3	3	0.46
Sometimes	38	26	12	0.11
Never	34	41	-7	0.40
Unsure	22	30	-8	0.27
		Chi-squared test of distributional differences		0.40
2001 Middle School Cohort				
Usually	11	10	1	0.70
Sometimes	36	34	2	0.71
Never	37	44	-7	0.24
Unsure	16	12	3	0.40
		Chi-squared test of distributional differences		0.94
High School Cohort				
Usually	17	20	-3	0.63
Sometimes	37	27	10	0.18
Never	36	34	3	0.75
Unsure	10	19	-9	0.09*
		Chi-squared test of distributional differences		0.74

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.6. Impacts on Perceived Effectiveness of Condoms for Preventing Chlamydia and Gonorrhea

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	11	9	2	0.33
Sometimes	33	26	7	0.06*
Never	34	36	-3	0.49
Unsure	22	29	-7	0.09*
		Chi-squared test of distributional differences		0.10
2003 Middle School Cohort				
Usually	7	5	2	0.68
Sometimes	30	22	8	0.27
Never	40	40	-1	0.95
Unsure	24	32	-9	0.25
		Chi-squared test of distributional differences		0.50
2001 Middle School Cohort				
Usually	8	7	1	0.60
Sometimes	30	35	-5	0.37
Never	37	31	6	0.28
Unsure	25	27	-3	0.62
		Chi-squared test of distributional differences		0.72
High School Cohort				
Usually	19	15	4	0.46
Sometimes	40	21	18	0.01**
Never	24	38	-14	0.07*
Unsure	17	26	-9	0.22
		Chi-squared test of distributional differences		0.11*

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.7. Impacts on Perceived Effectiveness of Condoms for Preventing Herpes and HPV

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	10	10	0	0.89
Sometimes	28	24	4	0.26
Never	42	44	-2	0.68
Unsure	20	22	-3	0.45
		Chi-squared test of distributional differences		0.83
2003 Middle School Cohort				
Usually	8	4	4	0.22
Sometimes	31	23	8	0.23
Never	38	46	-8	0.33
Unsure	22	27	-5	0.50
		Chi-squared test of distributional differences		0.53
2001 Middle School Cohort				
Usually	7	4	4	0.07*
Sometimes	24	33	-8	0.10
Never	44	43	1	0.84
Unsure	24	20	3	0.49
		Chi-squared test of distributional differences		0.88
High School Cohort				
Usually	15	22	-7	0.26
Sometimes	29	17	13	0.07*
Never	43	42	1	0.90
Unsure	13	19	-7	0.27
		Chi-squared test of distributional differences		0.78

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.8. Impacts on Perceived Effectiveness of Birth Control Pills for Preventing Pregnancy

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	37	46	-9	0.03**
Sometimes	50	41	9	0.04**
Never	5	6	0	0.89
Unsure	8	8	0	0.94
		Chi-squared test of distributional differences		0.30
2003 Middle School Cohort				
Usually	21	28	-8	0.30
Sometimes	58	45	13	0.11
Never	8	12	-4	0.44
Unsure	13	14	-1	0.82
		Chi-squared test of distributional differences		0.54
2001 Middle School Cohort				
Usually	42	48	-6	0.31
Sometimes	47	46	1	0.91
Never	4	2	2	0.24
Unsure	7	4	3	0.29
		Chi-squared test of distributional differences		0.51
High School Cohort				
Usually	47	62	-14	0.10
Sometimes	46	32	14	0.10*
Never	3	3	1	0.81
Unsure	3	4	-1	0.72
		Chi-squared test of distributional differences		0.44

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.9. Impacts on Perceived Effectiveness of Birth Control Pills for Preventing HIV

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	5	2	2	0.06*
Sometimes	8	6	2	0.36
Never	73	77	-4	0.27
Unsure	15	15	-1	0.84
		Chi-squared test of distributional differences		0.91
2003 Middle School Cohort				
Usually	4	0	4	0.08*
Sometimes	11	10	1	0.86
Never	66	60	6	0.40
Unsure	19	30	-10	0.13
		Chi-squared test of distributional differences		0.74
2001 Middle School Cohort				
Usually	5	3	2	0.29
Sometimes	6	3	3	0.26
Never	69	82	-13	0.01***
Unsure	20	12	8	0.06*
		Chi-squared test of distributional differences		0.28
High School Cohort				
Usually	5	3	1	0.60
Sometimes	6	4	2	0.52
Never	85	88	-4	0.45
Unsure	5	4	1	0.85
		Chi-squared test of distributional differences		0.90

