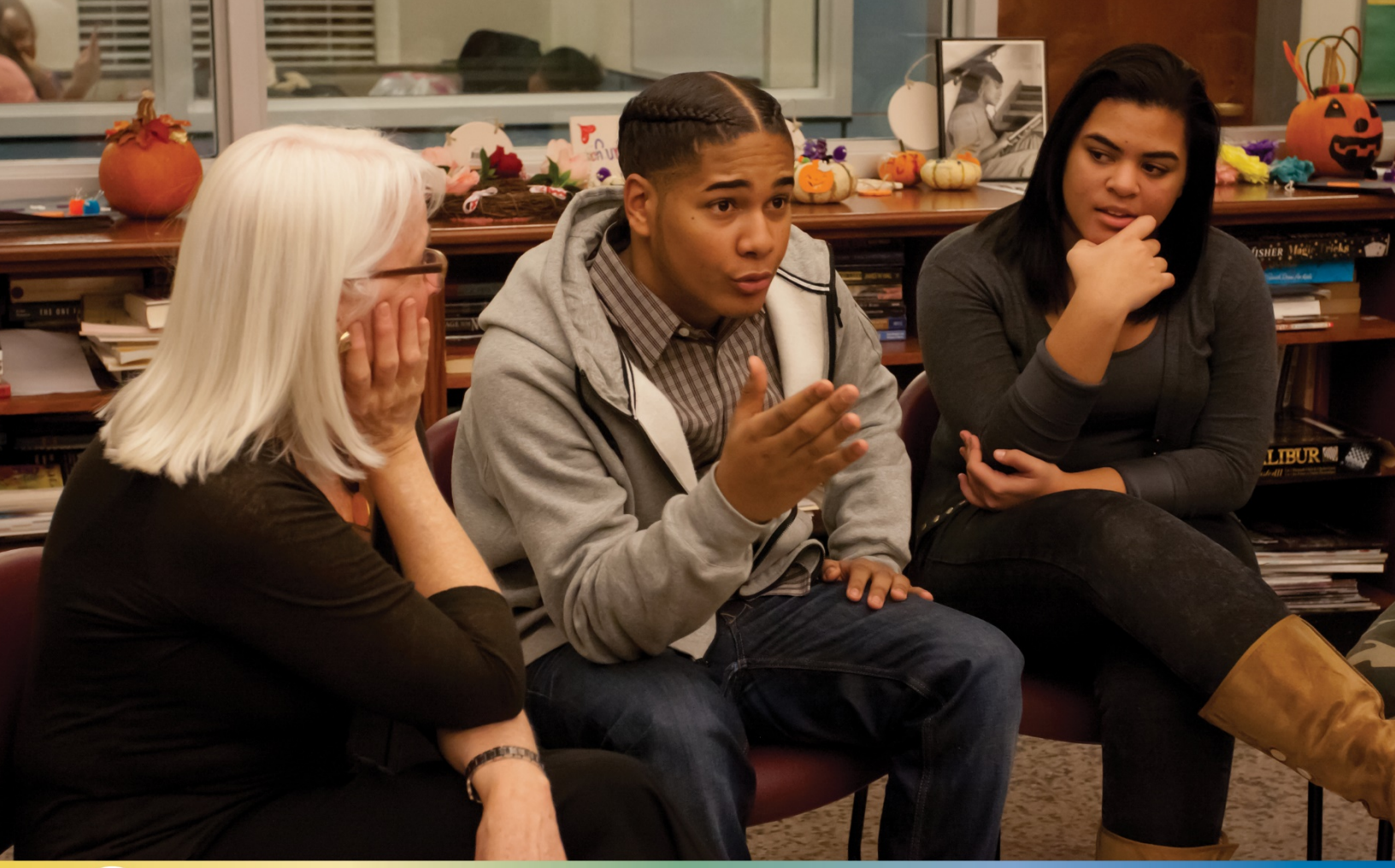

PREP

The Personal Responsibility Education Program Evaluation

Delivering Adolescent Pregnancy Prevention Services to High-Risk Youth:

The Impacts of *Teen Choice* in New York

OPRE Report Number 2019-49

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Delivering Adolescent Pregnancy Prevention Services to High-Risk Youth: The Impacts of *Teen Choice* in New York

April 2019

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OVERVIEW

More than 600,000 youth in the United States attend alternative schools or other specialized education programs for students at risk of academic failure. Many of these youth can be at high risk of teen pregnancy and sexually transmitted infections (STIs). Because alternative schools provide supplemental services to address the specific needs of these youth, these schools often find it difficult to fit pregnancy prevention programming into the regular school day. The result is that youth enrolled in these schools often have limited opportunities to receive sexual health education.

To help expand the available evidence on teen pregnancy prevention services for youth in alternative school settings, the Administration for Children and Families (ACF) within the U.S. Department of Health and Human Services funded Mathematica Policy Research to collaborate with the New York State Department of Health (NYSDOH) on a rigorous evaluation of the *Teen Choice* curriculum. *Teen Choice* is a 12-session adolescent pregnancy prevention curriculum that covers abstinence, contraception, STIs, and healthy relationships through interactive exercises and guided discussions. As part of the study, Inwood House, a New York City–based nonprofit agency that developed the curriculum, delivered *Teen Choice* to high-risk youth in five alternative schools in and around New York City. Inwood House used federal Personal Responsibility Education Program (PREP) funding that it received from NYSDOH to deliver the curriculum. The study is part of a broader national evaluation of PREP that Mathematica is conducting for ACF (Wood et al. 2015).

Mathematica conducted a randomized controlled trial of *Teen Choice*, in which the study team placed youth randomly into either (1) a treatment group offered *Teen Choice* as a voluntary program during the school day or (2) a control group offered the standard school curriculum. Random assignment occurred from 2014 to 2016; the study team enrolled 462 youth into the study. The study relies on data from two surveys: (1) a baseline survey completed at study enrollment and (2) a follow-up survey completed six months after the program ended.

The *Teen Choice* process study documented the challenges Inwood House experienced maintaining regular attendance among program participants (Shapiro et al. 2017). By design, the program enrolled a set of highly at-risk youth with substantial academic and behavior issues. Inwood House worked closely with school staff on strategies to improve attendance at *Teen Choice* sessions; however, poor attendance remained a challenge. Across all study schools, youth enrolled in *Teen Choice* attended 53 percent of the sessions offered.

Despite these low attendance rates, *Teen Choice* improved some outcomes associated with sexual risk behavior. Six months after the program ended, *Teen Choice* had succeeded in increasing support for condom use among youth enrolled in the program, as well as increasing their perceived skills for saying no to sex. The program also reduced the percentage of youth who reported they intended to have sex in the next year. The short follow-up period limits the study's ability to detect effects on sexual risk behaviors and pregnancy. Six months post program, *Teen Choice* had no effect on rates of unprotected sex.

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INTRODUCTION

More than 600,000 youth in the United States attend alternative schools or other specialized education programs for those at risk of academic failure (Carver and Lewis 2010). Many of these youth can be at high risk of teen pregnancy and sexually transmitted infections (STIs) (Carver and Lewis 2010; Coyle et al. 2006, 2013). Because alternative schools provide supplemental services to address the specific needs of these youth, these schools often find it difficult to fit pregnancy prevention programming into the regular school day. The result is that youth enrolled in these schools often have limited opportunities to receive sexual health education (Boehning 2006; Decker et al. 2015).

To help expand the available evidence on teen pregnancy prevention services for youth in alternative school settings, the Administration for Children & Families (ACF) within the U.S. Department of Health and Human Services funded Mathematica Policy Research to collaborate with the New York State Department of Health (NYSDOH) on a rigorous evaluation of the *Teen Choice* curriculum. *Teen Choice* is a 12-session adolescent pregnancy prevention curriculum that covers abstinence, contraception, STIs, and healthy relationships through interactive exercises and guided discussions. As part of the study, Inwood House, a New York City–based nonprofit agency that developed the curriculum, delivered *Teen Choice* to high-risk youth in alternative schools in and around New York City. Inwood House used federal Personal Responsibility Education Program (PREP) funding that it received from NYSDOH to deliver the curriculum. Mathematica conducted a randomized controlled trial of the curriculum, in which the study team placed youth randomly into either a treatment group that was offered *Teen Choice* or a control group that was not. The study is part of a broader national evaluation of PREP that Mathematica is conducting for ACF (Wood et al. 2015).

This report presents evidence on *Teen Choice*'s impacts six months after program completion. It also documents the study methods. An earlier process study report described the design and implementation of the program (Shapiro et al. 2017).

The *Teen Choice* curriculum

Inwood House, which merged with The Children's Village in 2016, provides adolescent pregnancy prevention services to a range of youth populations. The agency has a long history of providing services for vulnerable children and youth in New York City, with its roots going back to the nineteenth century. Inwood House developed *Teen Choice* in the late 1970s in response to a request from the New York City Department of Education to fill a need for additional sex education in New York City public schools. The agency has revised the curriculum over the years and has updated information as needed to maintain medical accuracy. Since its development, more than 100,000 youth in New York and New Jersey have received *Teen Choice.* Despite the widespread use of the program over the past 40 years, there is limited rigorous research on the effectiveness of *Teen Choice*. Inwood House conducted longitudinal studies of participants in New York City and Atlantic County, New Jersey that support evidence of improved outcomes; however, this is the first rigorous study of the program, which compares results for students who received *Teen Choice* with those of a comparison group of students who did not receive the program.

Teen Choice is a 12-lesson curriculum covering a wide range of topics in reproductive health education and adulthood preparation (Table 1). Reproductive health education topics include abstinence and contraception, STIs and HIV/AIDS, and pregnancy options. Inwood House designed the curriculum to be delivered to small groups of students by trained facilitators, who ideally have a degree in social work. The delivery of *Teen Choice* is guided by the "mutual aid" approach, which stresses that youth are best able to retain and use new information by interacting with their peers, in the presence of a trusted adult (Moyse-Steinberg 2014). *Teen Choice* aims to encourage youth to develop trusting relationships with one another and the facilitator and to provide a safe space in which youth can express themselves. During the program's 12 sessions, youth participate in interactive exercises designed to build communication and relationship skills.

