Evaluation of Adolescent Pregnancy Prevention Approaches

OAH Evaluation Report

Impact Report from the Evaluation of Adolescent Pregnancy Prevention Approaches

Interim Impacts of the Gender Matters Program

April 2016

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

OFFICE OF ADOLESCENT HEALTH

Purpose statement: This study reports interim findings from a large-scale demonstration project and evaluation of the Gender Matters program, an innovative new comprehensive sexuality education curriculum that aims to reduce teen pregnancy and associated sexual risk behaviors, in part by challenging commonly held perceptions of gender roles and promoting healthy, equitable relationships. The study reports interim impacts of the program on adolescent sexual risk behaviors and other short-term outcomes measured six months after participants enrolled in the study. A future report will examine the program's longer-term impacts on repeat pregnancy and sexual risk behaviors 18 months after study enrollment.

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I. INTRODUCTION

A long-standing body of research connects adolescents' perceptions of gender roles to their sexual and reproductive health outcomes. Gender attitudes and beliefs influence how adolescents view sexuality and can play an important role in shaping their sexual behavior, risk-taking attitudes, and use of health information and services (World Health Organization 2011; Kirby and Lepore 2007). For both male and female adolescents, traditional attitudes toward gender roles have been correlated with a number of adverse sexual risk behaviors and outcomes. Adolescent males who hold traditional views of masculinity report earlier sexual initiation, more sexual partners, less consistent condom use, weaker beliefs in male responsibility to prevent pregnancy, and lower use of health services (Marcell et al. 2007; Marston and King 2006; Noar and Morokoff 2002). Adolescent females who hold conventional views of femininity are more likely to accommodate men's interests, use condoms less, become pregnant at an early age, experience sexually transmitted infections (STI), and be sexually abused (Jewkes and Morrell 2010; Stewart 2003; Wingood and DiClemente 2000).

Building on this research, this report presents interim findings from a large-scale demonstration project and evaluation of *Gender Matters* (*GEN.M*), an innovative new comprehensive sexuality education program that aims to reduce teen pregnancy and associated sexual risk behaviors among U.S. adolescents, in part by challenging commonly held perceptions of gender roles and promoting healthy, equitable relationships. The program was developed in 2010 by EngenderHealth, an international nonprofit organization. Drawing on its experience designing and implementing gender programming internationally, EngenderHealth developed the *GEN.M* program to meet an identified need in the United States for gender content in teen pregnancy prevention programs for adolescents. The program features a 20-hour curriculum-based workshop, social media activities, and a community film screening. For this demonstration project and evaluation, EngenderHealth implemented *GEN.M* among youth in Travis County, Texas, an area that encompasses the state capital, Austin, and has among the highest teen pregnancy and birth rates in the state.

Drawing on data from a rigorous random assignment impact evaluation conducted with a large sample of more than 750 Travis County youth, this report examines interim impacts of the *GEN.M* program on sexual activity and rates of unprotected sex measured about six months after enrollment in the study. The report also examines program impacts on a range of factors that potentially mediate sexual behaviors, including exposure to information on sexual and reproductive health topics; knowledge, attitudes, and intentions related to sexual risk behaviors; and gender role beliefs. Findings from an in-depth implementation study of the program were presented in an earlier report (Shapiro 2013). A future report will examine the program's longer-term impacts on sexual behaviors and incidence of teen pregnancy measured 18 months after study enrollment.

The evaluation has involved a unique collaboration and partnership among several organizations. The evaluation was originally designed by faculty at Columbia University's Mailman School of Public Health, in consultation with staff from EngenderHealth. In fall 2010, EngenderHealth was awarded competitive federal grant funding for the evaluation through the Office of Adolescent Health (OAH) of the U.S. Department of Health and Human Services

(HHS). In winter 2011, the program was selected as one of seven sites to participate in the Evaluation of Adolescent Pregnancy Prevention Approaches (PPA) study, a major federal effort to expand available evidence on effective ways to prevent and reduce pregnancy and related sexual risk behaviors among teens in the United States. The PPA study is being conducted by Mathematica Policy Research and its partners, Child Trends and Twin Peaks Partners, LLC, under contract with OAH. Participation in the PPA study provided the *GEN.M* evaluation with additional resources to support data collection and analysis. In addition, researchers from the PPA evaluation team have collaborated with Columbia University faculty to refine the evaluation design, support data collection, and plan the analysis.

The report is divided into five chapters. In the rest of this chapter, we provide background and context for the evaluation and a more detailed description of the program. Chapters II and III provide detailed information on the study design, data, and analytic methods. Chapter IV presents findings from the interim impact analysis, and Chapter V summarizes and discusses the implications of the results.

A. Background and context

At the global level, there has been a long-standing call to address gender in adolescent sexual and reproductive health programs, dating back to the 1994 International Conference on Population and Development's (ICPD) Programme of Action. Drawing on the IPCD and emerging evidence, a number of international resolutions and organizations have continued to highlight gender as an important component of sexuality education and other efforts to improve adolescent health and well-being (Haberland 2015). More recently, there has been an increasing focus on "gender transformative" approaches, which not only acknowledge but challenge traditional gender norms. A number of international agencies and organizations, and several U.S. organizations, have implemented youth-specific gender transformative programs, with a growing body of evidence demonstrating their effectiveness in improving sexual and reproductive behaviors and outcomes (Haberland 2015; Barker et al. 2007; Rottach et al. 2009; DiClemente et al. 2004). One recent review of rigorously evaluated sexuality and HIV education programs in developed and developing countries concluded that addressing gender and power in sexual relationships should be considered a key characteristic of successful programs (Haberland 2015).

Despite compelling evidence on the importance of gender in adolescent sexual behavior and risk reduction, few teen pregnancy prevention programs in the United States incorporate gender content. For example, among the programs that HHS currently recognizes as evidence-based approaches to teen pregnancy prevention, there is only one gender transformative program (SiHLE), which focuses on African American girls (DiClemente et al. 2004). Most other programs aimed at preventing teen pregnancy in the United States do not incorporate gender in their theory of change or explicitly address gender norms and dynamics related to adolescent sexual risk behaviors.

In developing the *GEN.M* program model, EngenderHealth sought to incorporate elements of existing gender and sexuality education programs both in and outside of the United States, and to draw on the organization's vast experience applying a gender lens to sexual and reproductive health programming in more than 20 countries over the past two decades. Most notably, the program builds on EngenderHealth's *Men as Partners* (*MAP*) program, a gender transformative

program developed in the late 1990s to engage men in reducing gender-based violence and to promote men's constructive role in sexual and reproductive health. The *MAP* program works with men to promote gender equity and health in families and communities. It has been implemented in several countries in Africa, Asia, and Latin America (Kreuger 2003; Peacock and Levack 2004). The program uses interactive workshops, public education campaigns, and advocacy networks to deliver public health messages about gender equality and sexual decision making to young men in developing countries. The goal of the program is to change men's perceptions of gender roles so that they view themselves as equal partners with women in establishing and maintaining healthy sexual relationships. Evaluations of the *MAP* program suggest that the program has had a positive effect on attitudes toward men's involvement in sexual and reproductive health among participants, service providers, and community members, as well as improved access to reproductive health and family planning services by men and their partners (Mehta et al. 2004; Peacock and Levack 2004).

For the *GEN.M* program, EngenderHealth adapted the *MAP* curriculum to focus on the influence of social constructions of gender on associated risks of teenage pregnancy. These constructions include harmful societal messages about masculinity that may prevent male youth from seeking reproductive health care and from feeling concern or responsibility for parenting their children. For female youth, harmful constructions on femininity can lead to a dependence on male partners and may inhibit young women from making pregnancy prevention decisions that are in their best interest. In addition, for both male and female youth, harmful constructions of gender can prevent open communication within relationships and support gender inequities in decision making related to pregnancy prevention. The *GEN.M* program also addresses other determinants of teenage pregnancy commonly targeted by evidence-based comprehensive sex education approaches, including knowledge, attitudes, and skills related to (1) when and where to obtain sexual and reproductive health services; (2) contraceptive use; (3) making sexual and reproductive health decisions; and (4) refusing, delaying, and negotiating sex.

EngenderHealth selected Travis County, Texas as the launch and first testing site for the *GEN.M* program. Travis County was selected because of its high rate of teen pregnancy and to leverage EngenderHealth's office presence and staff experience working with youth and youth organizations in Austin. Texas, like the rest of the United States, has seen significant declines in teen pregnancy and birth rates in recent years. The teen pregnancy rate in Texas has dropped by 38 percent since 1988, and the teen birth rate has dropped by 48 percent since 1991 (Brazeal et al. 2015; Kost and Henshaw 2014; Ventura et al. 2014). Despite these improvements, Texas has experienced lower rates of decline than many other states and continues to face worse teen pregnancy statistics than most. Texas has the third-highest teen pregnancy rate and fifth-highest teen birth rate in the United States, and Travis County's rates exceed national averages on both counts (Martin et al. 2011). Public costs of unplanned pregnancies in Texas were estimated at $2.9 billion in 2010, among the highest in the country (National Campaign to Prevent Teen and Unplanned Pregnancy 2015). In addition, Texas is ranked fourth among U.S. states for reported number of AIDS cases among adolescents (National Campaign to Prevent Teen and Unplanned Pregnancy 2015).

To ensure successful recruitment of youth participants and competent program facilitators for the *GEN.M* demonstration project, EngenderHealth partnered with two local Travis County organizations: (1) the Travis County Health and Human Services Department's Summer Youth

Employment Program (SYEP); and (2) SafePlace, a youth-focused organization based in Austin. The SYEP is a youth development program that places teens at local job sites across Travis County for five weeks during the summer. Although the program is offered to all youth attending public schools in Travis County, it focuses recruitment on youth who are low income, are at risk, or have special needs. Recognizing a potential need for reproductive health education and services among the youth served by the SYEP, EngenderHealth partnered with county staff to recruit participants for the *GEN.M* program from among those youth who applied for the SYEP. To identify staff for the *GEN.M* program, EngenderHealth formed an additional partnership, with SafePlace, a local organization offering domestic violence prevention services and workshops to Travis County youth. SafePlace provided trained educators to facilitate the *GEN.M* workshop sessions. The program participants and facilitators are described in greater detail in Chapter II.

B. The *GEN.M* program

The *GEN.M* program targets male and female youth ages 14 to 16. The program has three interactive components: (1) a 20-hour curriculum-based educational workshop, (2) a four-month text message/Facebook campaign that reinforces workshop messages, and (3) a community film screening that further underscores the messages from the workshop and social media campaign. The program design was guided primarily by three psychosocial behavioral change theories. First, the workshop curriculum draws on elements of social cognitive theory, which posits that youth learn behaviors by observing peers and practicing their knowledge and skills in their own environments. Second, the curriculum applies the theory of gender and power to guide youth in examining how gender norms and power dynamics in relationships influence sexual risk behaviors and teenage pregnancy. Finally, the program applies social norm theory by exploring, questioning, and attempting to change perceived social norms about gender and pregnancy through its three components.