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.10. Impacts on Perceived Effectiveness of Birth Control Pills for Preventing Chlamydia and Gonorrhea

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	5	2	3	0.01***
Sometimes	7	7	0	0.97
Never	72	73	-1	0.70
Unsure	17	19	-2	0.59
		Chi-squared test of distributional differences		0.64
2003 Middle School Cohort				
Usually	5	1	4	0.07*
Sometimes	7	5	2	0.53
Never	60	57	3	0.68
Unsure	27	37	-9	0.18
		Chi-squared test of distributional differences		0.75
2001 Middle School Cohort				
Usually	2	1	1	0.44
Sometimes	8	7	1	0.86
Never	70	79	-8	0.09*
Unsure	20	13	7	0.10
		Chi-squared test of distributional differences		0.51
High School Cohort				
Usually	7	3	4	0.07*
Sometimes	4	7	-3	0.50
Never	84	83	1	0.85
Unsure	4	6	-2	0.53
		Chi-squared test of distributional differences		0.45

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.11. Impacts on Perceived Effectiveness of Birth Control Pills for Preventing Herpes and HPV

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (All Three Cohorts)				
Usually	3	2	2	0.11
Sometimes	6	5	1	0.61
Never	73	75	-2	0.60
Unsure	17	18	-1	0.75
		Chi-squared test of distributional differences		0.94
2003 Middle School Cohort				
Usually	4	2	2	0.37
Sometimes	8	6	3	0.42
Never	63	58	4	0.56
Unsure	25	34	-9	0.18
		Chi-squared test of distributional differences		0.76
2001 Middle School Cohort				
Usually	1	2	-1	0.27
Sometimes	6	6	1	0.84
Never	73	79	-6	0.18
Unsure	20	13	7	0.09*
		Chi-squared test of distributional differences		0.14
High School Cohort				
Usually	6	1	4	0.04**
Sometimes	4	5	-1	0.87
Never	85	88	-3	0.56
Unsure	5	6	-1	0.86
		Chi-squared test of distributional differences		0.67

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.12. Number of Sex Partners Ever

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Never had sex	60	59	1	0.77
One partner	12	16	-4	0.18
Two partners	10	4	6	0.04**
Three partners	7	6	1	0.68
Four or more partners	11	15	-4	0.23
		Chi-squared test of distributional differences		0.37
2001 Middle School Cohort				
Never had sex	73	72	1	0.77
One partner	13	17	-4	0.33
Two partners	5	3	2	0.34
Three partners	5	2	3	0.19
Four or more partners	4	7	-2	0.40
		Chi-squared test of distributional differences		0.57
High School Cohort				
Never had sex	47	46	1	0.89
One partner	10	15	-5	0.35
Two partners	16	6	10	0.07*
Three partners	9	9	0	0.92
Four or more partners	18	23	-5	0.35
		Chi-squared test of distributional differences		0.37

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.13. Impacts on Sex and Unprotected Sex at First Intercourse

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Never had sex	60	59	1	0.77
Had sex, used condom first time	36	38	-2	0.60
Had sex, no condom first time	4	3	1	0.42
		Chi-squared test of distributional differences		0.35
2001 Middle School Cohort				
Never had sex	73	72	1	0.77
Had sex, used condom first time	23	25	-1	0.78
Had sex, no condom first time	3	3	0	0.95
		Chi-squared test of distributional differences		0.74
High School Cohort				
Never had sex	47	46	1	0.89
Had sex, used condom first time	48	51	-3	0.66
Had sex, no condom first time	5	3	2	0.25
		Chi-squared test of distributional differences		0.28

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.14. Impacts on Sex and Unprotected Sex in the Last 12 Months

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Never had sex in last 12 months	66	66	0	0.96
Had sex, always used condom	14	17	-3	0.47
Had sex, did not always use condom	20	17	3	0.44
		Chi-squared test of distributional differences		0.30
2001 Middle School Cohort				
Never had sex in last 12 months	82	78	4	0.40
Had sex, always used condom	9	13	-4	0.55
Had sex, did not always use condom	9	9	0	0.99
		Chi-squared test of distributional differences		0.50
High School Cohort				
Never had sex in last 12 months	50	54	-3	0.65
Had sex, always used condom	19	22	-2	0.62
Had sex, did not always use condom	30	24	6	0.40
		Chi-squared test of distributional differences		0.21

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.15. Impacts on Sex and Birth Control Use at First Intercourse