Table 1. Overview of *Teen Choice* curriculum

Session	Objectives
1. Introductions, Purpose and Contract	Orient youth to the group, establish mutually agreed-upon rules, and introduce the concept of thinking about what they are learning
2. Values and Trust	Help group members become more aware of their values and reflect on whom or what to trust
3. Communication	Help group members identify elements of and barriers to effective communication
4. Effective Decision Making	Provide group members the opportunity to reflect upon, practice, and improve their decision-making skills
5. Sexuality and Sexual Feelings	Discuss the wide variations in the sexual development of adolescents and help group members understand sexuality includes biological, emotional, behavioral, and cultural factors
6. Taking Care of Ourselves: Reproductive Anatomy and Physiology	Provide information about reproductive anatomy and physiology and the changes that occur during development; help young people to be actively involved in their health care
7. Abstinence and Contraceptives	Provide information on abstinence and all possible contraceptive methods and help group members understand the pros and cons of each method
8. Pregnancy Options	Help group members explore pregnancy options and the decisions teens face when dealing with unplanned pregnancy; identify support systems for teens who need help with unplanned pregnancy
9. STIs and HIV/AIDS	Provide information on STIs and HIV/AIDS; explain prevention, detection, and treatment of these infections
10. Healthy Relationships	Discuss the qualities of healthy relationships and how to recognize abusive relationships
11. Review and Action Plan	Help group members recognize their growth during *Teen Choice* and develop individual action plans
12. Reflections and Closing Ceremony	Reflect on what group members learned and help the group create closure

Source: *Teen Choice* curriculum (Inwood House, 2014).
STIs = sexually transmitted infections.

Teen Choice is designed to be flexible. The facilitator guide includes objectives, activities, discussion prompts, and key messages for each session. To implement with fidelity, facilitators must cover the key messages of each session but can adapt activities and discussions based on the needs and experiences of the group. For instance, in the session on reproductive anatomy and

physiology, facilitators must cover puberty; however, they may choose to lead a more limited discussion of this topic with an older group of youth than they would have with a younger group. The flexible nature of *Teen Choice* enables facilitators to adapt each session to the issues most relevant to the youth in the class. Inwood House considered *Teen Choice* to be particularly well suited for its target population—a mix of younger and older high-risk youth—because facilitators could gauge the experience and knowledge level of each group and adjust planned activities and discussions as needed.

As a final program exercise, *Teen Choice* participants use what they have learned to create a personalized action plan that lists three steps they will take to avoid sexual risk behaviors and maintain healthy relationships. Examples of action plan steps include waiting to have sex, using a condom during sex, and seeing a physician every year for a reproductive health checkup. According to Inwood House staff, the goal of the action plan is to help students internalize the material and skills discussed in the program.

Implementing *Teen Choice* in New York

Inwood House originally planned to provide *Teen Choice* to youth in foster care. When NYSDOH received its PREP grant in 2011, the agency set aside some of the funds to serve foster care youth. The agency made this decision because few programs served this population despite their high rates of sexual risk behaviors (Boonstra 2011). NYSDOH selected Inwood House as a partner in this effort because Inwood House had a long history of providing sexual health education and related services to vulnerable youth. As documented in the implementation report of *Teen Choice* (Shapiro et al. 2017), it proved challenging for Inwood House to recruit a sufficient number of foster care–serving schools for the program and the evaluation. Therefore, the NYSDOH, in conjunction with ACF, broadened the target population for the program and evaluation to include a larger group of vulnerable youth, including runaway or homeless youth, pregnant or parenting youth, youth with emotional or behavioral disorders, and youth with other special education needs (for example, severe learning disabilities or intellectual disabilities). The goal was to serve these youth in alternative schools in the New York City area.

Inwood House implemented *Teen Choice* in five study schools. The schools varied in structure and target population (Table 2). Two schools (schools A and B in Table 2), which ultimately accounted for more than 75 percent of the study sample, are schools in the New York City area serving youth with special needs in residential and day programs. These two schools serve youth in grades 7 to 12 with serious emotional and behavioral issues. The other three schools are New York City public high schools. Two of the schools are high schools serving youth who are substantially behind grade level. These two schools account for 10 percent of the study sample. The last school, accounting for 14 percent of the study sample, is a high school serving substantial numbers of youth with special education needs. In this school, only youth who received special education services or those who were pregnant, parenting, or in foster care were eligible for the study.

Table 2. The five *Teen Choice* study schools

School	Description and study sample
School A	A private alternative school located in Yonkers, serving youth in grades 7–12 from New York City, Long Island, and Westchester County. Among the day and residential youth the school serves, 188 youth with serious emotional and behavioral issues participated in the evaluation.
School B	A public alternative school located in Westchester County, serving youth in grades 7–12 from New York City and Westchester County. Among the day and residential youth the school serves, 169 youth with serious emotional and behavioral issues participated in the evaluation.
School C	A public alternative school located in the Bronx, serving youth in grades 9–12 in Bronx County. Among the youth the school serves, 28 youth who were at least two years behind in their credit accumulation participated in the evaluation.
School D	A public alternative school located in Brooklyn, serving youth in grades 9–12 in Kings County. Among the youth the school serves, 17 over-age youth behind in their credit accumulation—who were homeless, runaways, in foster care, or involved in the court system—participated in the evaluation.
School E	A public school located in Queens, serving youth in grades 9–12 in select Queens County neighborhoods. Among the youth the school serves, 63 youth with special needs participated in the evaluation.

Source: Evaluation data and school staff.

Inwood House tailored the implementation schedule and logistics for each school. Sessions were either incorporated as electives in the school schedule or were pull-out sessions from either core or noncore classes. The frequency of scheduled sessions and the class length varied across schools and sometimes within schools, depending on the round of implementation. For instance, *Teen Choice* groups met more times per week during summer school sessions than during the other semesters. The meeting frequency ranged from once a week for 12 weeks to 3 times a week for 4 weeks during a single class period that ranged from 40 to 60 minutes. In all schools, one Inwood House facilitator implemented *Teen Choice* in small groups of 6 to 12 youth. For some groups, a second facilitator assisted to help maintain order in the classroom.

Teen Choice was implemented as a voluntary supplement to the sex education these students received through their regular school curricula. Both treatment and control students in all study schools likely received some modest exposure to other health and sex education topics as part of the school curriculum. One of the two largest study schools did not provide any standard abstinence and contraceptive instruction. Other study schools provided some abstinence and contraceptive education, typically integrated into a one-semester health class covering content mandated by the city or state and offered in 9th or 10th grade. On baseline surveys completed when youth enrolled in the study, 37 percent reported receiving instruction on STIs during the previous year, while 27 percent reported receiving instruction on contraception and 17 percent reported receiving instruction on abstinence during this period (Shapiro et al. 2017).

Evaluation design

To test the effectiveness of *Teen Choice*, the study team used a random assignment research design. The study team randomly assigned each eligible, consented student to one of two research groups: (1) a treatment group offered the chance to participate in *Teen Choice* as a voluntary elective program during the regular school day or (2) a control group offered the standard school curriculum without *Teen Choice*. This research design ensures that differences in

the outcomes between youth in the treatment and control groups represent unbiased estimates of the program's impacts.

Recruitment for the study occurred over a three-year period, beginning in the spring of the 2013–2014 academic year and continuing through the fall of the 2016–2017 academic year. The study team worked with school staff to identify youth who would be interested and appropriate for this voluntary program. School staff screened out youth who they considered to be a poor fit for the program (for example, due to a past trauma) or the evaluation (due to poor reading skills that would have made it difficult for them to complete baseline and follow-up surveys). Staff also screened out youth who seemed unlikely to complete the program because of a history of poor school attendance or because they were likely to leave the school before they could complete the program. Evaluation and school staff worked to collect parental and guardian consents for eligible youth. The study team then randomly assigned eligible, consented youth to either the *Teen Choice* group or the control group. Depending on the school's enrollment and recruitment success, the study team conducted random assignment once or twice per academic year. The Technical Appendix provides more detail about the recruitment and random assignment process.

When the *Teen Choice* evaluation began, Inwood House and the study team set a goal of enrolling 750 youth into the study. As described in the implementation report (Shapiro et al. 2017), recruiting schools for the evaluation proved challenging. A relatively small number of schools primarily serve the high-risk youth populations that Inwood House targeted for the *Teen Choice* intervention. In addition, given the many needs of the youth, there were often competing priorities for students' time during the school day. Crowded student schedules made administrators in these schools reluctant to commit time for delivering adolescent pregnancy prevention services. In addition, after Inwood House recruited schools, various factors made it difficult to enroll large numbers of students into the study. It is often hard to enroll youth in voluntary programs; however, the nature of the sample—largely youth with serious emotional and behavioral issues—made it more challenging to drum up interest in this optional program and get youth to return consent forms. Because of these challenges, Inwood House and the study team were able to enroll only 462 youth after almost three years. This smaller sample size meant that impacts had to be approximately 25 percent larger to be statistically significant than they would have had to be if the original target sample size of 750 had been achieved.[1] Therefore, the ability of the study to detect program effects is more limited than was initially intended.

The study uses data collected from two surveys: (1) a self-administered baseline survey completed when youth enrolled in the study and (2) a follow-up survey completed six months after the program ended. Study youth completed baseline surveys and most follow-up surveys as part of group administrations at the five study schools. Some youth who could not complete the follow-up survey in school completed the survey by telephone. In total, 378 youth (213 *Teen Choice* youth and 165 control group youth) completed the follow-up survey, for an 82 percent

[1] The study team selected the target sample size of 750 youth to be able to detect impacts of 8 percentage points, with 80 percent power, on the study's confirmatory outcomes measuring incidence of sexual risk behavior. With a sample of 462 youth, the study can detect impacts of 10 percentage points on these outcomes with 80 percent power.

completion rate. Response rates were similar for the two research groups. The Technical Appendix presents additional detail on survey response rates and methodology.