1. *GEN.M* educational workshop

The *GEN.M* curriculum is delivered to small, mixed-gender groups of 12 to 15 youth over five consecutive days. The five four-hour workshop sessions feature interactive educational and skill-building activities facilitated by one male and one female facilitator. Each session focuses on one of five themes (Table I.1) that support the program's emphasis on understanding gender, building healthy relationships, and developing skills to prevent pregnancy and STIs. Activities conducted during the workshop sessions are designed to highlight and reinforce six core messages tied to the program's five thematic areas: (1) I am the boss of me, (2) I decide what being a man or a woman means to me, (3) I treat others in the way I want to be treated, (4) I make my own decision about if and when to have sex, (5) I use protection every time I have sex, and (6) I go to the clinic to get tested and protected. These messages are posted on the classroom wall during each workshop session and are reinforced during each core curriculum activity. The expectation is that sustained exposure to clear messages about positive behaviors will help youth remember the messages and make the targeted behaviors a part of their own lives.

Table I.1. *GEN.M* workshop sessions

Session	Title	Purpose
1	Understanding Gender and Its Influence on Sexual Behavior	To help youth become aware of, question, and redefine gender norms in ways that promote equitable relationships and promote health and well-being
2	Healthy Relationships	To increase understanding of the characteristics of healthy and unhealthy relationships and build skills to ensure that relationships are fulfilling, enjoyable, and healthy
3	Big Decisions	To help youth understand the challenges of being a teen parent and build skills in setting limits to sexual activity
4	Skills for Preventing Pregnancy	To teach youth about pregnancy and STIs and build skills in preventing both through the consistent and correct use of condoms
5	Taking Action to Prevent Teen Pregnancy	To teach youth about the most widely accessible hormonal and long-acting contraceptives and where to obtain them; in addition, to ask youth to identify personal behaviors they intend to sustain or change to prevent pregnancy

During the workshop sessions, facilitators (1) lead group discussions to introduce the program themes and messages, and (2) guide individual and group activities. For individual activities, participants work independently and produce individual work (for example, assessments and writing assignments) in which they use critical thinking and analysis skills to apply the program themes and messages to their lives. Group activities (such as icebreakers, games, small-group discussions, and role plays) are used to encourage expression and communication. At the end of each session, facilitators videotape participants' reflections on the day's activities, and these reflections are used in the film screening component of the program.

2. Social media campaign

After the one-week workshop, program staff use a four-month social media campaign to reinforce curriculum messages. During the workshop, facilitators invite participants to join a private, supervised Facebook group. After the workshop ends, participants can access information and share thoughts in this group, while also maintaining connections formed with other participants during the workshop. In each of the campaign's four months, EngenderHealth staff focus their Facebook postings on one of the program's key messages, to stimulate discussion among group participants. After the campaign is over, the Facebook page remains active for ongoing youth-led interactions, discussions, and information sharing.

3. Community film screening

To further reinforce key messages and foster continued participant relationships, the program staff invite participants to a film screening after the educational workshop sessions have ended. The 20-minute film compiles the components of the workshop sessions during which participants were videotaped. In these video segments, participants (in group discussions or individually) detail what they have learned and how they intend to use that information in their lives.

C. Research questions

This report examines the interim impacts of the *GEN.M* program measured about six months after study enrollment and completion of the weeklong *GEN.M* workshop. Given the relatively short follow-up period being evaluated, we limit our analysis to the shorter-term mediating outcomes and interim goals specified in the program logic model (Figure I.1). A future report will examine *GEN.M*'s longer-term impacts on sexual risk behaviors and the incidence of teen pregnancy measured 18 months after study enrollment.

The interim report first focuses on the impacts of the *GEN.M* program on key pathways or mechanisms through which the program aims to influence sexual risk behaviors. These potential shorter-term mediating outcomes include exposure to information on sexual and reproductive health topics and changes in knowledge, attitudes, intentions, and refusal skills. We explore program impacts on these outcomes through the following research questions:

1. Does *GEN.M* increase exposure to information on relationships, birth control methods and sources, refusal skills, and prevention of STIs?

2. Does *GEN.M* increase knowledge of birth control methods and where to access them?

3. Do *GEN.M* participants report different attitudes toward pregnancy and contraceptive use?

4. Do *GEN.M* participants report different attitudes toward gender roles?

5. Does *GEN.M* make youth less likely to report intentions to have sexual intercourse and unprotected sex in the near future?

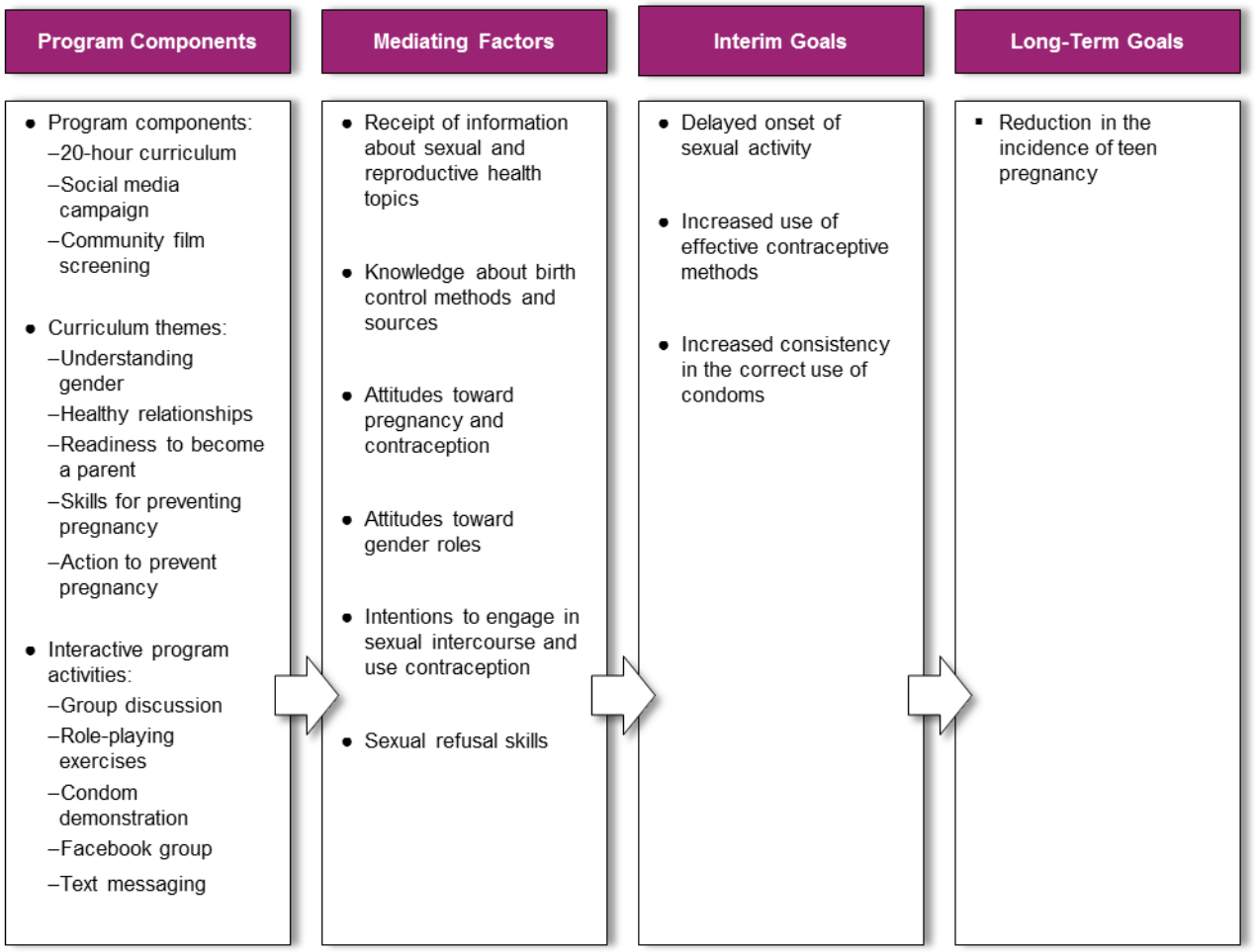
6. Does *GEN.M* succeed in building refusal skills?

We then examine program impacts on sexual behavior outcomes targeted by the program, including rates of sexual activity and unprotected sex. The specific research questions addressed are as follows:

7. Does *GEN.M* reduce rates of sexual activity among youth?

8. Does *GEN.M* reduce the incidence of unprotected sex among youth?

Figure I.1. *GEN.M* program logic model



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II. STUDY DESIGN

This study was designed as a randomized controlled trial involving predominately low-income youth in Travis County, Texas, recruited through the Travis County SYEP. Among eligible youth who agreed to participant in the study, just over half were randomly assigned to a treatment group that was offered the *GEN.M* program, and the others were assigned to a control group that was not offered the program. Both treatment and control group participants had access to existing sexual and reproductive health programs and services offered to Travis County youth. We calculated interim program impacts of the *GEN.M* program by comparing outcomes for the treatment and control groups about six months after study enrollment.

In this chapter, we first describe the enrollment and retention of study participants. We then discuss the baseline characteristics of the study sample. We end by providing a summary description of the treatment and control conditions. Chapter III describes the data, measures, and analytic methods used to estimate impacts of the *GEN.M* program.

A. Sample enrollment and retention

The study population was made up of Travis County youth who applied to participate in the Travis County SYEP program. A joint venture of the city of Austin and the Travis County Health and Human Services department, the SYEP places roughly 750 youth between ages 14 and 18 at job sites throughout Travis County for five weeks during the summer. Although the SYEP is offered to all youth attending public schools in Austin/Travis County, the program focuses recruitment on youth who are low income, are at risk, or have special needs. The 12 zip codes from which SYEP primarily draws its participants account for 80 percent of teen births and many of the STI cases in Travis County, and these zip codes have the lowest median family income in the county. Most of the population in these zip codes is African American or Latino (EngenderHealth 2010).

The SYEP is offered twice each summer, with five-week sessions starting in early June and mid-July. Due to limitations in the number and size of SYEP job sites, not all youth who apply to the SYEP can receive job assignments. Youth employed by the SYEP work four hours per day for five weeks during one of the two sessions. For three consecutive summers starting in 2012, the 20-hour *GEN.M* curriculum was delivered to program participants the week after the end of each SYEP summer session. (In 2013, a third *GEN.M* workshop session was also delivered.) To increase program participation, EngenderHealth offered youth assigned to the treatment group an incentive payment equal to the weekly payment youth receive for participating in the SYEP ($150 per week). Only those youth who attended all 20 hours of the weeklong *GEN.M* workshop received the entire incentive payment.