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Never had sex	60	59	1	0.77
Had sex, used birth control first time	36	38	-2	0.73
Had sex, no birth control first time	3	3	0	0.83
		Chi-squared test of distributional differences		0.52
2001 Middle School Cohort				
Never had sex	73	72	1	0.77
Had sex, used birth control first time	23	25	-1	0.78
Had sex, no birth control first time	3	3	0	0.95
		Chi-squared test of distributional differences		0.74
High School Cohort				
Never had sex	47	46	1	0.89
Had sex, used birth control first time	49	51	-2	0.82
Had sex, no birth control first time	4	3	1	0.69
		Chi-squared test of distributional differences		0.40

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.16. Impacts on Sex and Birth Control Use in the Last 12 Months

	Life Skills AE Group (Percentage)	Control AE Group (Percentage)	Life Skills AE-Control AE Difference (Percentage Points)	*p*-value
Overall (Both Cohorts)				
Never had sex in last 12 months	66	66	0	0.96
Had sex, always used birth control	16	20	-4	0.41
Had sex, did not always use birth control	18	14	4	0.32
		Chi-squared test of distributional differences		0.08*
2001 Middle School Cohort				
Never had sex in last 12 months	82	78	4	0.40
Had sex, always used birth control	9	13	-4	0.51
Had sex, did not always use birth control	9	9	0	0.92
		Chi-squared test of distributional differences		0.45
High School Cohort				
Never had sex in last 12 months	50	54	-3	0.65
Had sex, always used birth control	23	27	-3	0.55
Had sex, did not always use birth control	26	20	7	0.30
		Chi-squared test of distributional differences		0.06*

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively. Life Skills AE-control AE difference may not equal difference in percentages due to rounding.

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

Table B.17. Estimated Impacts on Selected Behavioral Outcomes, Participants Only

Descriptor of Measure	2001 Middle School Cohort		High School Cohort		Overall	
	Mean Difference	*p*-value	Mean Difference	*p*-value	Mean Difference	*p*-value
Sexual Abstinence and Sexual Activity						
Remained abstinent (always)	2	0.77	1	0.89	2	0.77
Abstinent last 12 months	4	0.40	-4	0.65	0	0.96
Four or more sexual partners ever	-2	0.40	-7	0.35	-5	0.23
Age at First Sex [a]						
Had sex by age 14	3	0.46	-12	0.04**	-5	0.27
Had sex by age 15	4	0.43	-8	0.34	-2	0.79
Had sex by age 16	n.a.	n.a.	-12	0.22	n.a.	n.a.
Had sex by age 17	n.a.	n.a.	2	0.86	n.a.	n.a.
Unprotected Sex and Birth Control Use						
Unprotected sex at first intercourse	0	0.95	3	0.25	2	0.42
Unprotected sex at least once last 12 months	0	0.99	7	0.40	4	0.44
Birth control not used at first intercourse	0	0.95	1	0.69	1	0.83
Sex without birth control at least once last 12 months	0	0.92	8	0.30	4	0.32
Possible Consequences of Teen Sex						
Ever been pregnant	-2	0.12	8	0.27	3	0.48
Ever had a baby	0	--	8	0.07*	4	0.07*
Ever had a (reported) STD	0	0.81	0	0.96	0	0.96
Other Risk Behaviors						
Smoked cigarette (past month)	-3	0.55	-1	0.89	-2	0.66
Drank alcohol (at least once a month)	0	0.95	15	0.09*	8	0.14
Used marijuana (ever)	0	0.93	10	0.28	5	0.33
Sample Size Total	**300**		**144**		**444**	
Control AE Group	141		70		211	
Life Skills AE Group	159		74		233	
Participants	153		63		216	
Nonparticipants	6		11		17	

Source: Wave 4 Survey of Teen Activities and Attitudes (Mathematica Policy Research, Inc. 2005), administered to youth 18 to 55 months after enrolling in the Title V, Section 510 Abstinence Education Program study sample.

Note: All estimates are based on weighted regression models. For details on the covariates used in these regressions, see Appendix Table B.1. Sample sizes and R-square statistics are in Appendix Tables B.2 and B.3, respectively.

[a]Estimates exclude youth who were older than the specified age at the time of study enrollment, since the Life Skills Education Component could not have influenced youth behavior prior to participating. For example, youth who were 15 or older at the time of study enrollment are excluded from estimates of "had sex by age 14." Likewise, estimates exclude youth who were younger than the specified age at the time of the final follow-up survey, since the outcome is not defined for these youth. For example, youth in the 2001 middle school sample who were under age 15 at the time of the final follow-up survey are excluded from estimates of "had sex by age 15."