Before conducting the analysis, the study team selected 19 primary outcome measures spanning seven domains for the impact analysis (Table 3). These choices were informed by the program's curriculum and logic model (Shapiro et al. 2017). The domains include (1) access to reproductive health care (eight measures); (2) knowledge of contraception and STIs (one measure); (3) communication skills (one measure); (4) attitudes toward healthy romantic relationships (two measures); (5) attitudes toward abstinence and contraceptives (three measures); (6) decision making regarding sexual intercourse (two measures); and (7) sexual risk behavior (two measures). The study team selected two of these primary measures, the two measures within the sexual risk behavior domain, as the study's confirmatory outcomes: (1) having had vaginal, oral, or anal sex without a condom in the past three months; and (2) having had vaginal sex without any effective contraception in the past three months. These measures assess whether youth engaged in behavior that put them at risk of STIs and pregnancy, respectively. Impacts on these outcomes represent the main test of *Teen Choice*'s success in achieving its central goal.[2]

With one exception, all outcomes were available for the analytic sample of 378 youth who completed follow-up surveys. The exception was the confirmatory measure indicating whether the sample member had vaginal, oral, or anal sex without a condom in the three months before the follow-up survey. Because of objections by school administrators, follow-up surveys for one school did not include questions concerning anal sex. Therefore, the measure of any sexual activity without a condom is available for only the 265 youth in the analytic sample enrolled in the other four study schools.[3]

Table 3. Outcome measures

Domain and outcome	Definition
Access to reproductive health care	
Number of classes or sessions on reproductive health topics	Series of five continuous variables indicating the number of classes or sessions attended on each of five reproductive health topics; response options range from never to 10 or more times in the past 12 months.
Received information from a doctor, nurse, or clinic	Series of two binary variables: equals 1 if student reported receiving information on one of two reproductive health topics from a doctor, nurse, or clinic; equals 0 if student did not receive such information in the past 12 months.
Received contraceptive from a doctor, nurse, or clinic	Binary variable: equals 1 if student reported receiving any type of birth control, such as condoms, pills, the shot, an implant, the ring, and so on from a doctor, nurse, or clinic in the past 12 months; equals 0 if student reported not receiving any type of birth control.

[2] The team also selected a small set of secondary measures to examine as part of the impact analysis. Impacts on these secondary measures are reported in the Technical Appendix (Table A.8).

[3] In this report, "any sexual activity" refers to vaginal, oral, or anal sex.

Domain and outcome	Definition
Knowledge of contraception and STIs	
Knowledge of contraceptive effectiveness and transmission of sexually transmitted infections	Continuous index variable: sum of correct responses to eight knowledge questions—for example, "If condoms are used correctly and consistently, how much can they decrease the risk of pregnancy?" and "Can a woman give HIV to a man if they are having sexual intercourse without a condom?"; questions adapted from Goldstein et al. (2010) and Trenholm et al. (2007); values range from 0 to 8, with higher values indicating greater knowledge.
Communication skills	
Perceived conflict management ability	Multiple-item continuous scale variable: average of responses to five survey questions on which students rated their ability to manage conflict by doing things such as "admit that you might be wrong during a disagreement," "avoid saying things that could turn a disagreement into a big fight," and "accept another person's point of view even if you don't agree with it;" questions were adapted from Buhrmester et al. (1998); values on the scale range from 1 to 4, with higher values indicating greater perceived communication skills when involved in a disagreement with another person ($\alpha = 0.77$).
Attitudes toward healthy romantic relationships	
Disapproval of dating violence	Single-item scale variable indicating the level of agreement with the statement: "There are times when hitting or pushing between people who are dating is okay." The variable ranges from 1 to 4, with higher numbers reflecting less agreement with the statement.
Support for compromise in a romantic relationship	Single-item scale variable indicating the level of agreement with the statement: "In a good dating relationship, you don't always get your own way." The variable ranges from 1 to 4, with higher numbers reflecting more agreement with the statement.
Attitudes toward abstinence and contraceptives	
General support for abstinence	Single-item scale variable indicating the level of agreement with the statement: "Having sex is a good thing for you to do at your age." The variable ranges from 1 to 4, with higher numbers reflecting less agreement with the statement.
Support for abstinence for safety and health	Single-item scale variable indicating the level of agreement with the statement: "At your age right now, not having sex is important for you to be safe and healthy." The variable ranges from 1 to 4, with higher numbers reflecting more agreement with the statement.
Support for condom use	Continuous scale variable: average of responses to two survey questions that asked students to report their level of agreement with the following two statements: "Condoms should always be used if a person your age has sex" and "Condoms are important to make sex safer;" questions were adapted from Smith et al. (2012); values on the scale range from 1 to 5, with higher values indicating greater support for condom use among sexually active youth ($\alpha = 0.76$).
Decision making regarding sexual intercourse	
Intentions to have sexual intercourse	Binary variable: equals 1 if student reported intentions to have sexual intercourse in the next year; equals 0 if student did not report intentions to have sexual intercourse in the next year.
Perceived refusal skills	Continuous scale variable: average of responses to five survey questions; variable ranges from 1 to 5, with higher values indicating greater perceived refusal skills when facing pressure to have sexual intercourse (five items, $\alpha = 0.76$).
Sexual risk behavior	
Had any sex without a condom in past three months[a]	Binary variable: equals 1 if student reported having had vaginal, oral, or anal sex without a condom in the past three months; equals 0 if student reported not having had vaginal, oral, or anal sex or always using a condom.
Had sexual intercourse without any effective contraceptive method in past three months[a]	Binary variable: equals 1 if student reported having had vaginal sex without any effective contraceptive method in the past three months; equals 0 if student reported not having had vaginal sex or always using an effective contraceptive method.

Note: The alpha coefficients were calculated for the 378 youth who completed the follow-up survey.

[a] Confirmatory outcome.

Student characteristics

Teen Choice study participants are a diverse set of youth reflective of the student populations of the five study schools. Because two study schools served both middle and high school youth, the age of the youth ranged from 12 to 19 years old (Table 4). The median age was 16 (not shown). Fifty-seven percent of participants were male. Nearly a quarter of the youth (23 percent) identified as lesbian, gay, bisexual, transgender, or questioning, considerably higher than the national average (15 percent) for high school age youth (Kann et al. 2018).

Study youth reported relatively limited exposure to information on reproductive health topics. At study enrollment, 37 percent reported having had a class on STIs in the past 12 months. Fewer reported having had a class discussing birth control methods (27 percent) or abstinence (17 percent) during this period. Study participants also had limited knowledge about the effectiveness of contraceptives. When asked a series of questions on the baseline survey about the effectiveness of condoms and birth control pills in reducing the risk of pregnancy and HIV, fewer than half answered the questions correctly.

Table 4. Student characteristics at baseline

Measure	Percentage
Demographics	
Age	
12 to 14	29
15 to 16	40
17 to 18	27
19	4
Race/ethnicity	
White, non-Hispanic	6
African American, non-Hispanic	30
Hispanic	55
Other	8
Male	57
Gay, lesbian, bisexual, transgender, or questioning	23
Information and knowledge	
Attended a class in the prior year on:	
Sexually transmitted infections (STIs)	37
Abstinence	17
Relationships, dating, or marriage	23
Methods of birth control	27
Where to get birth control	20

Measure	Percentage
Correctly answered knowledge question on:	
Condoms and risk of pregnancy	45
Condoms and risk of getting HIV	37
Birth control pills and risk of pregnancy	39
Birth control pills and risk of getting HIV	39
Oral sex and risk of STIs	58
Romantic relationships and risk behaviors	
Currently in a dating relationship	52
Ever had sexual intercourse	53
Had sexual intercourse in past three months	35
Had sexual intercourse without contraception in past three months[a]	12
Had any sex without a condom in past three months[a]	30
Sample size	**462**

Source: Baseline survey administered spring 2014 through fall 2016.

[a] Confirmatory outcome.

Study youth reported high rates of risky sexual behavior. At study enrollment, 53 percent reported ever having sexual intercourse. Even though roughly one-quarter of the sample was in middle school, this rate of sexual initiation is above the national average of 40 percent for high school age youth (Kann et al. 2018). On baseline surveys, 12 percent of study youth reported having had sexual intercourse in the past three months without using contraception. A higher proportion, 30 percent, had had any sex without a condom in the past three months.

Program implementation

The *Teen Choice* process study found that the four Inwood House facilitators generally adhered to their implementation plan and implemented the program with fidelity (Shapiro et al. 2017). Across the five study schools, program staff implemented the full program a total of 32 times to classes ranging from 6 to 12 students. Program staff reported liking the flexibility of the *Teen Choice* curriculum, as well as its mutual aid approach. Facilitators indicated that, in their view, the mutual aid approach used in *Teen Choice* helped students develop trusting relationships with one another and ultimately helped them identify with and retain the program's messages. During sessions observed by study team members, youth were generally engaged and willing to participate in group discussions.

By design, the youth that Inwood House targeted for *Teen Choice* had substantial academic and behavioral issues, which included poor school attendance. To address this challenge, Inwood House worked with school staff to develop and implement strategies to improve attendance at *Teen Choice* sessions. When possible, they avoided scheduling classes at the beginning or end of the school day, when class attendance was poorest. Facilitators enlisted teachers, counselors, and peers to remind group members to attend scheduled sessions. They also provided snacks during program sessions and gift cards for regular program attendance, strategies they viewed as particularly useful.

Despite these efforts, poor attendance remained a challenge throughout the study period. Across all study schools, youth enrolled in *Teen Choice* attended 53 percent of the sessions offered. Program staff indicated that being absent from school was the most common reason for students to miss a *Teen Choice* session; average daily attendance rates at the two largest study schools was about 75 percent (Shapiro et al. 2017). Other required school obligations, such as testing or supplemental services required for their individualized education plans, also pulled youth from *Teen Choice* sessions. In some cases, poor attendance caused the number of students in a particular session to be quite small, making it difficult to encourage the positive peer interactions central to *Teen Choice*'s mutual aid approach.