To be eligible for the study, SYEP applicants had to be between ages 14 and 16, have obtained parental consent to participate in the evaluation, and have completed a baseline survey. Recruitment of youth for the study took place annually between January and July. During the early consent phase (January to April), recruitment efforts targeted a large number of potentially eligible youth, with the expectation that attrition would be high between consent and the baseline survey administration later in the summer.

From January to April of each year, the SYEP conducts a series of 15-hour job readiness trainings (JRTs) for youth interested in the SYEP. Parents of interested youth are required to attend the first session of this training to learn more about the program, complete the program application, and sign a consent form allowing their child to participate in the SYEP. During these initial sessions, EngenderHealth program staff told parents about *GEN.M* and the potential opportunity for their child to participate in the program as part of an evaluation study. Parents who wanted their child to have a chance at participating in *GEN.M* and agreed to have their child participate in the evaluation were asked to return a signed evaluation consent form at the end of the JRT session. Efforts were also made to recruit SYEP applicants outside of the JRTs. These youth were typically identified by comparing lists of SYEP applicants who had consented to the evaluation to an expanded list of SYEP applicants compiled from information provided by SYEP staff. After youth were identified, information on the *GEN.M* program and study, along with parental consent forms, were sent to youth and their parents by mail or, for youth already employed by SYEP, through a SYEP job site liaison.

Between late May and July of each year, age-eligible consented youth were invited to complete a paper-and-pencil baseline survey questionnaire. Youth were invited to participate in a group baseline survey administration in June or July, depending on their SYEP job assignment (or lack thereof), which indicated availability for scheduled *GEN.M* workshops. Youth were invited to the baseline survey administration closest to the start of the *GEN.M* workshop they would be offered if they were selected to receive the intervention. Only those youth who completed the baseline survey were considered eligible for random assignment.

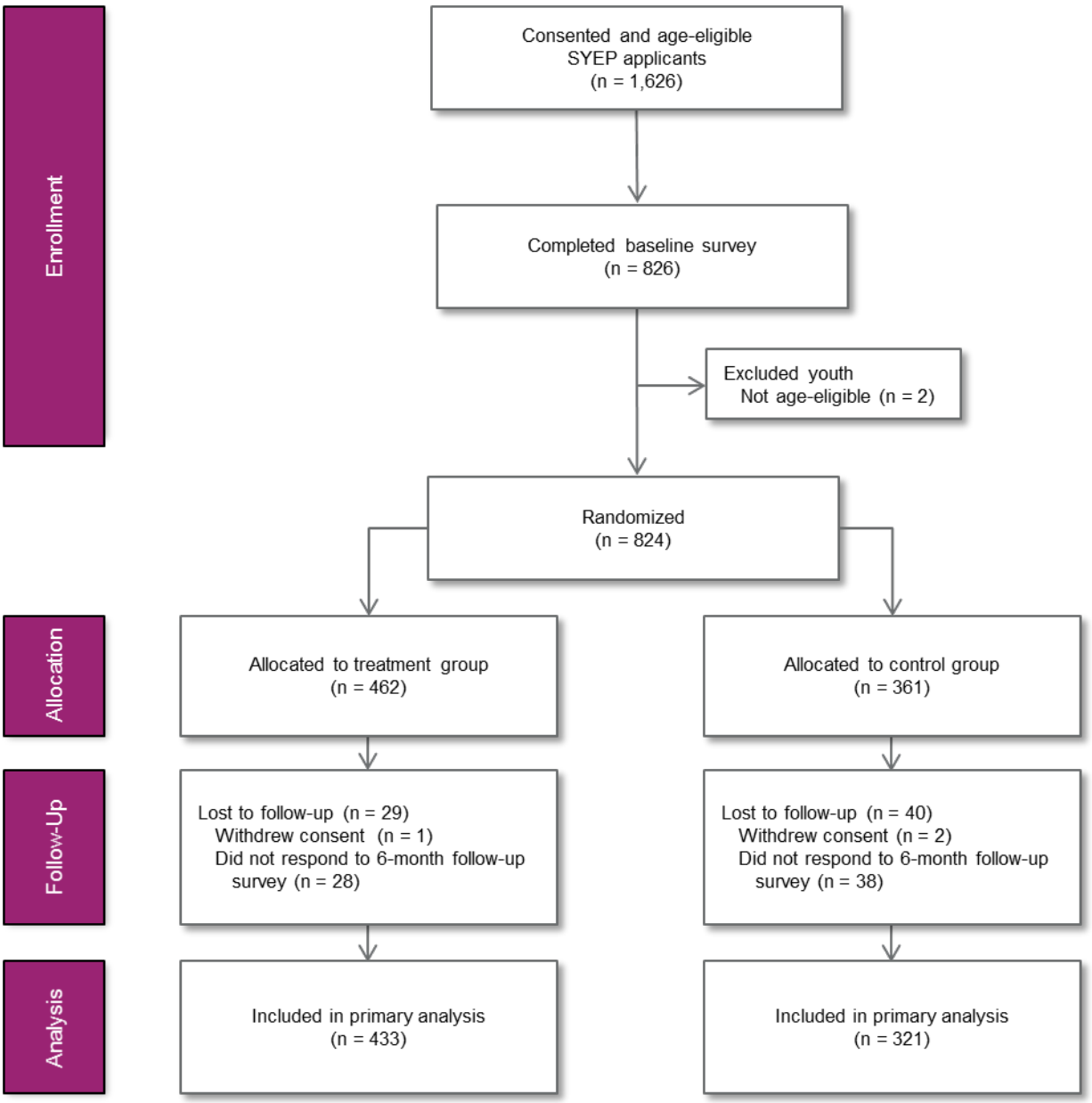
Sample enrollment and random assignment were managed through a secure web-based system. Mathematica staff entered all age-eligible, consented youth into the system on a rolling basis as signed parental consent forms were received from SYEP applicants. After each round of baseline data collection, age-eligible, consented youth who had completed the baseline survey questionnaire were randomly assigned. Random assignment was conducted by Mathematica staff using SAS, a statistical software package. The random assignment procedure was designed to take into account (1) the minimum and maximum number of youth who could participate in scheduled *GEN.M* workshops, (2) youth availability to attend the scheduled workshops (determined by SYEP job assignment results and information provided on the baseline survey sign-in sheets), and (3) the need for roughly equal numbers of male and female youth in each workshop group. To achieve this, random assignment was stratified by gender, availability for *GEN.M* workshops, and sibling status (as needed). This resulted in 23 random assignment blocks across the three summer cohorts of youth enrolled in the study. Within each block, participants were assigned to the treatment or control group; the probability of assignment to the treatment group varied across blocks in order to achieve the targeted number of youth and gender balance in each *GEN.M* workshop group. Siblings were randomly assigned as a unit to either the treatment or control group. Shortly after random assignment, youth were informed of their assignment status and the *GEN.M* workshop session to which they were assigned (as applicable), by telephone and mail.

The sample enrollment process yielded a total sample of 824 youth (Figure II.1). This study sample was obtained from a larger target population of age-eligible SYEP applicants, 1,626 of whom provided consent and were invited to take the baseline survey. Of these age-eligible, consented youth, 826 (51 percent) completed the baseline survey, and 824 (51 percent) were

randomly assigned. Because not all age-eligible SYEP applicants provided consent for the evaluation and, as anticipated, roughly half of those who did proceeded to take the baseline survey, the study sample is not intended to be a random or representative sample of all youth in the target population. Of the 824 youth randomly assigned, 56 percent (462 youth) were assigned to the treatment group, and the other 44 percent (361 youth) were assigned to the control group. The treatment group was larger because of the need to have a minimum number of youth in each program group to ensure adherence to the program model.

The retention rate for the study was high (Figure II.1). This report focuses on data from the first follow-up survey, which was administered to youth participants beginning about six months after the baseline survey. Of the 462 youth randomly assigned to the treatment group, 433 completed the six-month follow-up survey, for a response rate of 94 percent. Of the 361 youth assigned to the control group, 321 completed the survey, for a response rate of 89 percent. We will report retention rates for the longer-term 18-month follow-up survey in a future report. Appendix A contains a nonresponse analysis examining the characteristics of participants who did not complete the six-month follow-up survey.

Figure II.1. Overview of sample enrollment and retention



B. Baseline sample characteristics

We examined several characteristics of the treatment and control groups at baseline to characterize our sample of interest and ensure that random assignment resulted in comparable study groups. Differences between the treatment and control groups were generally small and not statistically significant.

The socio-demographic characteristics of the study sample were consistent with those of the population targeted by the *GEN.M.* program (Table II.1). At the time of the baseline survey, the mean age of participants at baseline was 15. Roughly half of the study participants were male. The racial characteristics of the population reflect those of the SYEP population: most sample

members were non-Hispanic blacks and Hispanics. Although non-Hispanic whites made up only a small percentage of both study groups (3.2 percent of the treatment group and 6.5 percent of the control group), the roughly 3.3 percentage point difference between the groups is statistically significant, but substantively small. Only 5 percent of participants reported a language other than English as the primary language spoken at home. Approximately 40 percent of youth in both study groups reported that religion is very important in their life, and a similar percentage reported that they attend religious services or other related events at least once a week.

Table II.1. Baseline socio-demographic characteristics

Variable	Treatment group mean	Control group mean	Difference	*p*-value
Age at random assignment (years)	15.4	15.4	0.0	0.82
Female	51.0	48.6	2.4	0.93
Race/ethnicity (%)				
White, non-Hispanic	3.2	6.5	-3.3*	0.04
Black, non-Hispanic	55.2	55.5	-0.3	0.77
Hispanic	37.9	35.2	2.7	0.29
Other race/ethnicity or multiracial	3.7	2.8	0.9	0.63
Main language spoken at home not English (%)	5.1	5.3	-0.2	0.64
Religion (%)				
Religion is very important in life	41.0	42.9	-1.9	0.41
Attend religious services/events weekly	38.3	36.7	1.6	0.65
Family structure				
Lives with both biological parents	31.0	29.1	1.9	0.50
Lives with one biological parent	62.7	60.0	2.7	0.49
Lives with neither biological parent	6.3	10.9	-4.6*	0.02
Parents' employment status				
Mother is employed	84.5	84.8	-0.3	0.61
Father is employed	81.3	87.5	-6.2*	0.05
Relationship with parents				
Feels very close to or cared for by mother	62.4	64.0	-1.6	0.65
Feels very close to or cared for by father	37.6	41.5	-3.9	0.28
Sample size[a]	**433**	**321**		

Source: Baseline survey administered to study participants before the start of the program.