AE = Abstinence Education. All youth in the study sample participated in the core Abstinence Education Component of the *Heritage Keepers*® Program and had the opportunity to participate in its Community Education Component as well.

n.a. = not available. Sex by ages 16 and 17 was not analyzed for the 2001 middle school cohort, since most youth (60 percent) in this cohort were age 15 or younger at the time of the final follow-up survey.

***p-value (of Life Skills AE-control AE difference) < 0.01; **p-value < 0.05; *p-value < 0.10, two-tailed test.

APPENDIX C

SURVEY QUESTIONS UNDERLYING THE OUTCOME MEASURES USED FOR THE FINAL IMPACT ANALYSIS

INTERMEDIATE OUTCOMES RELATED TO TEEN SEXUAL ACTIVITY

VIEWS TOWARD ABSTINENCE, TEEN SEX, AND MARRIAGE

Measure 1: Views Supportive of Abstinence

This measure reports the average of the following five questions:

2.05 For each of the following statements, please tell us if you strongly agree, agree, disagree, or strongly disagree.

MARK (X) ONE ANSWER FOR EACH		STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
g.	Having sexual intercourse is something only married people should do	3	2	1	0
h.	It is against my values for me to have sexual intercourse as an unmarried teen	3	2	1	0
i.	It would be OK for teens who have been dating for a long time to have sexual intercourse	0	1	2	3
j.	It is OK for teenagers to have sexual intercourse before marriage if they plan to get married	0	1	2	3
p.	It is OK for unmarried teens to have sexual intercourse if they use birth control	0	1	2	3

Measure 2: Views Unsupportive of Teen Sex

This measure reports the average of the following five questions:

2.5 For each of the following statements, please tell us if you strongly agree, agree, disagree, or strongly disagree.

MARK (X) ONE ANSWER FOR EACH		STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
d.	"Petting" (heavy kissing and touching) can lead to sexual intercourse	3	2	1	0
e.	In a relationship between a boy and a girl, there are many more important things than sexual intercourse	3	2	1	0
f.	It is OK to say "NO" when someone wants to touch me or wants me to touch them	3	2	1	0

MARK (X) ONE ANSWER FOR EACH	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
m. The best way for young people to avoid an unwanted pregnancy or a sexually transmitted disease is to wait until they are married to have sexual intercourse	3	2	1	0
o. It is likely that teens who have sexual intercourse before they are married will get pregnant	3	2	1	0

Measure 3: Views Supportive of Marriage

This measure reports the average of the following two questions:

2.05 For each of the following statements, please tell us if you strongly agree, agree, disagree, or strongly disagree.

MARK (X) ONE ANSWER FOR EACH	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
k. Having a good marriage is important to me	3	2	1	0
l. Having a good marriage does not seem realistic for me	0	1	2	3

PEER INFLUENCES AND RELATIONS

Measure 1: Friends' Support for Abstinence

This measure reports the average of three component measures: friends' support for teen sex, friends' support for abstinence until marriage, and friends' sexual experience.

Friends' support for teen sex is calculated from the following two questions:

2.06 Do any of your 5 closest friends think it is okay for young people your age to have sexual intercourse?

2.06a How many of your 5 closest friends think it is okay for young people your age to have sexual intercourse? (asked only if Respondent answers "Yes" to 2.06)

5 "Respondent reports that none of his or her five closest friends think it is okay for young people their age to have sexual intercourse" (responds "No" to 2.06)

3.5 "Respondent reports that one or two of his or her five closest friends think it is okay for young people their age to have sexual intercourse"

1.5 "Respondent reports that three or four of his or her five closest friends think it is okay for young people their age to have sexual intercourse"
0 "Respondent reports that all of his or her five closest friends think it is okay for young people their age to have sexual intercourse"

Friends' support for abstinence until marriage is calculated from the following two questions:

2.07 Do any of your 5 closest friends think someone should wait until marriage before having sexual intercourse?

2.07a How many of your 5 closest friends think someone should wait until marriage before having sexual intercourse? (asked only if Respondent answers "Yes" to 2.07)

5 "Respondent reports that all of his or her five closest friends think someone should wait until marriage before having sexual intercourse"
3.5 "Respondent reports that three or four of his or her five closest friends think someone should wait until marriage before having sexual intercourse"
1.5 "Respondent reports that one or two of his or her five closest friends think someone should wait until marriage before having sexual intercourse"
0 "Respondent reports that none of his or her five closest friends think someone should wait until marriage before having sexual intercourse" (responds "No" to 2.07)