Despite the lack of attendance, youth who attended reported enjoying the program. Youth in focus groups reported that the program was important and relevant to their lives. They also reported that *Teen Choice* helped to increase their knowledge about sexuality, contraception, and STIs. For instance, one focus group participant said, "I like this group a lot. A lot of kids think they know everything about sex. You come in this class at first and are like, 'Oh, I know everything' and towards the end, you are like, 'Wow, I really did not know that.' So I really learned a lot from it."

Program impacts

Teen Choice aims to help youth reduce their risk of pregnancy and STIs. To that end, the program provides information on abstinence, contraception, communication skills, healthy relationships, and other topics. This section presents the program's effects six months after participants completed the program. It examines impacts on their exposure to information, knowledge, attitudes, and perceived skills. It also examines impacts on their sexual risk behaviors. The Technical Appendix provides additional impact estimates for secondary outcomes and subgroups.

Teen Choice increased students' exposure to information on romantic relationships, birth control, and STIs.

On the follow-up survey, control group youth reported attending, on average, one or two classes in the past year on each of the following five topics: relationships, dating, or marriage; abstinence from sex; methods of birth control; where to get birth control; and STIs (Table 5). *Teen Choice* youth reported attending about one additional class on four of these five topics (all but abstinence). Youth in the two research groups were equally likely to have received information on contraception or STIs from a health professional in the past year, about half of each group. The two groups were also equally likely to report having received contraception from a health professional during this period, about a quarter of each group.

Table 5. *Teen Choice's* impacts on exposure to information

Measure	*Teen Choice* group	Control group	Impact	Effect size
Number of classes attended in the prior year on:				
Relationships, dating, or marriage	2.5	1.5	1.0*	0.27
Abstinence from sex	2.2	1.6	0.6	0.16

Measure	*Teen Choice* group	Control group	Impact	Effect size
Methods of birth control	2.9	2.0	0.9*	0.23
Where to get birth control	2.5	1.2	1.3**	0.41
Sexually transmitted infections (STIs)	3.3	2.4	0.9+	0.21
Received information in the prior year from a doctor, nurse, or clinic on:				
Methods of birth control (%)	53	53	0	0.00
Where to get birth control (%)	46	43	3	0.06
STIs (%)	50	46	3	0.07
Received contraceptives in the prior year from a doctor, nurse, or clinic (%)	27	25	2	0.05
Sample size	**213**	**165**		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Teen Choice* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

***Teen Choice* did not improve knowledge of STIs and contraception; it did, however, increase support for condom use and reduce intentions to have sex; it also increased the youth's perceived ability to say no to sex.**

Teen Choice did not increase participants' knowledge of the effectiveness of contraception and the transmission of STIs. Six months after program completion, youth in both the *Teen Choice* and control groups answered, on average, four of eight questions on these subjects correctly (Table 6). Similarly, *Teen Choice* had no measurable effect on attitudes toward abstinence six months after program completion.

Table 6. *Teen Choice's* impacts on knowledge, attitudes, intentions, and refusal skills

Measure	*Teen Choice* group	Control group	Impact	Effect size
Knowledge of contraception and STIs (range: 0 to 8)	3.97	3.96	0.01	0.00
General support for abstinence (range: 1 to 4)	2.35	2.32	0.02	0.03
Support for abstinence for safety/health (range: 1 to 4)	2.87	2.78	0.10	0.11
Support for condom use (range: 1 to 5)	4.45	4.32	0.14+	0.15
Intentions to have sexual intercourse (%)	57	66	−9+	−0.18
Perceived refusal skills (range: 1 to 5)	2.72	2.55	0.17+	0.18
Sample size	**213**	**165**		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Teen Choice* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Teen Choice increased the degree to which participants endorsed condom use for sexually active youth. The impact on the scale score measuring support for condom use is statistically significant at the 0.10 level (Table 6). Similarly, *Teen Choice* reduced the youth's intentions to have sex. Six months after program completion, 57 percent of *Teen Choice* youth indicated they planned to have sexual intercourse in the next year if they had the chance, compared with 66 percent of control group youth, a difference that is statistically significant at the 0.10 level. *Teen Choice* also increased the youth's perceptions of their ability to say no to sex. The average refusal skills score is 2.72 on a 1-to-5 scale for *Teen Choice* youth, compared with a score of 2.55 for control group youth, a difference that is statistically significant at the 0.10 level.

Teen Choice did not improve perceived conflict management skills or attitudes toward healthy relationships. The average scores on the four-point perceived conflict management scale were similar for the two research groups (Table 7). Youth in both research groups were also similarly likely to disapprove of dating violence and support compromise in a romantic relationship.

Table 7. Impacts of *Teen Choice* on conflict management and relationship attitudes

Measure	*Teen Choice* group	Control group	Impact	Effect size
Perceived conflict management ability (range: 1 to 4)	2.33	2.43	−0.10	−0.13
Disapproval of dating violence (range: 1 to 4)	3.40	3.42	−0.02	−0.03
Support for compromise in a romantic relationship (range: 1 to 4)	3.06	2.96	0.10	0.12
Sample size	**213**	**165**		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Teen Choice* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Teen Choice did not reduce rates of unprotected sex during the study follow-up period.

Youth in the *Teen Choice* and control groups were equally likely to report recent unprotected sex six months after the program ended. At this point, 12 percent of both research groups reported having had sexual intercourse without using birth control in the past three months (Table 8). Similarly, at follow-up, 32 percent of both groups reported having vaginal, oral, or anal sex without a condom in the past three months. As noted earlier, because of objections by school administrators, follow-up surveys for one school did not include questions concerning anal sex. Therefore, this last analysis is based on data only for the four other study schools.[4]

[4] Exploratory analysis suggests that the impact on this measure would have been similar if all five study schools could have been included in this analysis. See the Technical Appendix for more details.

Table 8. Impacts of *Teen Choice* on sexual risk behavior

Measure	*Teen Choice* group	Control group	Impact	Effect size
Had sexual intercourse without contraception in past three months	12	12	1	0.02
Had any sex without a condom in past three months[a]	32	32	0	−0.01
Sample size	**213**	**165**		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled *Teen Choice* group and Control group are regression-adjusted predicted values.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

[a] Youth in one school were not asked about anal sex. The estimates are based on 148 *Teen Choice* youth and 117 control youth at the other schools for whom the study team was able to construct this measure.

Discussion

This study examines the effects of *Teen Choice*, an adolescent pregnancy prevention program delivered to highly at-risk youth enrolled in alternative schools in and around New York City. The five study schools serve students with emotional, behavioral, and academic challenges. The study provides an important opportunity to examine strategies to deliver pregnancy prevention services to youth enrolled in alternative schools, an underserved population that can be at high risk for teen pregnancy. It also represents the first rigorous study on the effectiveness of *Teen Choice*. The 12-session curriculum covers abstinence, contraception, STIs, and healthy relationships through interactive exercises and guided discussions. Inwood House, a nonprofit agency that developed the curriculum, implemented the program in the five study schools.

The *Teen Choice* process study documented the challenges Inwood House experienced recruiting students for the program and maintaining their regular attendance (Shapiro et al. 2017). By design, the program enrolled a set of highly at-risk youth. Two-thirds had been suspended or expelled from school at some point before study enrollment; more than a third had been suspended three or more times. In light of the substantial academic and behavioral issues among the students served, Inwood House worked with school staff to develop and implement strategies to improve attendance at *Teen Choice* sessions. Despite these efforts, poor attendance remained a challenge. Across all study schools, youth enrolled in *Teen Choice* attended 53 percent of the sessions offered. Inwood House's experience delivering *Teen Choice* suggests that maintaining regular attendance is likely to be a challenge for other pregnancy prevention programs that serve such high-risk youth in similar school settings. In addition, many youth in the control group received similar information from other sources. About half of both research groups reported receiving information in the past year from a health professional on contraception and STIs. This high level of exposure among control group youth may have limited program effects.

Despite low attendance rates and the control group's exposure to some similar information, *Teen Choice* improved some outcomes associated with sexual risk behavior. Six months after the program ended, *Teen Choice* had succeeded in increasing support for condom use among youth enrolled in the program, as well as increasing their perceived skills for saying no to sex. The program also reduced the percentage of youth who reported they intended to have sex in the next

year. Even so, six months post program, *Teen Choice* did not succeed in reducing rates of unprotected sex. At the end of the follow-up period, the percentage of youth reporting having recently had sexual intercourse without birth control or recently having any sex without a condom were similar in the two research groups.

The *Teen Choice* study has two important limitations. First, because of difficulty enrolling schools and students for the evaluation, the research sample was smaller than intended (Shapiro et al. 2018). After almost three years, Inwood House recruited 462 youth across five study schools, considerably below the study enrollment target of 750 set at the outset of the study. This relatively small research sample limits the ability to detect program impacts. In addition, because of the small sample size, the impacts the study did detect were generally statistically significant only at the 0.10 level. Second, the follow-up period for the study was relatively short—only six months post program. The *Teen Choice* study originally included a second follow-up to be conducted two years after youth enrolled in the study. However, because of delays created by the program's difficulties with achieving study enrollment targets, ACF and the evaluation team decided not to conduct a second follow-up survey. Therefore, the study cannot examine the program's longer-term impacts on sexual risk behaviors. Given *Teen Choice's* positive short-term effects on support for condom use, perceived refusal skills, and reduced intentions to have sex, it seems possible that impacts on sexual risk behaviors or pregnancy could emerge over time.

Youth in alternative schools are at high risk of pregnancy and STIs (Coyle et al. 2006, 2013). To date, little rigorous research has been done on providing pregnancy prevention programming to youth in alternative school settings. This study provides useful initial evidence on a promising approach for delivering these services. Additional research will be needed to determine the long-term effects of *Teen Choice* and other pregnancy prevention programs for youth in alternative schools.