Notes: Reported means are from weighted regressions that account for the random assignment design. See Appendix B for a description of the measures.

[a] Reported sample size is the number of participants who completed the six-month follow-up survey and are included in the analysis.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

There were small, but statistically significant, baseline differences between the study groups in some of the household/family characteristics examined. Most participants reported living with one or both biological parents at the time of the baseline survey, with roughly equal proportions of participants in both study groups living with one or both biological parents. However, there was a small but statistically significant difference between the two groups at baseline in the proportion of youth who reported living with neither biological parent (6 percent of youth in the treatment group versus 11 percent of youth in the control group). Similarly, although nearly all

participants in both groups reported that both parents were employed at the time of the baseline survey, there was a small but statistically significant difference between the two groups in the proportion of youth reporting that their father was employed at baseline (81 percent of treatment group youth versus 87 percent of control group youth). A similar proportion of participants in both study groups reported feeling very close to or cared for by their mother and father (roughly 63 and 40 percent, respectively).

Participants reported mixed levels of exposure to information on reproductive health and sexuality education topics at the time of study enrollment, with no statistically significant differences in exposure rates between the two study groups (Table II.2). More than three-fourths of participants said they had received at least some information in the past 12 months on (1) reproduction; (2) relationships, dating, marriage, and family life; and (3) STIs. More than 60 percent said they had received information on abstinence and how to say no to sex. However, fewer than half had received information related to birth control, including information on birth control methods, how to talk to your partner about birth control, and where to obtain birth control.

There were no baseline differences between the study groups in knowledge, attitudes, or intentions related to birth control and pregnancy (Table II.2). Participants had similar levels of knowledge about birth control pills as condoms, but low levels of knowledge about sources of female birth control methods, with less than one-quarter reporting that they "definitely" knew where to obtain female birth control methods. Participants reported relatively strong attitudes against pregnancy at the time of study enrollment, and more supportive attitudes toward condom use than use of birth control pills. Baseline attitudes toward gender roles were also similar between the two study groups.

The study participants reported rates of sexual activity at baseline that were slightly below state averages for high school students of comparable age, with no significant differences in rates between the study groups (Table II.3) (Centers for Disease Control 2013). Roughly 33 percent of participants reported some lifetime experience with sexual intercourse at the time of the baseline survey, compared to a state average of 39 percent for 10th graders; and roughly 17 percent of participants reported having sexual intercourse in the past three months, compared to a state average of 25 percent for 10th graders (CDC 2013). Rates of unprotected sex were also low at baseline; fewer than 4 percent of participants reported having unprotected sex and roughly 8 percent of participants reported having sex without a condom in the past three months.

Table II.2. Baseline exposure to information, knowledge, attitudes, and intentions

Variable	Treatment group mean	Control group mean	Difference	*p*-value
Exposure to information				
In the past 12 months, received information on (%				
Reproduction	82.2	80.7	1.5	0.43
Relationships, dating, marriage, and family life	81.3	82.3	-1.0	0.83
STIs	77.1	78.5	-1.4	0.43
How to say no to sex	67.6	67.1	0.5	0.83
Abstinence	60.3	61.4	-1.1	0.85
Methods of birth control	45.5	48.3	-2.8	0.71
How to talk to your partner about birth control	44.3	48.4	-4.1	0.32
Where to obtain birth control	41.1	39.4	1.7	0.47
Knowledge of birth control methods and sources				
Knowledge of birth control pills (index score, ranges 0-2)[b]	1.1	1.1	0.0	0.27
Knowledge of condoms (index score, ranges 0-2)[b]	0.9	1.0	-0.1	0.46
Percentage of youth reporting they "definitely" know where to obtain female birth control methods	18.6	22.3	-3.7	0.20
Attitudes toward pregnancy and contraception				
Views on pregnancy (standardized scale score, ranges from -2.6 to 0.9)[b]	-0.01	0.04	-0.05	0.381
Percentage of youth who "strongly agree" that:				
Condoms are important to make sex safer	61.4	57.8	3.6	0.13
Condoms should always be used by someone their age during sexual intercourse	71.4	68.8	2.6	0.41
Female birth control should always be used if someone their age is having sexual intercourse	37.7	35.0	2.7	0.37
Attitudes toward gender roles				
Beliefs about:				
Male gender roles (scale score, ranges 1-4)[b]	3.12	3.06	0.06	0.08
Males' role in sex (scale score, ranges 1-4)[b]	3.41	3.41	0.00	0.84
Females' obligation to have sex (individual item, ranges 1-4) [b]	3.54	3.51	0.03	0.62
Intentions toward sex and contraceptive use				
Percentage of youth reporting they will "definitely":				
Not have sexual intercourse in the next year	26.8	26.2	0.6	0.95
Use a condom or female birth control method if have sexual intercourse next year	89.2	84.8	4.4	0.10
Use a condom if they have sexual intercourse in next	86.4	81.9	4.5	0.12
Use female birth control method if have sexual intercourse in next year	51.9	49.5	2.4	0.32
Perceived refusal skills				
Perceived refusal skills (continuous score, ranges 1–4)	3.3	3.3	0.0	0.83
Sample size[a]	**433**	**321**		

Source: Baseline survey administered to study participants before the start of the program.

Notes: Reported means are from weighted regressions that account for the random assignment design. See Chapter III for a description of the measures.

[a] Reported sample size is the number of participants who completed the six-month follow-up survey and are included in the analysis; it does not account for item nonresponse for any measures included in the table.

[b] See Chapter III and Appendix B for a detailed description of each measure.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

Table II.3. Baseline sexual risk behaviors

Variable	Treatment group mean	Control group mean	Difference	*p*-value
Ever had sex (%)	31.9	34.0	-2.1	0.99
In past 3 months:				
Had sexual intercourse	17.3	17.6	-0.3	0.76
Had unprotected sex	3.9	3.9	0.0	0.56
Had sex without a condom	7.9	8.2	-0.3	0.79
Sample size[a]	**433**	**321**		

Source: Baseline survey administered to study participants before the start of the program.

Notes: Reported means are from weighted regressions that account for the random assignment design. See Chapter III for a description of the measures.

[a] Reported sample size is the number of participants who completed the six-month follow-up survey and are included in the analysis; it does not account for item nonresponse for any measures included in the table.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

C. Treatment and control conditions

Treatment condition. Youth assigned to the treatment group were offered the *GEN.M* program, including the 20-hour curriculum-based workshop and subsequent social media and film screening activities. The five four-hour workshop sessions were delivered on consecutive days in July or August by a pair of trained health educators (one male and one female) from SafePlace, a local organization offering domestic violence prevention services to Travis County youth. Consistent with the program model, each workshop group included 12 to 15 youth and roughly equal numbers of males and females. During the workshops, participants were invited to join a private Facebook group supervised by program staff and to receive text messages on workshop-related topics over a four-month period. Participants were also invited to attend a screening of a film documenting their workshop experiences, compiled from videotaped portions of the *GEN.M* workshop sessions.

All workshop facilitators received a five-day (40-hour) training in spring 2012, before the first set of *GEN.M* workshops. During the training, facilitators could practice delivering the curriculum. EngenderHealth held a supplemental training later in the spring to give facilitators more practice discussing sexual and reproductive health topics with youth. After the initial training, EngenderHealth staff held monthly meetings with the facilitators to review logistics for the workshops and discuss fidelity to the curriculum. EngenderHealth staff also monitored program delivery for fidelity through classroom observation and review of fidelity log forms that facilitators completed after each workshop session.

Our accompanying implementation study of the *GEN.M* program found that the program was well implemented (Shapiro 2013). More than 80 percent of youth enrolled in the treatment group completed the 20-hour *GEN.M* workshop. The high attendance may be a result of tying the *GEN.M* program to the SYEP, including scheduling the *GEN.M* workshops as an additional week of SYEP employment and offering an incentive equal to the weekly SYEP payment for attending all five workshop sessions. Implementation study results also suggested that youth were engaged in the program material, which may have influenced continued workshop

attendance throughout the week. Facilitators reported that participants' engagement increased over the course of the weeklong curriculum and was highest during interactive activities, such as skits and plays. Program participants reported that they respected the facilitators and felt that they treated them as adults and valued their opinions and responses to questions, leading them to participate freely in discussions. Implementation study findings suggested the program content resonated with both male and female youth, in a manner consistent with the program's goals. For example, both male and female youth valued being in control of their own actions and said they would use the strategies *GEN.M* taught to "say no" to sex; however, males and females had different perceptions of what this meant with regard to sex and dating. Females understood that they could defend themselves against peer pressure to date and have sex; males heard that they could make individual choices about sex (that is, to wait to have sex and to not pressure a partner into having sex). The implementation study suggested that younger participants (age 14) had difficulty understanding some of the material because of their more limited experience with sex and dating. A more detailed description of the implementation successes and challenges is provided in the *GEN.M* implementation report (Shapiro 2014).

Control condition. Youth assigned to the control condition were not offered the *GEN.M* program, but they had access to any other sexual and reproductive health services available to them. A variety of teen pregnancy prevention interventions were available to teens in the Austin/Travis County area during the study period (Brazeal et al. 2015). These interventions included a number of evidence-based sexuality education programs, several of which were launched between 2012 and 2014, after the study began. Some of these interventions were implemented under the Personal Responsibility Education Program and OAH Teen Pregnancy Prevention grant initiatives, administered by the Administration for Children and Families and OAH, respectively.

Evidence-based sexuality education programs offered in Austin/Travis County high schools during the study period include (1) REAL TALK, an abstinence-based program that uses the *Reducing the Risk* curriculum for high school students; and (2) *Making Proud Choices!* Several evidence-based sexuality education programs were also available to high school-age youth in community settings, including (1) *Be Proud! Be Responsible! Be Protected!*, offered to teen parents; (2) *Be Proud! Be Responsible!*, offered to homeless, runaway, and foster youth; (3) the Connections Project, which offers the *Making Proud Choices!* curriculum to youth in foster care and the juvenile justice system; (4) *Sisters Saving Sisters*, offered to female teens in community- and clinic-based settings; and (5) *¡Cuidate!* Peer to Peer Program, which targets high school-age Latino youth.

In addition to these evidence-based sexuality education programs, several other pregnancy prevention programs were available to teens in school, community, and after-school settings during the study period. These include *Big Decisions in AISD*, offered to Austin Independent School District students in health class, and the Austin Healthy Adolescent Program sexuality education program, an after-school program for youth in juvenile probation.

Still other resources for pregnancy prevention include long-standing sexual and reproductive health services provided through Austin/Travis County community clinics, including the People's Community Clinic and Planned Parenthood of Greater Texas. The Tandem Teen Prenatal and Parenting Program, an interagency collaboration, also provides medical, mental

health, educational/vocation, and social support services to teen mothers and their children through several clinics and community organization sites.