Friends' sexual experience is calculated from the following two questions:

2.08 Have any of your 5 closest friends ever had sexual intercourse?

2.08a How many of your 5 closest friends have had sexual intercourse? (asked only if Respondent answers "Yes" to 2.08)

5 "Respondent reports that none of his or her five closest friends have had sexual intercourse" (responds "No" to 2.08)
3.5 "Respondent reports that one or two of his or her five closest friends have had sexual intercourse"
1.5 "Respondent reports that three or four of his or her five closest friends have had sexual intercourse"
0 "Respondent reports that all of his or her five closest friends have had sexual intercourse"

Measure 2: Peer Pressure to Have Sex

Peer pressure to have sex is calculated from the following two questions:

2.09 Do you feel pressure from your friends to have sexual intercourse?

2.09a How much pressure do you feel? (asked only if Respondent answers "Yes" to 2.09)

3 "Respondent reports that he or she feels a lot of pressure"
2 "Respondent reports that he or she feels some pressure"
1 "Respondent reports that he or she feels a little pressure"
0 "Respondent reports that he or she feels no pressure at all"

SELF-CONCEPT AND REFUSAL SKILLS

Measure 1: Refusal Skills

This measure reports the average of the following five questions:

2.10 Imagine you had been going out with someone you really liked and this person decided he [or she] wanted to have sexual intercourse with you, but you didn't want to have sexual intercourse. Could you do each of the following?

MARK (X) ONE ANSWER FOR EACH		YES	MAYBE	NO
a.	Stick with your decision not to have sexual intercourse	2	1	0
b.	Talk to your boyfriend [or girlfriend] about your decision not to have sexual intercourse	2	1	0
c.	Avoid getting into a situation that might lead to sexual intercourse (like going to a bedroom, drinking, doing drugs)	2	1	0
d.	Say "NO" to having sexual intercourse, and explain your reasons	2	1	0
e.	Stop seeing your boyfriend [or girlfriend] if he [or she] keeps pushing you to have sexual intercourse	2	1	0

Measure 2: Self-Esteem and -Control

This measure reports the average of two component measures: self-esteem and self-control.

The self-esteem measure reports the average of the following four questions:

4.01 Here are some opinions that students sometimes have about themselves. Please tell us how much you agree or disagree with each one.

MARK (X) ONE ANSWER FOR EACH		AGREE A LOT	AGREE A LITTLE	DISAGREE A LITTLE	DISAGREE A LOT
a.	I have a lot to be proud of	3	2	1	0
b.	I like myself just the way I am	3	2	1	0
c.	I feel like I am doing everything just about right	3	2	1	0
d.	I feel loved and wanted	3	2	1	0

The self-control measure reports the average of the following four questions:

4.02 After reading each sentence, mark the one answer that tells us how true the sentence is for you.

MARK (X) ONE ANSWER FOR EACH	AGREE A LOT	AGREE A LITTLE	DISAGREE A LITTLE	DISAGREE A LOT
a. I would do almost anything on a dare	0	1	2	3
b. I like to test myself sometimes by doing something a little risky	0	1	2	3
c. I keep out of trouble at all costs	3	2	1	0
d. I often act before I think	0	1	2	3

PERCEIVED CONSEQUENCES OF TEEN AND NONMARITAL SEX

Measure 1: Perceived General Consequences of Teen Sex

This measure reports the average of the following three questions:

2.05 For each of the following statements, please tell us if you strongly agree, agree, disagree, or strongly disagree.

MARK (X) ONE ANSWER FOR EACH	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
a. Sexual relationships create more problems than they're worth for teens	3	2	1	0
b. Sexual relationships make life too difficult for teens	3	2	1	0
n. A teen who has had sexual intercourse outside of marriage would be better off to stop having sex and wait until marriage to have sexual intercourse again	3	2	1	0

Measure 2: Perceived Personal Consequences of Teen Sex

This measure reports the average of the following four questions:

2.01 Does having sexual intercourse as a teenager make it harder for someone to study and stay in school in the future?

2.02 Does having sexual intercourse as a teenager make it harder for a teen to grow and develop emotionally and morally?

2.03 Does having sexual intercourse before marriage make it harder for someone to have a good marriage and a good family life in the future?