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TECHNICAL APPENDIX

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This appendix is a technical supplement to the evaluation of *Teen Choice* in New York, conducted as part of the Personal Responsibility Education Program (PREP) Multi-Component Evaluation. It contains additional detail on the evaluation's design, methods, and findings. The first section describes the randomization procedures and the characteristics of the randomized groups. The second section describes the survey administration procedures and consent and response rates. The fourth and fifth sections describe the outcome measures and analytic methods. The last section presents impact findings for key subgroups and for secondary outcomes.

Random assignment

For the evaluation of *Teen Choice*, the study team randomly assigned youth to a treatment group that was offered *Teen Choice* or a control group that was not. Both groups received the regular abstinence and contraceptive education at their schools. Because youth were randomized, any differences between the treatment and control groups are due to random chance, and the differences in youth outcomes may be rigorously attributed to *Teen Choice*.

The study team conducted random assignment within groups, or "blocks," of youth. The study team randomized youth in each of the five study schools over three years, starting with the spring of the 2013–2014 academic year and continuing through the fall of the 2016–2017 academic year. In each school, random assignment was conducted once or twice per academic year. To decrease the likelihood of chance differences between the treatment and control groups, the study team constructed groups of youth by gender and, when there was sufficient sample size, by similar age. This process created 59 separate blocks of youth. The team then conducted random assignment within these groups. Relative to a random assignment process without any blocking, this evaluation design reduced the likelihood that the treatment and control groups would have chance differences related to age or gender. However, because youth were randomly assigned within a school, there is some risk of contamination or spillover from youth interacting with each other. This potential contamination within a school lessens the chance of detecting true effects of the program relative to a design without contamination or where large numbers of schools are randomized (a design that was not feasible for this program implementation).

The random assignment procedure created research groups that were similar to each other at baseline on over 40 variables measuring key characteristics, our confirmatory outcome measures, and most primary and secondary outcomes (Table A.1). However, there were statistically significant differences at baseline on two primary outcome measures (perceived conflict management ability, intentions to have sex) and one secondary outcome measure (sexual initiation). At baseline, *Teen Choice* youth had higher perceived conflict management ability, were more likely to intend to have sexual intercourse in the next 12 months, and were more likely to have had sexual intercourse previously. The groups had similar values on all other outcomes examined in this report.

To assess the importance of the few significant baseline differences for the impact findings, the study team reviewed the randomization protocols, implementation data, and considered the similarities of the groups on other baseline measures, including age, other measures of sexual behavior, and nonsexual risk behaviors. The team determined that the differences were likely due to chance because there was no evidence that the random assignment was compromised or that

these differences were part of a larger pattern. As described in more detail below, the study team controlled for race, baseline sexual initiation, and the baseline outcome measure in all impact analyses to improve precision. The analysis does not control for intentions because baseline sexual initiation and intentions are strongly correlated (r = 0.54).

Table A.1. Characteristics for the full student sample at baseline

Measure	*Teen Choice* youth	Control youth	Difference
Demographics			
Age (%)			
12 to 14	30	29	1
15 to 16	38	41	−3
17 to 18	29	26	3
19	3	4	−1
Race/ethnicity (%)			
White, non-Hispanic	8	5	3
African American, non-Hispanic	31	30	2
Hispanic	52	58	−6
Other	10	8	2
Male (%)	57	57	0
Gay, lesbian, bisexual, transgender, or questioning (%)	24	24	−1
Information, knowledge, communication skills, and healthy romantic relationships			
Attended a class in the prior year on (%):			
Sexually transmitted infections (STIs)	39	34	6
Abstinence	18	16	2
Relationships, dating, or marriage	24	24	1
Methods of birth control	27	28	−1
Where to get birth control	22	18	4
Correctly answered knowledge question on (%):			
Condoms and risk of pregnancy	46	42	4
Condoms and risk of HIV	37	37	0
Birth control pills and risk of pregnancy	40	37	3
Birth control pills and risk of getting HIV	38	38	0
Oral sex and risk of STIs	59	58	1
Perceived conflict management ability scale (range: 1 to 4)	2.49	2.30	0.19**
Disapproval of dating violence (range: 1 to 4)	3.30	3.30	0.00
Support for compromise in a romantic relationship (range: 1 to 4)	2.90	2.89	0.02
Attitudes toward abstinence and contraceptives and decision making regarding sexual intercourse			
Support for condom use scale (range: 1 to 5)	4.45	4.39	0.06
Intentions to have sexual intercourse (%)	63	53	10*
Perceived refusal skills (range: 1 to 5)	2.45	2.42	0.02

Measure	*Teen Choice* youth	Control youth	Difference
Romantic relationships and risk behaviors			
Currently in a dating relationship (%)	51	55	−4
Ever had sexual intercourse (%)	58	47	11*
Had sexual intercourse in past three months (%)	38	32	6
Had sexual intercourse without contraception in past three months (%)	12	10	2
Had any sex without a condom in past three months[a] (%)	29	32	−3
Sample size	**260**	**202**	

Source: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a baseline survey. The estimates account for blocked randomization. Confirmatory outcome measures are bolded.

[a] Youth in one school were not asked about anal sex. This estimate is based on youth at the other schools who were asked about anal sex and for whom the study team was able to construct this measure.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Consent and survey response

Enrolling large numbers of youth from study schools proved challenging. The two largest study schools experienced a decline in student enrollment during the study period, which slowed the pace of study enrollment from these schools. Further, these two alternative schools served both residential and day youth. Because youth were still in school, the study team needed to obtain parental consent and youth assent. Obtaining parental consent forms for residential youth was particularly challenging, as staff could not easily send forms home with them. In these two schools, the evaluation team mailed consent forms home to parents and obtained parental consent over the telephone, which alleviated this problem somewhat. At all study schools, some parents did not have strong relationships with the schools, adding to the challenge of obtaining consent. Staff from the schools with residential and day programs noted that some families are not involved with the schools and some youth have limited contact with families. In some cases, youth had strained relations or limited contact with their families, further complicating the consent-gathering process.

The study team designed the self-administered baseline and follow-up surveys to capture a broad range of demographic characteristics, personal characteristics, attitudes, and behaviors. The study team drew most of the questions from established surveys such as the National Longitudinal Study of Adolescent Health, the National Survey of Family Growth, and the Youth Risk Behavior Survey. The baseline and follow-up survey instruments were similar, so baseline measures are available for most outcomes. The instruments were identical across schools except for questions related to anal sex. Because of objections from school staff, we were unable to gather information on incidence of anal sex in one study school representing 14 percent of the research sample. Therefore, all measures that relate to anal sex are missing for one school.

The study team achieved high survey response rates among the full sample of students providing consent and for the four study schools where youth were asked about anal sex (Table A.2). Across all schools, 723 youth returned consent forms for this voluntary program, and 660 youth (91 percent) provided consent for the study. School staff deemed 167 of these students

were not eligible for the study or program. They screened out youth who were not developmentally or emotionally ready for the *Teen Choice* program or who had chronic attendance issues. The study team randomly assigned the remaining 493 youth (278 *Teen Choice* and 215 control); however 28 (16 *Teen Choice* and 12 control) of those youth were deemed ineligible after random assignment because they left the school before the program started, yielding a *Teen Choice* group of 262 youth and a control group of 203 youth. Baseline surveys were completed by 462 youth. Eighty-two percent of these youth in the treatment and control groups also completed the six-month post-program follow-up survey. The response rates for the treatment and control groups were similar in the subset of schools where youth were asked about anal sex, which is our sample for the second confirmatory outcome of having any sex without a condom in the past three months.

Table A.2. Survey response rates

Measure	*Teen Choice* group	Control group	Total
All schools			
Number of youth:			
Randomly assigned	262	203	465
Completed baseline survey	260	202	462
Completed follow-up survey	213	165	378
Baseline survey response rate (% of randomly assigned youth)	99	100	99
Follow-up survey response rate (% of baseline survey respondents)	82	82	82
Schools where youth were asked about anal sex			
Number of youth:			
Randomly assigned	227	175	402
Completed baseline survey	225	174	399
Completed follow-up survey	183	143	326
Baseline survey response rate (% of randomly assigned youth)	99	99	99
Follow-up survey response rate (% of baseline survey respondents)	81	82	82

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The first panel represents the analytic sample for the confirmatory outcome of having sexual intercourse without contraception in the past three months. The second panel represents the analytic sample for the confirmatory outcome of having any sex without a condom in the past three months.

The evaluation bases its analyses on youth who responded to the follow-up survey and had data on the outcome measure. To assess whether nonresponse to the follow-up survey materially affects the similarity of the treatment and control groups in the evaluation's analyses, the study team compared baseline characteristics of the analytic samples for the evaluation's two confirmatory outcomes (Tables A.3, A.4). As described in the main text, the confirmatory outcomes were (1) had sexual intercourse without contraception in the past three months and (2) had any sex without a condom in the past three months. The second confirmatory outcome is only available in the four schools where youth were asked about anal sex.

The study team found that nonresponse did not systematically increase differences between the treatment and control groups in the analytic samples for the confirmatory outcomes. The treatment and control groups in the analytic sample for sexual intercourse without contraception

were similar on most characteristics. As with the full sample, only three variables had statistically significant differences at the 10 percent level: perceived conflict management ability, intentions to have sexual intercourse, and sexual initiation. The direction and magnitude of these differences were similar to those for the full sample. In the analytic sample for any sex without a condom, the study team found that only the difference in perceived conflict management ability was statistically significant. One variable with low prevalence had a difference that was significant at the 10 percent level; youth in the treatment group were more likely to be non-Hispanic white than youth in the control group for this analytic sample. Race indicators are included as controls in all impact analyses.