Given the large number of pregnancy prevention efforts in Travis County, it is likely that some youth in the *GEN.M* evaluation sample will have been exposed to a pregnancy prevention program outside of *GEN.M* and/or received other sexual and reproductive health services offered in the area during the study period. However, few, if any, of the other programs offered to high school-age youth incorporate gender content or explicitly address harmful gender norms linked to adolescent sexual risk behaviors. In addition, Table II.1 suggests that the *GEN.M* program may be more comprehensive than existing programs offered to Travis County youth. Although most study participants reported that they had received information on relationships, STIs, how to say no to sex, and abstinence at baseline, fewer than half reported having received information on topics related to birth control, including methods, sources, and how to talk to your partner about birth control.

III. DATA, MEASURES, AND ANALYSIS

This analysis is based on data from two rounds of surveys completed by youth in both the treatment and control groups. As discussed in Chapter II, youth were required to complete a paper-and-pencil baseline survey questionnaire before random assignment. The survey was administered to groups of youth by trained data collection staff from Mathematica, roughly two to five weeks before the weeklong *GEN.M* workshop. Each participant received a $20 gift card for completing the baseline survey. Starting six months after the baseline survey, a first follow-up survey was administered by telephone to individual youth by trained Mathematica interviewers. Each participant received a $25 gift card for completing the six-month follow-up survey. In the remainder of this chapter, we first describe the outcome measures constructed from the six-month follow-up survey. We then discuss the analytic methods used to assess the impacts of the *GEN.M* program on participant outcomes. Appendix B contains more detailed information on the measures.

A. Outcome measures

Drawing on data from the six-month follow-up survey, we constructed eight groups of outcome measures, each corresponding to one of the study's research questions: (1) exposure to information on sexual and reproductive health topics, (2) knowledge of birth control methods and sources, (3) attitudes towards pregnancy and contraception, (4) attitudes toward gender roles, (5) intentions toward sex and contraceptive use, (6) perceived refusal skills, (7) sexual activity, and (8) unprotected sex. These measures are summarized in Table III.1 and described in greater detail below.

1. Exposure to information on sexual and reproductive health topics

The six-month follow-up survey included two questions designed to assess youth exposure to information on reproductive health, pregnancy and STI prevention, and relationships. The survey first asked youth whether they had received information in the past 12 months on topics such as relationships, birth control methods, where to get birth control, abstinence from sex, STIs, and how to say no to sex (see Appendix B for a complete list). We used responses to this question to create a series of eight binary (yes/no) measures of whether youth had received information on each topic. The survey then asked youth whether they received such information from various different sources—in a summer youth program, in a school class, at a community center, youth organization, or after-school activity, and so on. We used responses to these questions to create a series of six binary (yes/no) variables indicating whether youth received information from each of the following sources: (1) summer youth program; (2) school class; (3) community center, youth organization, or after-school activity; (4) doctor, nurse, or clinic; (5) religious leader or institution; or (6) internet or media.

Table III.1. Outcome measures

Measure	Definition
Mediating outcomes	
Exposure to information on sexual and reproductive health topics	
Receipt of information in the past 12 months	Series of eight binary variables: equals 1 if youth reported receiving information on each of eight topics; equals 0 if youth did not receive information.
Sources of information in the past 12 months	Series of six binary variables: equals 1 if youth reported receiving information from each of six sources; equals 0 if youth did not receive information from source.
Knowledge of birth control methods and sources	
Knowledge of birth control pills	Index variable: sum of correct responses to two survey questions; variable ranges from 0 to 2, with higher values indicating greater knowledge.
Knowledge of condoms	Index variable: sum of correct responses to two survey questions; variable ranges from 0 to 2, with higher values indicating greater knowledge.
Perceived knowledge of female birth control sources	Binary variable: equals 1 if youth reports that he or she "definitely" knows where to obtain birth control; equals 0 if youth reports a lower level of perceived knowledge.
Attitudes toward pregnancy and contraception	
Attitudes toward pregnancy	Continuous scale variable: standardized scale based on four survey questions; variable ranges from -2.6 to 0.9, with higher values indicating stronger attitudes against becoming pregnant or getting a partner pregnant (alpha coefficient = 0.61).
Perceived importance of condom use for safe sex	Binary variable: equals 1 if youth reported that he or she "strongly agrees" that condoms are important to make sex safer; equals 0 if youth did not strongly agree.
Perceived need for consistent condom use	Binary variable: equals 1 if youth reported that he or she "strongly agrees" that condoms should always be used if a person his or her age has sexual intercourse; equals 0 if youth did not strongly agree.
Perceived need for consistent female birth control use	Binary variable: equals 1 if youth reported that he or she "strongly agrees" that birth control should always be used if a person his or her age has sexual intercourse; equals 0 if youth did not strongly agree.
Attitudes toward gender roles	
Beliefs about masculinity	Continuous scale variable: average of responses to four survey questions; variable ranges from 1 to 4, with higher values indicating less traditional views (alpha coefficient = 0.52).
Beliefs about male role in sex	Continuous scale variable: average of responses to six survey questions; variable ranges from 1 to 4, with higher values indicating less traditional views (alpha coefficient = 0.80).
Beliefs about females' obligation to have sex	Based on a single survey question: variable ranges from 1 to 4, with higher values indicating less traditional views.
Beliefs about importance of boyfriends to girls' self-esteem (female youth only)	Continuous scale variable: average of responses to three survey questions; variable ranges from 1 to 4, with higher values indicating less traditional views (alpha coefficient = 0.67).
Intentions toward sex and contraceptive use	
Intentions to have sexual intercourse	Binary variable: equals 1 if youth reported that he or she "definitely" intended to have sexual intercourse in the next year; equals 0 if youth reported less intention.
Intentions to use a female method of birth control	Binary variable: equals 1 if youth reported that he or she "definitely" intended to use a female birth control method during sexual intercourse in the next year; equals 0 if youth reported less intention.
Intentions to use condoms	Binary variable: equals 1 if youth reported that he or she "definitely" intended to use a condom during sexual intercourse in the next year; equals 0 if youth reported less intention.

Measure	Definition
Intentions to use a female birth control or condoms	Binary variable: equals 1 if youth reported that he or she "definitely" intended to use a female birth control method or condom during sexual intercourse in the next year; equals 0 if youth reported less intention.
Perceived refusal skills	
Perceived refusal skills (full sample)	Average of two survey questions; variable ranges from 1 to 4, with higher values indicating a greater perceived refusal skills.
Perceived refusal skills (females only)	Continuous scale variable: average of responses to three survey questions; variable ranges from 1 to 4, with higher values indicating greater perceived refusal skills.
Sexual behavior outcomes	
Sexual activity	
Ever had sexual intercourse	Binary variable: equals 1 if youth reported ever having had sexual intercourse; equals 0 if youth reported never having sexual intercourse.
Had sexual intercourse in the past three months	Binary variable: equals 1 if youth reported having had sexual intercourse in the past three months; equals 0 if the youth did not have intercourse in the past three months.
Unprotected sex	
Had unprotected sex in the past three months	Binary variable: equals 1 if youth reported that he or she had sexual intercourse without a modern birth control method in the past three months; equals 0 if youth did not have unprotected sex.
Had sexual intercourse without a condom in the past three months	Binary variable: equals 1 if youth had sexual intercourse without a condom in the past three months; equals 0 if participant did not have sex without a condom.

2. Knowledge of birth control methods and sources

To assess the program's effects on youth knowledge of birth control methods and sources, we constructed three different outcomes:

- **Knowledge of birth control pills.** The survey asked youth two questions about the efficacy of birth control pills in preventing pregnancy and STIs: (1) "If birth control pills are used correctly and consistently, how much can they reduce the risk of pregnancy?" and (2) "If birth control pills are used correctly and consistently, how much can they reduce the risk of getting HIV, the virus that causes AIDS?" The five response categories were: "not at all," "a little," "a lot," "completely," and "don't know." We summed the number of correct responses to these two questions to create an index of knowledge of birth control pills. The index ranges from 0 to 2, with higher values indicating greater knowledge.
- **Knowledge of condoms.** The survey asked youth two questions about the efficacy of condoms in preventing pregnancy and STIs: (1) "If condoms are used correctly and consistently, how much can they reduce the risk of pregnancy?" and (2) "If condoms are used correctly and consistently, how much can they reduce the risk of getting HIV, the virus that causes AIDS?" The five response categories were: "not at all," "a little," "a lot," "completely," and "don't know." We summed the number of correct responses to these two questions to create an index of knowledge of condoms. The index ranges from 0 to 2, with higher values indicating greater knowledge.
- **Perceived knowledge of female birth control sources.** The survey asked youth to respond to the following statement: "I would know where to go for birth control methods like the pill or the shot for me or my partner." The response categories were: "definitely true," "probably

true," "probably false," "definitely false," and "don't know." We constructed a binary indicator comparing youth who responded "definitely true" to this statement to youth who provided other responses indicating less certainty about their knowledge of where to access birth control.

3. Attitudes toward pregnancy and contraceptive use

We constructed four measures of youth attitudes toward pregnancy and birth control use:

- **Attitudes toward pregnancy.** The survey asked youth three questions about how they would feel if they became pregnant or got a partner pregnant. The first two questions asked youth whether they agreed or disagreed with the following statements: (1) "Getting pregnant or getting a girl pregnant in the next year or two would hurt your chances of being successful in life"; and (2) "If you got pregnant or got a girl pregnant in the next year or two, your life would become a lot better." The four possible response categories ranged from "strongly agree" to "strongly disagree." The third question asked youth: "If you got pregnant, how would you feel?" For this question, five possible response categories were offered, ranging from "very happy" to "very upset." We combined these three questions into a standardized scale with higher values indicating stronger attitudes against becoming pregnant or getting a partner pregnant.
- **Perceived importance of condom use for safe sex.** The survey asked youth if they agreed or disagreed with the following statement: "Condoms are important to make sex safer." The five possible response categories ranged from "strongly agree" to "strongly disagree." We constructed a binary measure to compare youth who said that they "strongly agree" to youth who reported a lower level of agreement.
- **Perceived need for consistent condom use.** The survey asked youth if they agreed or disagreed with the following statement: "Condoms should always be used if a person your age has sexual intercourse." The five possible response categories ranged from "strongly agree" to "strongly disagree." We constructed a binary measure to compare youth who said that they "strongly agree" to youth who reported a lower level of agreement.
- **Perceived need for consistent female birth control use.** The survey asked youth if they agreed or disagreed with the following statement: "Birth control should always be used if a person your age has sexual intercourse." The five possible response categories ranged from "strongly agree" to "strongly disagree." We constructed a binary measure to compare youth who said that they "strongly agree" to youth who reported a lower level of agreement.