Response options and coding for 2.01, 2.02, and 2.03:

0 "Respondent reports 'No, not harder at all'"
1 "Respondent reports 'Yes, somewhat harder'"
2 "Respondent reports 'Yes, much harder'"

2.04 Is there a problem with unmarried teens having sexual intercourse if no pregnancy results from it?

0 "Respondent reports 'No problem at all'"
1 "Respondent reports 'Some problem'"
2 "Respondent reports 'Big problem'"

EXPECTATIONS TO ABSTAIN FROM SEXUAL INTERCOURSE

Measure 1: Expectations to Abstain Until Marriage

If the respondent reported never having had sexual intercourse:

5.01a Do you think you will abstain from sexual intercourse from now until you are married?

0 "Respondent reports that s/he does not expect to abstain from now until s/he is married"
1 "Respondent reports that s/he does expect to abstain from now until s/he is married"

If the respondent reported having had sexual intercourse:

6.01a Even though you have already had sex, do you think you will abstain from sexual intercourse from now until you are married?

0 "Respondent reports that s/he does not expect to abstain from now until s/he is married"
1 "Respondent reports that s/he does expect to abstain from now until s/he is married"

Measure 2: Expectations to Abstain Through High School[1]

If the respondent reported never having had sexual intercourse:

5.01a Do you think you will abstain from sexual intercourse from now until you complete high school?

0 "Respondent reports that s/he does not expect to abstain from now until s/he completes high school"
1 "Respondent reports that s/he does expect to abstain from now until s/he completes high school"

If the respondent reported having had sexual intercourse:

6.01a Even though you have already had sex, do you think you will abstain from sexual intercourse from now until you complete high school?

0 "Respondent reports that s/he does not expect to abstain from now until s/he completes high school"
1 "Respondent reports that s/he does expect to abstain from now until s/he completes high school"

Measure 3: Expectations to Abstain as a Teenager[2]

If the respondent reported never having had sexual intercourse:

5.01a Do you think you will abstain from sexual intercourse from now until you are at least 20 years old?

0 "Respondent reports that s/he does not expect to abstain from now until s/he is at least 20 years old"
1 "Respondent reports that s/he does expect to abstain from now until s/he is at least 20 years old"

If the respondent reported having had sexual intercourse:

6.01a Even though you have already had sex, do you think you will abstain from sexual intercourse from now until you are at least 20 years old?

0 "Respondent reports that s/he does not expect to abstain from now until s/he is at least 20 years old"
1 "Respondent reports that s/he does expect to abstain from now until s/he is at least 20 years old"

[1] Reported for respondents younger than 18 years of age.

[2] Reported for respondents younger than 20 years of age.

KNOWLEDGE AND PERCEPTIONS OF RISKS ASSOCIATED WITH TEEN SEX

STD IDENTIFICATION

Measure 1: Overall Identification of STDs

This measure reports the percent of the following questions answered correctly by the respondent. "Not sure" responses were considered incorrect.

3.1 Which of the following is a sexually transmitted disease (STD)?

AIDS or HIV	Yes
Diabetes	No
Gonorrhea	Yes
Genital herpes	Yes
Multiple sclerosis	No
Syphilis	Yes
Chlamydia	Yes
Crabs	Yes
Tuberculosis	No
Genital warts	Yes
Hepatitis B	Yes
Jaundice	No
Human papillomavirus (HPV)	Yes

Measure 2: Identification of True STDs

This measure reports the percent of the true STDs listed in Question 3.1 (above) that were identified correctly as an STD by the respondent: AIDS or HIV, Gonorrhea, Genital Herpes, Syphilis, Chlamydia, Crabs, Genital Warts, Hepatitis B, Human Papillomavirus (HPV).

Measure 3: Identification of False STDs

This measure reports the percent of the false STDs listed in Question 3.1 (above) that were identified correctly as a non-STD by the respondent: Diabetes, Multiple Sclerosis, Tuberculosis, Jaundice.

KNOWLEDGE OF POTENTIAL RISKS AND CONSEQUENCES OF SEXUAL ACTIVITY

Measure 1: Knowledge of Unprotected Sex Risks

3.5 If you had sexual intercourse only once without using a condom or other birth control, could you get a sexually transmitted disease?

0 "Respondent reports that you cannot get an STD from having sexual intercourse only once without using a condom or other birth control" or "Respondent reports that s/he does not know"
1 "Respondent reports that you can get an STD from having sexual intercourse only once without using a condom or other birth control"

3.6 If you had sexual intercourse only once without using a condom or other birth control, could you get pregnant?

0 "Respondent reports that you cannot get pregnant from having sexual intercourse only once without using a condom or other birth control" or "Respondent reports that s/he does not know"
1 "Respondent reports that you can get pregnant from having sexual intercourse only once without using a condom or other birth control"

Measure 2: Knowledge of STD Consequences

This measure reports the percent of the following questions answered correctly by the respondent. "Don't know" responses were considered incorrect.