Table A.3. Baseline characteristics for analytic sample estimating impacts on sexual intercourse without contraception in the past three months

Measure	*Teen Choice* youth	Control youth	Difference
Demographics			
Age (%)			
12 to 14	34	34	0
15 to 16	39	43	−4
17 to 18	24	18	6
19	3	5	−1
Race/ethnicity (%)			
White, non-Hispanic	6	5	2
African American, non-Hispanic	31	28	3
Hispanic	54	59	−5
Other	8	9	−1
Male (%)	56	56	0
Gay, lesbian, bisexual, transgender, or questioning (%)	27	23	4
Information, knowledge, communication skills, and healthy romantic relationships			
Attended a class in the prior year on (%):			
Sexually transmitted infections (STIs)	40	36	4
Abstinence	19	18	1
Relationships, dating, or marriage	26	26	1
Methods of birth control	25	29	−4
Where to get birth control	22	22	0
Correctly answered knowledge question on (%):			
Condoms and risk of pregnancy	42	40	2
Condoms and risk of HIV	36	35	1
Birth control pills and risk of pregnancy	41	33	8
Birth control pills and risk of HIV	38	38	0
Oral sex and risk of STIs	54	57	−3
Perceived conflict management ability scale (range: 1 to 4)	2.51	2.27	0.24**
Disapproval of dating violence (range: 1 to 4)	3.37	3.39	−0.01
Support for compromise in a romantic relationship (range: 1 to 4)	2.89	2.86	0.03

Measure	*Teen Choice* youth	Control youth	Difference
Attitudes toward abstinence and contraceptives and decision making regarding sexual intercourse			
Support for condom use scale (range: 1 to 5)	4.51	4.43	0.08
Intentions to have sexual intercourse (%)	61	49	12*
Perceived refusal skills (range: 1 to 5)	2.50	2.41	0.08
Romantic relationships and risk behaviors			
Currently in a dating relationship (%)	49	51	−2
Ever had sexual intercourse (%)	54	41	12*
Had sexual intercourse in past three months (%)	31	28	4
Had sexual intercourse without contraception in past three months (%)	10	10	0
Sample size	**193**	**147**	

Source: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a baseline and follow-up survey. Confirmatory outcome measure is bolded.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Table A.4. Baseline characteristics for analytic sample estimating impacts on any sex without a condom in the past three months

Measure	*Teen Choice* youth	Control youth	Difference
Demographics			
Age (%)			
12 to 14	35	33	2
15 to 16	35	43	−8
17 to 18	26	20	6
19	4	4	0
Race/ethnicity (%)			
White	7	1	6+
African American, non-Hispanic	34	32	2
Hispanic	54	59	−5
Other	5	8	−3
Male (%)	61	62	0
Gay, lesbian, bisexual, transgender, or questioning (%)	27	22	5
Information, knowledge, communication skills, and healthy romantic relationships			
Attended a class in the prior year on (%):			
Sexually transmitted infections (STIs)	39	34	5
Abstinence	15	17	−2
Relationships, dating, or marriage	27	22	5
Methods of birth control	24	27	−3
Where to get birth control	18	21	−3

Measure	*Teen Choice* youth	Control youth	Difference
Correctly answered knowledge question on (%):			
Condoms and risk of pregnancy	37	41	−4
Condoms and risk of HIV	33	34	−2
Birth control pills and risk of pregnancy	36	33	2
Birth control pills and risk of HIV	35	39	−4
Oral sex and risk of STIs	52	57	−5
Perceived conflict management ability scale (range: 1 to 4)	2.52	2.25	0.27**
Disapproval of dating violence (range: 1 to 4)	3.40	3.37	0.02
Support for compromise in a romantic relationship (range: 1 to 4)	2.85	2.83	0.03
Attitudes toward abstinence and contraceptives and decision making regarding sexual intercourse			
Support for condom use scale (range: 1 to 5)	4.49	4.42	0.07
Intentions to have sexual intercourse (%)	62	56	6
Perceived refusal skills (range: 1 to 5)	2.42	2.39	0.02
Romantic relationships and risk behaviors			
Currently in a dating relationship (%)	47	52	−5
Ever had sexual intercourse (%)	52	45	8
Had sexual intercourse in past three months (%)	28	28	0
Had sexual intercourse without contraception in past three months (%)	8	11	−3
Had any sex without a condom in past three months (%)	26	28	−2
Sample size	**148**	**117**	

Source: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a baseline and follow-up survey at the four schools where youth were asked about anal sex and for whom the study team was able to construct this measure. Confirmatory outcome measures are bolded.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Outcome measures

The study team measured outcomes in seven domains informed by the program logic model (Shapiro et al. 2017) and the curriculum: (1) access to reproductive health care, (2) knowledge of contraception and sexually transmitted infections (STIs), (3) communication skills, (4) attitudes toward healthy romantic relationships, (5) attitudes toward abstinence and contraceptives, (6) decision making regarding sexual intercourse, and (7) sexual risk behavior. This section describes the construction of the primary measures in each domain, as well as one secondary outcome that is a scale (parent communication scale).

1. Access to reproductive health care

The survey included a series of questions designed to assess the youth's exposure to information on reproductive health topics. The first question asked youth how often they had attended any classes or sessions in the past 12 months on each of the following topics: (1) STIs; (2) abstinence from sex; (3) relationships, dating, or marriage; (4) methods of birth control; and (5) where to get birth control. Response categories were never, 1 to 2 times, 3 to 5 times, 6 to 9

times, and 10 or more times. At baseline, the evaluation team constructed a series of binary (yes/no) measures of whether the student had attended classes or sessions on each of these topics. For the outcome measure, the evaluation team measured the number of classes or sessions attended by coding never as 0, coding the other intervals as their midpoints (that is, 1.5, 4, and 7.5), and coding the category of 10 or more times as 15.

Similarly, using the same 12-month reference period, the survey also asked youth how often they had received information from a doctor, nurse, or clinic on each of the following three topics: (1) contraceptive methods, (2) where to get birth control, and (3) STIs. Response categories ranged from never to 10 or more times. The evaluation team used responses to this question to construct a series of three binary measures of whether the student had received information from a doctor, nurse, or clinic on each topic.

Last, the survey asked youth whether they received any type of birth control from a doctor, nurse, or clinic for the same reference period. The evaluation team constructed a binary measure for whether youth received birth control from a doctor, nurse, or clinic.

2. Knowledge of contraception and STIs

The study team created a summary measure of the youth's knowledge of contraception and STIs from the following eight questions included on the follow-up survey. Correct answers are in bold. The baseline survey included the first five questions in this list.

- If condoms are used correctly and consistently, how much can they decrease the risk of pregnancy? Not at all, a little, **a lot**, completely, or don't know.
- If condoms are used correctly and consistently, how much can they decrease the risk of getting HIV, the virus that causes AIDS? Not at all, a little, **a lot**, completely, or don't know.
- If birth control pills are used correctly and consistently, how much can they decrease the risk of pregnancy? Not at all, a little, **a lot**, completely, or don't know.
- If birth control pills are used correctly and consistently, how much can they decrease the risk of getting HIV, the virus that causes AIDS? **Not at all**, a little, a lot, completely, or don't know.
- Can you get a sexually transmitted disease, also known as an STD or STI, from having oral sex? **Yes** or no.
- Can a woman give HIV to a man if they are having sexual intercourse without a condom? **Yes** or no.
- Can a person who has sexual intercourse only with people he or she knows well ever get HIV? **Yes** or no.
- Which of the following methods offers the most protection against HIV, the virus that causes AIDS, and other sexually transmitted diseases, also known as STDs or STIs? Birth control pills, the shot (Depo-Provera), **condoms**, the patch, or don't know.

The questions were adapted from prior studies of adolescents and have been used in other evaluations of teen pregnancy prevention programs (Goldstein et al. 2010; Trenholm et al. 2007;

Goesling et al. 2017). For each question, the study team coded each student as having provided either a correct or an incorrect response. The study team considered skipped questions on the follow-up survey to be incorrect responses if at least one of the eight questions was answered. The team then totaled the number of correct responses across the eight questions on the follow-up survey to create an eight-item knowledge test of contraception and STIs. Possible scores on the measure ranged from 0 to 8, with higher values indicating a greater number of correct responses. If none of the eight questions were answered, the student's knowledge measure was coded as missing.

3. Communication skills

The study team created a measure of perceived conflict management ability based on the youth's responses to whether they were bad, okay, good, or extremely good at doing each of the following statements in the survey:

- Admit that you might be wrong during a disagreement
- Avoid saying things that could turn a disagreement into a big fight
- Accept another person's point of view even if you don't agree with it
- Listen to another person's opinion during a disagreement
- Work through problems without arguing

The study team assigned each response a value from 1 to 4, with higher values indicating higher perceived conflict management ability. For youth who responded to at least four of the five statements, the study team calculated a scale score for each student as the average of the student's responses across the different statements. The team did not calculate scores for youth who responded to three or fewer statements. The scale had high internal reliability at baseline (alpha coefficient = 0.77) and follow-up (alpha coefficient = 0.77).

The study team constructed a secondary measure of communication skills. The parent communication scale score was derived from six survey questions measuring the youth's level of communication with their parents about relationships, sex, school, drug or alcohol use, and personal problems. These questions asked youth how many times they had discussed each of the following topics with their mother or father in the past three months: (1) romantic relationships or dating, (2) how to resist pressures to have sex, (3) whether you should be having sex at this time in your life, (4) how things are going with school work or grades, (5) avoiding drugs or alcohol, and (6) a personal problem. Four response categories were presented for each question, covering a range from never to 10 or more times. The evaluation team assigned each response category a number ranging from 1 to 4. Higher values indicated more communication with parents. For youth who responded to at least five of the six statements, the evaluation team calculated a scale score for each student by taking the average value of the student's responses across the different statements. The team did not calculate scores for youth who responded to only four or fewer statements. The scale had high internal reliability at baseline (alpha coefficient = 0.78) and follow-up (alpha coefficient = 0.77).

4. Attitudes toward healthy romantic relationships

The evaluation team constructed two single-item scale variables measuring disapproval of dating violence and support for compromise in a romantic relationship. The measure of disapproval of dating violence was based on the youth's level of agreement to the survey question, "There are times when hitting or pushing between people who are dating is okay." The measure of support for compromise in a romantic relationship was based on level of agreement to the survey question, "In a good dating relationship, you don't always get your own way." For both of these survey questions, the survey gave four response categories, ranging from strongly disagree to strongly agree. The evaluation team organized the response categories for each question in order of least to most healthy for a romantic relationship and assigned each response category a number ranging from 1 to 4. Higher values indicated a healthier romantic relationship attitude.