4. Attitudes toward gender roles

We constructed four measures that assess the extent to which youth subscribe to traditional norms of masculinity and femininity that have been associated with sexual risk behaviors. The measures focus on masculine and feminine ideologies related to male toughness, male sexual roles, females' sexual role, and the importance of male partners to girls' self-esteem.

- **Beliefs about masculinity.** The survey asked youth if they agreed or disagreed with four statements reflecting traditional attitudes toward masculinity, such as "The best way for a boy to show he is strong is to act tough" and "In a good dating relationship, the boy gets his way most of the time." The four possible response categories ranged from "strongly agree" to "strongly disagree." We averaged responses across the four survey items to create a

composite scale of youth beliefs about masculinity, with higher values indicating greater disagreement and less traditional attitudes.

- **Beliefs about males' role in sex.** The survey asked youth if they agreed or disagreed with six statements concerning males' role in sex, such as "It is embarrassing for a 16-year-old boy if he has never had sexual intercourse," "One way for a guy to prove he is a real man is to have sex with a lot of girls," and "It is all right for a boy to pressure a girl to have sex if she has had sex with him in the past." The four possible response categories ranged from "strongly agree" to "strongly disagree." We averaged responses across the six items to create a composite scale of youth beliefs about male sex roles, with higher values indicating greater disagreement and less traditional attitudes.
- **Beliefs about females' obligation to have sex.** The survey asked youth if they agreed or disagreed with the following statement: "A girl who really likes a guy needs to have sex with him to prevent him from finding someone else." The four possible response categories ranged from "strongly agree" to "strongly disagree." The variable ranges from 1 to 4, with higher values indicating greater disagreement and less traditional attitudes.
- **Beliefs about importance of boyfriends to girls' self-esteem (female youth only).** The survey asked female youth if they agreed or disagreed with three statements concerning the role of boyfriends in teenage girls' lives, such as "A girl is likely to feel bad about herself if she never has a boyfriend." The four possible response categories ranged from "strongly agree" to "strongly disagree." We averaged responses across the three items to create a composite scale of the importance of boyfriends to girls' self-esteem, with higher values indicating greater disagreement and less traditional attitudes.

5. Intentions toward sex and contraceptive use

We constructed four measures of youth intentions toward sexual activity and contraceptive use. Three measures are based on three separate survey questions about youth intentions to (1) have sexual intercourse in the next year, (2) use (or have their partner use) female birth control if they have sexual intercourse in the next year, and (3) use (or have their partner use) a condom if they have sexual intercourse in the next year. For these three questions, the four possible response categories ranged from "definitely" to "definitely not." For each question, we created a binary measure that compares youth who said they definitely do not intend to have sexual intercourse or definitely intend to use birth control if they have sex to youth who report a less strong intention to avoid pregnancy/STI risk.

The fourth measure is a measure of whether youth reported an intention to use a condom *or* female birth control method if they have sexual intercourse in the next year. For this measure, we combined responses to the two questions asking youth about their intentions to use condoms and female birth control. Based on responses to the two questions, we constructed a binary measure that compares youth who said they "definitely" intend to use a condom or female method of birth control to youth who reported a less strong intention.

6. Perceived refusal skills

To assess the program's success in building refusal skills among youth, we constructed two versions of a composite measure of perceived refusal skills, one for male youth and one for

female youth. The measure for male youth is based on two questions asked of both male and female youth. For these two questions, youth were asked to imagine that they were alone with someone they liked very much and to assess whether they could resist an unwanted sexual advance using the following two questions: (1) "How likely is it that you could stop them if they wanted to touch your private parts below the waist, meaning the parts of the body covered by underwear, and you did not want them to do that?" and (2) "How likely is it that you could avoid having sexual intercourse if you didn't want to?" In addition to the two questions asked of male youth, female youth were asked a third question: "How likely is it that you could stop them if they wanted to touch your chest and you did not want them to do that?" For all these questions, the four possible response categories ranged from "not at all likely" to "very likely." We averaged responses across the items to create a summary index, with higher values indicating greater perceived refusal skills.

7. Sexual activity

To measure the interim impact of the program on sexual activity, we constructed two outcomes: (1) a binary (yes/no) indicator for whether youth reported that they had ever had sexual intercourse, and (2) a binary (yes/no) indicator for whether youth reported that they had sexual intercourse in the past three months. Each measure was based on a single survey question that was limited to vaginal intercourse, not oral or anal sex.

8. Unprotected sex

Among youth who reported having sexual intercourse at least once, the survey used a different series of question for youth who reported having sexual intercourse more than once versus youth who reported having sex only once. Among those who reported having sex more than once, the survey asked youth how many times in the past three months they had sexual intercourse without using (1) a condom, and (2) any modern method of birth control. The modern birth control methods specified in the survey were condoms, birth control pills, the shot, the patch, the ring, an IUD, or contraceptive implants. Among youth who reported having sexual intercourse once, the survey asked youth when they had sex, whether they used modern birth control during sex, and what type of birth control they used, if any.

Based on responses to these two sets of questions, we created two binary (yes/no) indicators for whether a participant reported (1) having unprotected sex in the last three months (defined as having sexual intercourse in the past three months without any modern contraceptive method), and (2) having sex without a condom. Youth who did not have sexual intercourse in the past three months were coded as not having unprotected sex/and not having sex without a condom.

B. Analytic approach

We used a multivariate regression framework to analyze the impact of *GEN.M* on each outcome. A regression framework is appropriate for this study because it allows us to account for the stratification used for random assignment and differential random assignment probabilities across strata (discussed in Chapter II). It also allows us to improve the precision of our impact estimates by statistically adjusting for any baseline covariates that are strongly correlated with our outcome measures.

We estimated a separate regression model for each outcome. For binary outcome measures (such as ever had sexual intercourse), we estimated impacts using logistic regression models. When reporting results from these models, we calculated mean marginal effects to express the impact estimates as percentage point differences between outcomes for the treatment and control groups. For all other outcomes, we estimated ordinary least-squares (OLS) regression models. We used weights in the regression models to account for variability in the probability of selection to the treatment or control groups across the 23 random assignment blocks. A base weight was calculated for all sample members as the inverse of the probability of random assignment to the treatment or control groups. Since randomization occurred separately within blocks, the base weight was calculated separately by block. Siblings were randomized together, so they are treated as one sample unit in the weight computation. In nearly all cases, two siblings were assigned together, so the sibling adjustment divides the base weight by two. In the one instance in which three siblings were assigned together, the sibling adjustment divides the base weight by three.

Each regression model included the following covariates: a binary indicator for treatment status; three key demographic variables highly correlated with our key outcomes of interest (age, race/ethnicity, and gender); a baseline measure of the outcome (if available); and three additional baseline covariates empirically selected because of their strong predictive power and potential to improve the precision of the impact estimates. These additional baseline covariates are (1) father's employment status, (2) number of biological parents with whom the participant lives, and (3) participants' beliefs about masculinity. These last three covariates were selected empirically through a data-driven stepwise selection procedure developed previously in the literature (Social and Character Development Research Consortium 2010). This procedure involves gradually adding covariates to the model in order, from most to least predictive of the outcome (as defined by the *t*-statistic on each covariate's regression coefficient). At the same time, covariates can be removed from the model if their predictive power falls below a minimum defined threshold. The procedure stops when no variable meets the minimum defined threshold of predictiveness. A list of candidate covariates included in the stepwise selection procedure can be found in Appendix C.

We adjusted the *p*-values for the statistical significance tests from our regression models to account for multiple hypothesis testing. As discussed earlier in this chapter, our analysis uses multiple outcomes to answer some of the key research questions. For example, we constructed two separate measures of sexual activity, eight measures of exposure to information, and four measures of attitudes. Unless we account for this multiplicity, it could increase the chances of making a false discovery and lead to spurious claims about the program's effectiveness. Researchers often declare a finding "statistically significant" if the probability of falsely rejecting the null hypothesis of no impact is less than 5 percent. However, when conducting separate tests arising from multiple outcomes, the probability of falsely rejecting the null hypothesis in *at least one* of them can be much higher than 5 percent. To correct for this increased probability, we apply a multiple hypothesis testing procedure outlined by Hothorn et al. (2008) and Schochet (2009). This procedure involves adjusting the reported *p*-value for each test to account for other tests conducted within the same "family" of related measures. Similar to other common methods of adjusting for multiple hypothesis testing, this procedure yields a 5 percent false positive rate across outcomes within the same family. However, the procedure is less conservative than other

common adjustment methods, such as the well-known Bonferroni correction, because it also accounts for any correlation in test statistics among outcomes within the same family.

We made this adjustment separately for each of the eight groups of outcome measures described earlier in this chapter (and presented in Table III.1). That is, we adjusted the *p*-values accounting for multiple outcomes within each of the eight groups of measures, but not for multiple outcomes measured across the different groups. We followed this approach because each group of outcomes aligns with a different research question. We base our substantive conclusions for each question only on the corresponding group of outcome measures. The number of outcomes measured in other groups has no bearing on our substantive conclusions for each question and therefore does not warrant an additional adjustment for multiple hypothesis testing.

To examine the robustness of our results, we conducted a range of sensitivity tests, including using alternative data cleaning procedures and specifications of the regression model (see Appendix C). The results presented in Chapter IV are robust to these alternative approaches. Because of the *GEN.M* program's gender focus, we also conducted exploratory analyses to examine program impacts on subsamples of male and female youth (Appendix D). Because the study was not powered to detect program impacts for male and female youth separately, the subgroup results should be interpreted with caution; the smaller sample sizes for the subgroup analysis reduce our ability to precisely detect smaller differences in outcomes between the treatment and control group. However, the results of the subgroup analyses were, in general, qualitatively consistent with the full sample results presented in Chapter IV (with two exceptions that are highlighted in Chapter IV).

IV. RESULTS

The *GEN.M* program had favorable impacts on several short-term, mediating outcomes targeted by the program. Youth assigned to the treatment group were significantly more likely than those in the control group to report receiving information on reproductive health, pregnancy and STI prevention, birth control, and relationship topics. We also find some evidence of short-term effects on knowledge and attitudes. Youth in the treatment group reported greater perceived knowledge of sources of female birth control and, among female youth, more supportive attitudes toward condom use to make sex safer (Appendix D). However, we find no evidence of program effects on gender role attitudes or intentions toward sexual activity and contraceptive use. This may be because youth in both the treatment and control groups generally held nontraditional (more egalitarian) views on gender roles and supportive attitudes toward condom use. Finally, we find no evidence that the program had an impact on youth sexual behaviors six months after study enrollment. However, given that we find evidence of program impacts on some key mediating factors, it may take longer than six months for program impacts on sexual behaviors to emerge. A future report will examine the longer-term impacts of the program on sexual behaviors, as well as pregnancy rates, measured 18 months after study enrollment.