3.2a For each of the following, please tell me if sexually transmitted diseases (STDs) can cause this or not… Can sexually transmitted diseases (STDs) cause some kinds of cancer?

0 "Respondent reports that STDs cannot cause some kinds of cancer" or "Respondent reports that s/he does not know"
1 "Respondent reports that STDs can cause some kinds of cancer"

3.2b For each of the following, please tell me if sexually transmitted diseases (STDs) can cause this or not…. Can sexually transmitted diseases (STDs) cause problems with fertility; that is, problems getting pregnant?

0 "Respondent reports that STDs cannot cause problems with fertility" or "Respondent reports that s/he does not know"
1 "Respondent reports that STDs can cause problems with fertility"

3.2c For each of the following, please tell me if sexually transmitted diseases (STDs) can cause this or not… Can sexually transmitted diseases (STDs) cause increased risk for asthma?

0 "Respondent reports that STDs can cause increased risk for asthma" or "Respondent reports that s/he does not know"
1 "Respondent reports that STDs cannot cause increased risk for asthma"

PERCEIVED EFFECTIVENESS OF CONDOMS

Measures 1–4: Perceived Effectiveness at Preventing Pregnancy
Perceived Effectiveness at Preventing HIV
Perceived Effectiveness at Preventing Chlamydia and Gonorrhea
Perceived Effectiveness at Preventing HPV

These measures are based on the following question:

3.3 Mark the answer that comes closest to what you think.

If a condom is used correctly…

MARK (X) ONE ANSWER FOR EACH	USUALLY	SOMETIMES	NEVER	NOT SURE
a. it prevents girls from getting pregnant	2	1	0	-1
b. it prevents HIV	2	1	0	-1
c. it prevents chlamydia and gonorrhea	2	1	0	-1
d. it prevents herpes and HPV	2	1	0	-1

PERCEIVED EFFECTIVENESS OF BIRTH CONTROL PILLS

Measures 1–4: Perceived Effectiveness at Preventing Pregnancy
Perceived Effectiveness at Preventing HIV
Perceived Effectiveness at Preventing Chlamydia and Gonorrhea
Perceived Effectiveness at Preventing HPV

These measures are based on the following question:

3.4 Mark the answer that comes closest to what you think.

If birth control pills are used correctly…

MARK (X) ONE ANSWER FOR EACH	USUALLY	SOMETIMES	NEVER	NOT SURE
a. it prevents girls from getting pregnant	2	1	0	-1
b. it prevents HIV	2	1	0	-1
c. it prevents chlamydia and gonorrhea	2	1	0	-1
d. it prevents herpes and HPV	2	1	0	-1

SEXUAL ABSTINENCE AND TEEN RISK BEHAVIORS

SEXUAL ABSTINENCE AND ACTIVITY[3]

Measure 1: Remained Abstinent

4.10 Have you ever had sexual intercourse? Sexual intercourse means "going all the way" and is the act that makes babies.

0 "Respondent reports that s/he has never had sexual intercourse"
1 "Respondent reports that s/he has had sexual intercourse"

Measure 2: Abstinence During the Last 12 Months

6.07 With how many different people have you had sexual intercourse in the past 12 months?

0 "Respondent reports no sexual partners in the past 12 months"
1 "Respondent reports one or more sexual partners in the past 12 months"

Measure 3: Number of Sexual Partners Ever

6.06 With how many different people have you ever had sexual intercourse, even if only once?

0 "Respondent reports no sexual partners"
1 "Respondent reports that s/he has had sex with one partner"
2 "Respondent reports that s/he has had sex with two partners"
3 "Respondent reports that s/he has had sex with three partners"
≥4 "Respondent reports that s/he has had sex with four or more partners"

Measure 4: Age at First Intercourse

6.02 How old were you when you had sexual intercourse for the first time?

_____ "Respondent reports age at first sexual intercourse"

[3] Except for the question about abstinence (Measure 1), which was asked of all respondents, the questions that make up these measures of sexual activity were asked only of respondents who reported ever having had sex. These questions were coded as either 0 or missing, as appropriate, for those respondents who did not report having had sex.