5. Attitudes toward abstinence and contraceptives

The evaluation team constructed three summary measures of the youth's attitudes toward abstinence and contraceptives: a measure of support for abstinence, a measure of support for abstinence for safety and health, and a measure of support for condom use among sexually active youth. Both measures related to support for abstinence were single-item scale variables. The evaluation team constructed the measure of support for abstinence based on level of agreement with the survey statement, "Having sex is a good thing for you to do at your age." The second measure was based on level of agreement with the survey statement, "At your age right now, not having sex is important for you to be safe and healthy." For each statement, the survey asked youth to respond on a four-point scale ranging from strongly disagree to strongly agree. The evaluation team drew the questions from a similar survey administered as part of the federal Evaluation of Adolescent Pregnancy Prevention Approaches (Smith et al. 2012). To construct the measures, the evaluation team first assigned each response category a number ranging from one to four. When assigning these numbers, the evaluation team organized the response categories for each statement so that higher values indicated greater support for abstinence.

For the measure of support for condom use, the survey asked youth to report their level of agreement with each of the following two statements:

- Condoms should always be used if a person your age has sex.
- Condoms are important to make sex safer.

For each statement, the survey asked youth to respond on a five-point scale ranging from strongly disagree to strongly agree. The evaluation team drew the questions from a similar survey administered as part of the federal Evaluation of Adolescent Pregnancy Prevention Approaches (Smith et al. 2012). To construct a scale from the youth's responses to these statements, the evaluation team first assigned each response category a number ranging from 1 to 5. For youth who responded to both statements, the team calculated a scale score for each student by taking the average value of the student's responses across the two statements. The team did not calculate scale scores for youth who responded to only one statement. The resulting scale ranged from 1 to 5, with higher values indicating greater support for condom use if one is sexually active. The scale had high internal reliability at baseline (alpha coefficient = 0.75) and follow-up (alpha coefficient = 0.76).

6. Decision making regarding sexual intercourse

To measure the youth's intentions to have sex, the survey asked them, "Do you intend to have sexual intercourse in the next year, if you have the chance?" The response categories were yes, definitely; yes, probably; no, probably not; and no, definitely not. The evaluation team used responses to this question to construct a binary measure indicating whether youth said they definitely or probably intended to have sex.

The study team measured the youth's perceived refusal skills based on a series of five questions on the survey. For each question, the survey asked youth to report their perceived ability to say no to having sex under each of the following hypothetical circumstances:

- With someone you have known for a few days or less
- With someone you have dated for a long time
- With someone with whom you have already had sex
- With someone who is pushing you to have sex
- With someone who does not want to use a condom

For each question, the survey asked youth to respond on a four-point scale, from feeling not at all likely they would be able to say no to feeling very likely they would be able to say no. The questions were adapted from a prior study by Cecil and Pinkerton (1998). The study team assigned values of 1 to 4 to the youth's responses, with higher scores indicating greater perceived refusal skills. For youth who responded to at least four of the five questions, the evaluation team calculated a scale score for each student by taking the average value of the student's responses across the different questions. The team did not calculate scale scores for youth who responded to three or fewer questions. The resulting scale ranged from 1 to 4. The scale had high internal reliability at baseline (alpha coefficient = 0.78) and the follow-up (alpha coefficient = 0.76).

7. Sexual risk behavior

The study team constructed two primary measures of sexual risk behavior. The two measures are (1) having had vaginal sex without contraception in the past three months and (2) having had vaginal, oral, or anal sex (or "any sex") without a condom in the past three months. These measures assess whether youth engaged in behavior that put them at risk of pregnancy and STIs, respectively. For the first measure, the survey asked youth how many times they had sexual intercourse in the past three months, and how many times they had sexual intercourse without the use of any birth control methods that were listed in the survey (condoms, birth control pills, the shot, the patch, the ring, intrauterine device, and implant). The study team used responses to these two questions to construct a binary measure of sexual intercourse without contraception in the past three months. The study team coded youth who abstained from sexual intercourse the same as youth who reported always using contraception when having intercourse (in other words, as not having had unprotected sex). The second measure was only constructed for youth at the four schools that permitted questions about anal sex. The survey asked youth in separate questions whether they had sexual intercourse, oral sex, and anal sex in the past three months, and how many times they had sexual intercourse, oral sex, and anal sex without a condom in the past three months. The study team used responses to this series of questions to

construct a binary measure of having had any sex without a condom in the past three months. For each type of sexual activity (vaginal, oral, or anal), youth who abstained during the three months before the survey were coded the same as youth who reported always using a condom for that activity.

The study team accounted for missing data (item nonresponse) and the potential for misreporting of sexual risk behaviors by comparing responses across multiple survey questions. The team began by constructing a binary measure of whether each student had ever engaged in each type of sexual activity (vaginal, oral, and anal if asked). The team constructed this measure on the basis of youth's responses to direct questions asking whether they had ever engaged in that type of sexual activity. In some cases, youth did not respond to this direct question but responded to other related survey questions, such as the number of sexual partners, contraceptive methods used, or age at first sexual initiation. For some of these youth, the study team could logically infer their initiation status for vaginal, oral, or anal sex (if asked) from their responses to these other survey questions. Similarly, if a student reported having had vaginal, oral, or anal sex at the time of the baseline survey but did not respond to the direct question on the follow-up survey, then the study team logically inferred the student's initiation status at follow-up. In other cases, youth provided contradictory information about their sexual initiation status across different survey questions. If the status was unclear, the study team coded the initiation status for that type of sex as missing. Once constructed, the initiation measures were used to refine students' measures of sexual behavior in the last three months. The study team logically inferred students' recent sexual activity if they did not answer direct questions about it but their cleaned initiation status measure indicated they had not previously had vaginal, oral, or anal sex. Responses about sexual activity in the last three months were coded to missing if they contradicted the cleaned initiation measure.

To determine whether these coding decisions materially changed the study findings, the study team conducted a sensitivity test by taking the youth's responses to the relevant survey questions as given, without accounting for any missing data or inconsistencies across survey questions. The estimated means and impacts on these outcomes were similar regardless of the coding decisions used (See Table A.5 for these and other sensitivity checks).

The study team also assessed the sensitivity of the confirmatory findings to including the school where questions about anal sex were not asked. To assess the influence of that school, the study team used the full sample to estimate impacts on having vaginal or oral sex without a condom in the three months before the survey (Table A.8). About 28 percent of youth in the *Teen Choice* and control groups had vaginal or oral sex without a condom in the past three months. The difference was not statistically significant. Second, for the subset of four schools where youth were asked about anal sex, the study team estimated the impact on having sexual intercourse without any effective contraceptive method in the three months before the survey. Similarly, there was no statistically significant difference in this measure (not shown). As a result, the conclusion that *Teen Choice* did not change sexual risk behavior would likely remain if both confirmatory outcomes had the same sample.

Analytic methods

The study team estimated impacts using *RCT-YES*, a publicly available statistical software tool (https://www.rct-yes.com/). *RCT-YES* uses estimation methods designed specifically for estimating treatment effects with data from randomized controlled trials. For the evaluation of *Teen Choice* in New York, the study team used the estimation methods for what *RCT-YES* describes as Design 2: the nonclustered, blocked design (Schochet 2016). These methods account for the fact that the study team randomly assigned youth to the treatment and control groups within separate blocks defined by school, cohort, and gender, and if sample sizes allowed, further stratification by age. Impact estimates are calculated by *RCT-YES* as a regression-based weighted average across blocks of the difference in outcomes for youth in the treatment and control groups.

RCT-YES requires users to input certain technical specifications of the model, such as the approach for covariate adjustment and handling of missing data. The study team used data from the baseline survey to include covariates for students' age, race and ethnicity, the baseline value of the outcome measure (when available), and whether youth reported in the baseline survey that they previously had sexual intercourse. To the extent that these covariates are correlated with students' outcomes, they can improve the precision of the impact estimates by reducing the residual variation in the outcome measures (Orr 1999). For missing data, the study team used the default *RCT-YES* options of mean imputation for missing baseline covariates and case deletion for missing outcome data—meaning that the impact estimates for a particular outcome exclude students with missing data for that outcome. Across analytic samples for the primary outcomes, 6 to 14 percent of youth with data on an outcome had an imputed value for at least one covariate. The study team also used the *RCT-YES* default assumption to calculate impacts assuming a finite-population model (SUPER_POP = 0). The team did not include block-by-treatment interactions (BLOCK_FE = 1) given low sample sizes, and lowered the default minimum group size for estimation (MIN_NUM = 3). The team deemed the resulting impact estimate as statistically significant if the estimated *p*-value for the coefficient fell below 5 percent based on a two-tailed hypothesis test. An impact estimate was described as statistically significant at the 10 percent level if the estimated *p*-value for the coefficient was between 5 and 10 percent. To help interpret the magnitude of the impact estimates, the study team also included in the report estimates of the standardized mean difference in outcomes (effect sizes) as calculated by *RCT-YES*.

To assess the sensitivity of the estimates to the use of *RCT-YES*, the study team compared the confirmatory impacts estimated from *RCT-YES* with estimates from multiple linear regression accounting for the random assignment design, the same covariates as our main approach, and the same mean imputation process used by *RCT-YES* (Table A.5). Because there were differences in baseline sexual initiation, Table A.5 also shows impact estimates that do not adjust for this variable. The conclusions presented for the confirmatory outcomes in the main report are not sensitive to these changes in the analysis approach.