A. Mediating outcomes

1. Exposure to information on sexual and reproductive health topics

The *GEN.M* program had large and statistically significant impacts on youth reports of exposure to information on reproductive health and sexuality education topics (Table IV.1). Compared to youth in the control group, youth in the treatment group were significantly more likely to report receiving information on all of the topics examined. They were also twice as likely to report receiving this information from a summer youth program, suggesting the *GEN.M* program was a key source of information among youth in the treatment group.

The magnitude of program impacts was largest for topics related to birth control. Compared to youth in the control group, youth in the treatment group were nearly 30 percentage points more likely to report receiving information on how to talk to a partner about birth control (82.6 versus 54.0 percent), birth control methods (79.5 versus 51.7 percent) and where to obtain birth control (78.4 versus 48.7 percent). Estimated differences in exposure to other sexual and reproductive health topics ranged from a low of 7.9 percentage points (receiving information on reproduction) to a high of 16.5 percent points (receiving information on how to say no to sex). These results suggest that the *GEN.M* program is filling key gaps in the teen pregnancy prevention program landscape in Travis County, particularly around topics related to birth control.

Table IV.1. Impacts on youth exposure to program information

Measure	Treatment group	Control group	Difference	*p*-value
Percentage of youth who reported receiving information on the following topics:[a]				
How to say no to sex	92.6	76.1	16.5**	<.001
Reproduction	92.5	84.6	7.9*	0.032
STIs	87.4	75.5	11.9**	0.008
How to talk to partner about birth control	82.6	54.0	28.6**	<.001
Methods of birth control	79.5	51.7	27.8**	<.001
Where to obtain birth control	78.4	48.7	29.7**	<.001
Relationships and dating	78.4	63.8	14.6**	0.004
Abstinence	77.2	61.4	15.8**	0.002
Percentage of youth who reported receiving information from each of the following sources:				
Summer youth program	84.6	42.8	41.8**	<.001
A school class	75.3	73.8	1.5	0.99
A doctor, nurse, or clinic	61.9	59.0	2.9	0.99
Internet or the media	59.6	52.1	7.5	0.99
A community center or after-school activity	54.7	36.5	18.2	0.40
A religious person or institution	39.3	38.5	0.8	0.99

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. All regressions are weighted to account for the random assignment design. Sample sizes accounting for item nonresponse range from 746 to 751, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

[a] Questions refer to information received in the 12 months before survey administration. See Appendix B for a more detailed description of each measure.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

2. Knowledge of birth control methods and sources

The *GEN.M* program had mixed effects on youth knowledge of birth control methods. Despite evidence of program impacts on exposure to information on birth control methods, we do not find evidence that *GEN.M* participation affected youth knowledge of birth control pills and condoms related to risk protection (Table IV.1). As discussed in Chapter III, the survey assessed youth knowledge of the efficacy of each method in preventing pregnancy and STIs using two questions, which were combined to create a knowledge index with values ranging from 0 to 2. In both study groups, index values were close to one for both knowledge measures, indicating that youth responded to roughly one of the two questions correctly, on average (Table IV.2). For the index of knowledge of birth control pills, the mean was 1.1 for the treatment group and 1.0 for the control group. For the index of knowledge of condoms, the mean was 1.0 for the treatment group and 0.8 for the control group. None of these treatment-control group differences was statistically significant. However, because the survey only measured knowledge of the efficacy of birth control pills and condoms, we cannot draw conclusions about whether the program affected knowledge of contraceptive methods more broadly.

In contrast, the *GEN.M* program had large and statistically significant impacts on perceived knowledge of female birth control sources (Table IV.2). Among youth in the treatment group, 37.3 percent reported that they "definitely" knew where to obtain female birth control, compared to 22.4 percent of youth in the control group.

Table IV.2. Impacts on youth knowledge of birth control methods and sources

Measure	Treatment group	Control group	Difference	*p*-value
Knowledge				
Knowledge of birth control pills (index score, ranges 0-2)[a]	1.1	1.0	0.1	0.059
Knowledge of condoms (index score, ranges 0-2)[a]	1.0	0.8	0.2	0.058
Percentage of youth reporting they "definitely" know where to obtain female birth control methods	37.3	22.4	14.9**	0.001

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. All regressions are weighted to account for the random assignment design. Sample sizes accounting for item nonresponse range from 747 to 750, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

[a] This index counts the number of correct responses to two knowledge questions. Possible values range from 0 to 2, with higher values indicating more correct responses.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

3. Attitudes toward pregnancy and contraception

The *GEN.M* program had limited impacts on youth attitudes toward pregnancy and contraceptive use (Table IV.3). Youth in both the treatment and control groups reported relatively strong attitudes against becoming pregnant or getting a sexual partner pregnant. On a scale ranging from -2.6 to 0.9, with higher values indicating stronger attitudes against pregnancy, the mean was zero for youth in both the treatment and control groups.

We did not find evidence that the *GEN.M* program affected youth perceptions of the importance of using condoms during sexual intercourse. Among youth in the treatment group, 63.6 percent strongly believed that condoms are important to make sex safer, compared to 54.3 percent of youth in the control group. Although this difference between the study groups is not trivial in size, it is not statistically significant. A substantial and similar majority of youth in the treatment and control groups reported that they strongly believed condoms should always be used during sexual intercourse (73.6 and 70.8 percent, respectively).

Youth in both study groups reported considerably weaker support for consistent use of female birth control methods. Fewer than half of youth in both study groups strong believed that female birth control should always be used during sexual intercourse (43.9 percent in the treatment group and 41.2 percent in the control group). This treatment-control group difference was not statistically significant.

In our exploratory analysis of program impacts on subgroups of male and female (Appendix D), we found that the program had a statistically significant effect on female youths' perceptions

of the importance of using condoms to make sex safer. In the treatment group, 65.1 percent of female youth reported a strong belief that condoms are important to make sex safer, compared to 54.3 percent of female youth in the control group, a statistically significant difference.

Table IV.3. Impacts on youth attitudes toward pregnancy and contraception

	Treatment group	Control group	Difference	*p*-value
Views on pregnancy (standardized scale score, ranges -2.6 to 0.9)[a]	0.0003	-0.006	0.0	0.999
Percentage of youth who "strongly agree" that:				
Condoms are important to make sex safer	63.6	54.3	9.3	0.084
Condoms should always be used by someone their age during sexual intercourse	73.6	70.8	2.8	0.999
Female birth control should always be used if someone their age is having sexual intercourse	43.9	41.2	2.7	0.999

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. All regressions are weighted to account for the random assignment design. Sample sizes accounting for item nonresponse range from 746 to 749, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

[a] Standardized scale measure based on three survey items, with higher values indicating stronger attitudes against becoming pregnant or getting a partner pregnant. The inter-item reliability (alpha) equals 0.61 for the full sample, 0.66 for females, and 0.57 for males at six months.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

4. Attitudes toward gender roles

As described in Chapter I, *GEN.M* is a gender transformative program that aims to challenge traditional gender norms associated with unhealthy sexual behaviors among youth. We did not find any evidence that the program affected youth attitudes toward traditional gender ideologies. Our findings suggest that youth in both the treatment and control groups held relatively nontraditional (more egalitarian) attitudes toward gender roles. For each of our three full sample measures of gender role attitudes, the values range from 1 to 4, with higher values indicating less traditional attitudes. For the measures of youth beliefs about masculinity, male sex roles, and females' obligation to have sex, the mean values were between 3.2 to 3.5, and the same for the treatment and control group. These high mean values indicate that most youth in both the treatment and control groups disagreed or strongly disagreed with the traditional ideologies examined.

For the female youth subsample, we also measured attitudes toward the importance of boyfriends to girls' self-esteem. For this measure, the mean was lower than for the other gender attitude measures, at 2.8 for the treatment group and 2.7 for the control group (Appendix D). This finding suggests that female youth held slightly more traditional beliefs about femininity. The treatment-control group difference for this measure was also not statistically significant.

Table IV.4. Impacts on youth gender role attitudes

Measure	Treatment group	Control group	Difference	*p*-value
Beliefs about:				
Male gender roles (scale score, ranges 1-4)[a]	3.2	3.2	0.0	0.999
Males' role in sex (scale score, ranges 1-4)[b]	3.4	3.4	0.0	0.999
Females' obligation to have sex (individual item, ranges 1-4)	3.5	3.5	0.0	0.999

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. All regressions are weighted to account for the random assignment design. Sample sizes accounting for item nonresponse range from 748 to 752, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

[a] This scale averages responses to four questions on beliefs about masculinity. Possible values range from 1 to 4, with higher values indicating a less traditional perspective on masculinity. The inter-item reliability (alpha) equals 0.58 for the full sample, females, and males at six months.

[b] This scale averages responses to six questions on males' role in sex. Possible values range from 1 to 4, with higher values indicating greater disagreement with statements asserting that boys should have sexual intercourse early and have sex with many girls, and that it is acceptable to pressure girls to have sex. The inter-item reliability (alpha) equals 0.79 for the full sample, 0.75 for females, and 0.81 for males at six months.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

5. Intentions

The *GEN.M* program did not have statistically significant impacts on youth intentions toward sexual activity or contraceptive use (Table IV.5). Most youth were open to the possibility of having sexual intercourse in the next year, with only 28.8 percent of youth in the treatment group and 34.0 percent of youth in the control group reporting that they "definitely" did not intend to have sex in the next 12 months. Most youth reported intentions to use birth control if they have sexual intercourse in the next year. Roughly 90 percent of youth in both study groups reported intentions to use a condom or birth control method if they have sexual intercourse in the next year (90.6 percent of youth in the treatment group and 89.4 percent of youth in the control group). The vast majority of youth in both study groups reported that they definitely intend to use a condom (87.9 percent of the treatment group and 84.4 of the control group). In contrast, only 56.3 percent of youth in the treatment group and 46.5 percent of youth in the control group reported that they definitely intend to use a female birth control method.

Table IV.5. Impacts on youth intentions toward sex and contraceptive use

Measure	Treatment group	Control group	Difference	*p*-value
Percentage of youth reporting they will "definitely":				
Not have sexual intercourse in the next year	28.8	34.0	-5.2	0.427
Use a condom or female birth control method if they have sexual intercourse in the next year	90.6	89.4	1.2	0.999
Use a condom if they have sexual intercourse in the next year	87.9	84.4	3.5	0.808
Use female birth control method if they have sexual intercourse in the next year	56.3	46.5	9.8	0.055

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. Sample sizes accounting for item nonresponse range from 730 to 748, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

6. Perceived refusal skills

We did not find statistically significant differences between youth in the treatment and control groups in perceived refusal skills (Table IV.6). Youth in both study groups reported relatively high levels of confidence in their ability to refuse unwanted sexual contact from someone they know. On a scale ranging from 1 to 4, with higher values indicating greater perceived refusal skills, the mean was 3.5 for both the treatment and control groups.