UNPROTECTED SEX AND BIRTH CONTROL[4]

Measure 1: Unprotected Sex at First Intercourse

6.05 Think about the first time you had sexual intercourse. Did you or your partner use any of the following that first time? (condom, birth control pill, Depo-Provera or Norplant, morning after pill, other)

0 "Respondent reports that a condom was not used at first intercourse"
1 "Respondent reports using a condom at first intercourse"

Measure 2: Unprotected Sex During the Last 12 Months

6.11 On how many of these occasions [of sexual intercourse in the last 12 months] did you or your partner use a condom?

0 "Respondent reports that condoms were not used on all occasions of sexual intercourse in the past 12 months"
1 "Respondent reports that condoms were used on all occasions of sexual intercourse in the past 12 months"

Measure 3: Birth Control Use at First Intercourse

6.05 Think about the first time you had sexual intercourse. Did you or your partner use any of the following that first time? (condom, birth control pill, Depo-Provera or Norplant, morning after pill, other)

0 "Respondent reports that no birth control was used at first intercourse"
1 "Respondent reports that birth control was used at first intercourse"

Measure 4: Birth Control Use During the Last 12 Months

6.10 On how many of these occasions of sexual intercourse in the past 12 months did you or your partner use some form of birth control or pregnancy protection?

0 "Respondent reports that birth control was not used on all occasions of sexual intercourse in the past 12 months"
1 "Respondent reports that birth control was used on all occasions of sexual intercourse in the past 12 months"

[4] These questions were asked only of respondents who reported ever having had sex. They were coded as either 0 or missing, as appropriate, for those respondents who did not report having had sex.

POSSIBLE CONSEQUENCES OF TEEN SEXUAL ACTIVITY[5]

Measure 1: Ever Been Pregnant

If respondent is male:

6.14 Have you ever gotten someone pregnant? Be sure to answer yes if your girlfriend is currently pregnant or any past pregnancy ended in a birth, an abortion, a stillbirth, a miscarriage, or a live birth after which the baby died.

0 "Respondent reports that he has never gotten anyone pregnant"
1 "Respondent reports that he has gotten someone pregnant"

If respondent is female:

6.14 Are you pregnant now?

0 "Respondent reports that she is not currently pregnant"
1 "Respondent reports that she is currently pregnant"

6.15 Have you been pregnant in the past?

0 "Respondent reports that she has not been pregnant in the past"
1 "Respondent reports that she has been pregnant in the past"

Measure 2: Ever Had a Baby

If respondent is male:

6.18 How many of these pregnancies resulted in a live birth?

0 "Respondent reports that none of these pregnancies resulted in a live birth"
1 "Respondent reports that one or more of these pregnancies resulted in a live birth"

If respondent is female:

6.16 Have you ever had a baby?

0 "Respondent reports that she has never had a baby"
1 "Respondent reports that she has had a baby"

[5] These questions were asked only of respondents who reported ever having had sex. They were coded as either 0 or missing, as appropriate, for those respondents who did not report having had sex.

Measure 3: Ever Had an STD

6.13 Have you ever been told by a doctor or a nurse that you had any of the following sexually transmitted diseases (STDs)? [STDs listed include chlamydia, syphilis, gonorrhea, HIV or AIDS, genital herpes, and genital warts (or HPV).]

0 "Respondent reports that s/he has never been told by a doctor or nurse that s/he had any of these STDs"
1 "Respondent reports s/he has been told by a doctor or nurse that s/he had one or more of these STDs"

OTHER BEHAVIORAL RISKS

Measure 1: Smoked Cigarettes in the Last Month

4.3 During the past month, have you smoked cigarettes?

0 "Respondent reports that s/he has not smoked cigarettes in the last month"
1 "Respondent reports that s/he has smoked cigarettes in the last month"

Measure 2: Drinks Alcohol at Least Once a Month

4.4a How often in your life have you drunk alcohol, like beer or wine or liquor?[6]

0 "Respondent reports that s/he has drunk alcohol only a few times"
1 "Respondent reports that s/he drinks alcohol one or two times a month"
1 "Respondent reports that s/he drinks alcohol about once a week"
1 "Respondent reports that s/he drinks alcohol a few times a week"

Measure 3: Ever Used Marijuana

4.5 Have you ever used marijuana?

0 "Respondent reports that s/he has never used marijuana"
1 "Respondent reports that s/he has used marijuana"

[6] This question was asked only of respondents who reported ever having drunk alcohol. It was coded as either 0 or missing, as appropriate, for those respondents who did not report having ever drunk alcohol.