Table A.5. Sensitivity of impacts to coding of sexual risk behavior and estimation approach

Measure	*RCT-YES*				Multiple linear regression	
	Teen Choice group	Control group	Impact	Effect size	Impact, all controls	Impact, not controlling for baseline initiation
Had sexual intercourse without contraception in past three months (%)						
Primary coding	12	12	1	0.02	1	2
Alternative coding	13	13	1	0.02	1	2
Primary coding in four schools asking about anal sex[a]	11	13	−2	-0.06	−2	0
Had any sex without a condom in past three months[a] (%)						
Primary coding	32	32	0	-0.01	−1	1
Alternative coding	30	32	−1	-0.03	−2	0
Sample size	**213**	**165**				

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The numbers in the columns labeled Teen Choice group and Control group are regression-adjusted predicted values. The estimates in the Ordinary least squares panel are from multiple linear regressions that account for the block design, use robust standard errors, and use mean imputation for covariates. The primary coding for measures includes logical imputation and cleaning of responses to the relevant survey questions by the study team. The alternative coding takes youth's responses to the relevant survey questions as given.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

[a] Youth in one school were not asked about anal sex. The follow-up sample at the schools where youth were asked about anal sex included 181 Teen Choice youth and 144 control youth.

Subgroup impacts

The study team examined a limited set of predefined exploratory analyses to examine possible variation in program impacts. This section presents impact estimates for subgroups based on gender and based on whether youth indicated they previously had sexual intercourse at the time of the baseline survey (Tables A.6, A.7). The estimates are exploratory because each subgroup is substantially smaller than the full sample in the main report, and the full sample did not reach the targeted sample size for the evaluation. Consequently, the subgroup impact estimates might not have sufficient precision. The study team conducted these analyses using a multiple linear regression model accounting for the random assignment design, the same covariates as in our main approach, a subgroup indicator (if not already a covariate) and an interaction term between the treatment and subgroup terms. The study team used multiple linear regression for the subgroup analyses because *RCT-YES* applied subgroup sample size restrictions that suppressed output for some primary outcomes with low prevalence.

The subgroup results for boys looked similar to the main sample findings, except boys in the treatment group were more likely to receive contraceptives in the prior year from a doctor, nurse, or clinic than boys in the control group. This difference was statistically significant at the 10 percent level. Two impact estimates were statistically significant at the 5 or 10 percent level for girls, and those estimates were consistent with findings for the full sample. The differences in

knowledge of contraceptive effectiveness and transmission of STIs and in support for condom use were statistically significant at the 10 percent level. No other differences in subgroup impacts for boys and girls were statistically significant.

Table A.6. Subgroup impacts by sex

Measure	Full sample	Boys	Girls
Access to reproductive health care			
Number of classes attended in the prior year on:			
Relationships, dating, or marriage	1.0*	1.5**	0.3
Abstinence from sex	0.6	1.2*	0
Methods of birth control	0.9*	1.4*	0.3
Where to get birth control	1.3**	1.7**	0.8
Sexually transmitted infections (STIs)	0.9+	1.4*	0.3
Received information in the prior year from a doctor, nurse, or clinic on (%):			
Methods of birth control	0	0	0
Where to get birth control	3	3	1
STIs	3	1	7
Received contraceptives in the prior year from a doctor, nurse, or clinic (%)	2	6	-1
Knowledge, communication skills, and healthy romantic relationships			
Knowledge of contraceptive effectiveness and transmission of sexually transmitted infections (range: 0 to 8)	0.01	−0.33	0.45
Perceived conflict management ability (range: 1 to 4)	−0.10	−0.12	−0.07
Disapproval of dating violence (range: 1 to 4)	−0.02	−0.02	−0.04
Support for compromise in a romantic relationship (range: 1 to 4)	0.10	0.03	0.17
Attitudes toward abstinence and contraceptives and decision making regarding sexual intercourse			
General support for abstinence (range: 1 to 4)	0.02	0.14	−0.12
Support for abstinence for safety/health (range: 1 to 4)	0.10	−0.16	0.11
Support for condom use (range: 1 to 5) †	0.14+	0.02	0.30*
Intentions to have sexual intercourse (%)	-9+	−7	−10
Perceived refusal skills (range: 1 to 5)	0.17+	0.07	0.28*
Sexual risk behavior			
Had sexual intercourse without contraception in past three months (%)	1	−2	4
Had any sex without a condom in past three months[a] (%)	0	1	-5
Sample size	**378**	**215**	**163**

Source: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a follow-up survey. Subgroup impacts were estimated from multiple linear regressions that account for the block design, use robust standard errors, and use mean imputation for covariates.

[a] Youth in one school were not asked about anal sex. This estimate is based on youth at the other schools who were asked about anal sex.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

†††/††/† Difference in impacts between subgroups is statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

The study team found evidence that the effects of *Teen Choice* were concentrated among youth who did not have sex prior to the baseline survey. For any outcome where a subgroup or full-sample impact estimate was statistically significant, the impacts for youth who had not become sexually active by the time of the baseline survey tended to be larger than the impact for the full sample. The subgroup impacts for having sexual intercourse without any effective contraceptive method in the three months before the follow-up survey could not be estimated because of small sample sizes. Few youth who were sexually inactive at baseline had unprotected sex three to six months after the program.

Table A.7. Subgroup impacts by baseline sexual initiation status

Measure	Full sample (controlling for sexual initiation status)	Did not have sex prior to baseline survey	Had sex prior to baseline survey
Access to reproductive health care			
Number of classes attended in the prior year on:			
Relationships, dating, or marriage	1.0*	1.4*	0.1
Abstinence from sex †	0.6	1.3*	−0.2
Methods of birth control	0.9*	1.7**	0.2
Where to get birth control †	1.3**	2.0**	0.5
Sexually transmitted infections (STIs)	0.9+	1.6*	0.1
Received information in the prior year from a doctor, nurse, or clinic on: (%)			
Methods of birth control	0	5	−1
Where to get birth control	3	3	1
STIs	3	2	3
Received contraceptives in the prior year from a doctor, nurse, or clinic (%)	2	2	3
Knowledge, communication skills, and healthy romantic relationships			
Knowledge of contraceptive effectiveness and transmission of sexually transmitted infections (range: 0 to 8)	0.01	−0.10	0.03
Perceived conflict management ability (range: 1 to 4) ††	-0.10	0.06	−0.25*
Disapproval of dating violence (range: 1 to 4)	-0.02	0.03	−0.07
Support for compromise in a romantic relationship (range: 1 to 4)	0.10	0.23*	0.04
Attitudes toward abstinence and contraceptives and decision making regarding sexual intercourse			
General support for abstinence (range: 1 to 4)	0.02	−0.11	0.16
Support for abstinence for safety/health (range: 1 to 4)	0.10	0.09	−0.15
Support for condom use (range: 1 to 5)	0.14+	0.21*	0.10
Intentions to have sexual intercourse (%)	−9+	−12	−7
Perceived refusal skills (range: 1 to 5)	0.17+	0.29*	0.03

Measure	Full sample (controlling for sexual initiation status)	Did not have sex prior to baseline survey	Had sex prior to baseline survey
Sexual risk behavior			
Had sexual intercourse without contraception in past three months (%)	1	0	0
Had any sex without a condom in past three months[a] (%)	0	2	−3
Sample size	**378**	**178**	**178**

Source: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a follow-up survey. The subgroup sample sizes do not add to the full sample because baseline sexual initiation status could not be determined for all youth. Subgroup impacts were estimated from multiple linear regressions that account for the block design, use robust standard errors, and use mean imputation for covariates.

[a] Youth in one school were not asked about anal sex. This estimate is based on youth at the other schools who were asked about anal sex and for whom the study team was able to construct this measure.

**/*/+ Differences are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

†††/††/† Difference in impacts between subgroups is statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

Impacts on secondary outcomes

This section presents additional exploratory analyses of outcomes that supplement the findings in the main report. These analyses include impacts estimated for three sets of outcomes: (1) individual survey questions that make up the summary knowledge index included in the main body of the report, (2) a measure of communication with parents, and (3) additional measures of sexual risk behavior.

The results of the exploratory analyses are consistent with the overall findings from the main report (Table A.8). Youth in the *Teen Choice* group were as likely as youth in the control group to answer individual knowledge questions correctly. The impact findings on secondary outcomes also show that youth in the *Teen Choice* and control groups reported similar levels of communication with parents. The impact estimates for the additional sexual risk behaviors are not statistically significant.

Table A.8. Impacts of *Teen Choice* on secondary measures of knowledge, communication skills, and sexual risk behavior

Measure	*Teen Choice* group	Control group	Impact	Effect size
Knowledge				
Correctly answered knowledge question on: (%)				
Condoms and risk of pregnancy	46	41	6	0.11
Condoms and risk of getting HIV	42	42	0	0.00
Birth control pills and risk of pregnancy	37	39	−2	−0.04
Birth control pills and risk of getting HIV	35	39	−4	−0.09
Oral sex and risk of STIs	61	62	−1	−0.02
Female-to-male transmission of HIV when condoms are used	75	73	2	0.04
Risk of getting HIV from people you know well	50	52	−2	−0.04
Protective methods against HIV	49	49	0	0.00
Communication skills				
Communication with parents (range: 1 to 4)	2.1	2.1	0.0	0.06
Sexual risk behavior				
Ever had sexual intercourse (%)	50	51	0	−0.01
Had sexual intercourse in past three months (%)	25	31	−6	−0.13
Had sexual intercourse without a condom in past three months (%)	19	18	1	0.03
Had oral sex in past three months (%)	28	29	0	−0.01
Had oral sex without a condom in past three months (%)	21	19	1	0.03
Had vaginal or oral sex without a condom in past three months (%)	28	27	1	0.02
Had anal sex in past three months[a] (%)	9	5	3	0.14
Diagnosed with an STI in the past 12 months (%)	7	9	−1	−0.05
Ever pregnant (%)	14	14	0	−0.01
Sample size	**213**	**165**		

Sources: Baseline and follow-up surveys conducted by Mathematica Policy Research.

Note: The reported sample size reflects the number of youth who completed a baseline and follow-up survey. The numbers in the columns labeled Teen Choice group and Control group are regression-adjusted predicted values.

[a] Youth in one school were not asked about anal sex. This estimate is based on youth at the other schools who were asked about anal sex and for whom the study team was able to construct this measure.

**/*/+ Impact estimates are statistically significant at the .01/.05/.10 levels, respectively, two-tailed test.

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