Table IV.6. Impacts on perceived refusal skills

Measure	Treatment group	Control group	Difference	*p*-value
Perceived refusal skills (continuous score, ranges 1–4)	3.5	3.5	0.0	0.571

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

B. Sexual behavior outcomes

GEN.M had no statistically significant impacts on the prevalence of sexual activity six months after study enrollment (Table IV.7). Approximately 40 percent of youth in both the treatment and control groups reported that they had some lifetime experience with sexual intercourse at the six-month follow-up (39.8 percent of youth in the treatment group and 39.9 percent of youth in the control group). About one-fifth of youth in both study groups reported having sex in the past three months (22.3 percent of youth in the treatment group and 19.9 percent of youth in the control group). Results were similar for male and female youth; however, male youth reported higher rates of sexual initiation than female youth (Appendix D).

We also found no evidence of program impacts on rates of unprotected sex, which were low in both study groups, reflecting both the relatively low rates of sexual activity and relatively high rates of contraceptive use among youth who reported having sexual intercourse. Only 6.9 percent of youth in the treatment group reported having sex without a modern birth control method in the past three months, compared to 6.4 percent of youth in the treatment group. Similarly, 7.2 percent of treatment group youth and 9.7 percent of control group youth reported having sex without a condom in the past three months. None of these differences between the treatment and control group is statistically significant.

Table IV.7. Impacts on youth sexual activity

Measure	Treatment group	Control group	Difference	*p*-value
Sexual activity				
Percentage of youth who reported the following:				
Ever had sexual intercourse	39.8	39.9	-0.1	0.999
Had sexual intercourse in the past three months	22.3	19.9	2.4	0.732
Unprotected sex				
Percentage of youth who reported the following:				
Had unprotected sex in the past three months	6.9	6.4	0.5	0.999
Had sex without a condom in the past three months	7.2	9.7	-2.5	0.530

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled “treatment group” and “control group” are regression-adjusted predicted values of outcomes at the six-month post-test survey. Sample sizes accounting for item nonresponse range from 693 to 752, depending on the measure. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the analytic methods and Appendix B for a more detailed description of each measure.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

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V. DISCUSSION AND CONCLUSION

The report presents interim impacts of the *GEN.M* program, an innovative comprehensive sexuality education program that aims to reduce teen pregnancy and related sexual risk behaviors among high school-age youth by addressing unhealthy gender norms. Prior research provides compelling evidence of linkages between traditional perceptions of masculinity, femininity, and sexual roles and adolescent sexual risk behaviors (see Rolleri 2013). However, few sexuality education or other teen pregnancy programs implemented in the United States have applied a gender lens or incorporated gender content as a way to increase program effectiveness.

Drawing on data from a rigorous random assignment evaluation involving a sample of 750 youth in Travis County, Texas, our interim findings show that *GEN.M* was successful in increasing youth exposure to information on reproductive health, pregnancy and STI prevention, birth control, and relationship topics measured six months after study enrollment. The program had particularly large impacts on youth receipt of information on birth control, including methods and sources of birth control and how to talk to a partner about birth control. We also find some evidence of short-term effects on knowledge and attitudes. Youth in the treatment group reported greater perceived knowledge of sources of female birth control and, among female youth, more supportive attitudes toward condom use to make sex safer. However, these short-term effects did not result in reduced rates of sexual activity or unprotected sex six months after study enrollment, or in changes in other mediating factors (such as attitudes toward pregnancy and intentions toward sexual risk behaviors). We also find no evidence of program effects on gender role beliefs, a key focus of the program.

Findings from the accompanying implementation study of the *GEN.M* program suggest that these mixed results are not a result of poor program implementation. Implementation study findings indicated that the program was well implemented. Facilitators delivered the workshop curriculum with fidelity, incorporating only minor modifications that were approved by EngenderHealth. Most youth attended all five workshop sessions and demonstrated high levels of engagement in the program material. Consistent with this picture, our analyses find substantial exposure to program information and messages among youth in the treatment group. However, the implementation study suggested that younger participants (age 14) had difficulty understanding some of the material because of their more limited experience with sex and dating.

Factors related to the evaluation setting may have contributed to the mixed study results and potentially diminished program impacts. First, youth in Travis County faced significant barriers to accessing female birth control methods during the study period. Since 1998, Texas law has required that adolescents obtain parental consent to receive prescription birth control. Confidential contraceptive services that do not require parental consent are offered to youth in clinics that receive funding through the federal Title X Family Planning program. However, in 2013, many family planning clinics in Texas lost federal Title X funding, including a Planned Parenthood clinic in Austin, the most commonly used source of contraceptive services among Travis County youth up until that point. The few family planning clinics in Travis County that have retained Title X funding and provide confidential contraceptive services are difficult for youth to access due to their limited hours and location. In this environment, it may have been difficult for the *GEN.M* program's impacts on youth exposure to information on birth control and perceived knowledge of birth control sources to translate to changes in contraceptive behaviors

during the study period. In addition, as discussed in Chapter II, a number of new pregnancy prevention programming efforts were launched in Travis County just before and during the study period, which may have reduced the contrast between the treatment and control group conditions. Although we find evidence of program impacts on receipt of information on all the topics examined, suggesting the *GEN.M* program filled key gaps in the program landscape, a large majority of youth in the control group reported receiving information on several key sexual and reproductive health topics, including how to say no to sex and STIs, with the latter potentially including discussion of condoms. Consistent with this, youth in the control group reported high levels of confidence in their sexual refusal skills and supportive attitudes toward consistent condom use at the six-month follow-up.

Aspects of the study sample and related limitations in our outcome measures may also have contributed to the mixed results. Our findings suggest that youth in the study sample held relatively nontraditional (egalitarian) attitudes toward gender norms, even at baseline, which may explain, in part, the lack of evidence of program impacts on our gender attitude measures. The survey only measured highly traditional attitudes and thus may not have captured less extreme, but important, aspects of youth gender role beliefs that could have been impacted by the program and may affect sexual risk behaviors. Alternatively, the focus on traditional gender ideologies may also have increased the likelihood of socially desirable responses that may not reflect actual beliefs, a long-standing concern in measurement of gender attitudes (Chang 1999; Jean and Reynolds 1984). Both of these issues limit our ability to draw conclusions about the program's impacts on youth gender beliefs. Second, youth in the study sample reported lower levels of sexual risk behaviors than were anticipated given the at-risk population targeted by the SYEP. For example, rates of sexual activity for control group youth at the six-month follow-up were roughly 5 percentage points lower than the state average for youth of comparable age in 2013 (CDC 2013). One possible explanation for this is that the study targeted all SYEP applicants, including those not selected for the program. Another is that SYEP applicants are different from other youth living in Travis County in ways that affect their sexual behaviors. It is possible that the program would have had different short-term results among higher-risk youth, or that it may take longer than six months for program impacts on sexual risk behaviors to emerge in this study sample.

The interim results presented in this report do not answer the ultimate question of whether the program's success in changing some key mediating outcomes will lead to reduced rates of pregnancy or longer-term changes in sexual risk behaviors. A future report will examine longer-term impacts of the program on sexual behaviors and pregnancy measured 18 months after study enrollment.

As the above discussion suggests, and as is typical of evaluations of teen pregnancy prevention programs, the findings presented in this report may not generalize to populations or settings outside of our study sample. By design, the evaluation focused on a specific set of youth in Travis County who applied to the SYEP, who may differ from the broader population of youth in Travis County and in other parts of the country. In addition, and as noted earlier, although the zip codes from which the SYEP draws its participants contain youth at high risk for teen pregnancy, the youth who apply to and participate in the SYEP within these zip codes may differ from those who do not in ways that affect sexual risk behaviors and mediating factors. Finally, of the SYEP applicants

potentially eligible for the study, only about half were enrolled in the study, suggesting that our study sample may not be representative of all age-eligible youth who applied to the SYEP.

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APPENDIX A

NONRESPONSE ANALYSIS

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This appendix examines the characteristics of the study participants lost to follow-up at the time of the six-month follow-up survey. As reported in Chapter II, among the 824 youth who enrolled in the study and were randomly assigned to the treatment and control groups, 754 completed the six-month survey, for an overall response rate of 92 percent. The remaining 70 participants did not complete a six-month survey and were therefore excluded from the interim impact analyses presented in this report. Because non-response rates were very low, and respondents and non-respondents were similar (as discussed below), we did not use non-response weights in our analysis of program impacts.

To better understand the characteristics of the study participants lost to follow-up, we used data from the baseline survey to compare the samples of follow-up survey respondents and nonrespondents. We compared the groups on a total of 28 measures of socio-demographic characteristics, exposure to information, and sexual risk behaviors (Tables A.1 and A.2). On the basis of this comparison, we found only three statistically significant differences. Compared to the 824 youth included in the analysis, the 69 nonrespondents were (1) less likely to report their race/ethnicity as American Indian, Alaska Native, Native Hawaiian or Other Pacific Islander, or multiracial; (2) more likely to have a father who was employed; and (3) less likely to report receiving information on birth control methods in the past 12 months. Other differences between the groups at the time of the baseline survey were generally small and not statistically significant. For a few variables, such as percentage female and living with both biological parents, differences between the two groups were relatively sizable, while not statistical significant; these differences were driven largely by the small size of the non-respondent group.

Table A.1. Baseline socio-demographic characteristics

Variable	Respondent Mean	Non-Respondent Mean	Difference	*p*-value
Age at random assignment (years)	15.4	15.4	0.0	0.966
Female	50.0	37.7	12.3	0.160
Race/ethnicity (%)				
White, non-Hispanic	4.6	2.9	1.7	0.752
Black, non-Hispanic	55.3	63.8	-8.5	0.577
Hispanic	36.7	33.3	3.4	0.912
Other race/ethnicity or multiracial	3.3	0.0	3.3**	<0.001
Main language spoken at home not English (%)	5.2	7.2	-2.0	0.593
Religion (%)				
Religion is very important in life	41.8	39.7	2.1	0.829
Attend religious services/events weekly	37.6	37.7	-0.1	0.661
Family structure				
Lives with both biological parents	30.2	21.7	8.5	0.172
Lives with one biological parent	61.6	71.0	-9.4	0.084
Lives with neither biological parent	8.2	7.2	1.0	0.361
Parents' employment status				
Mother is employed	84.6	90.6	-6.0	0.219
Father is employed	84.0	92.3	-8.3*	0.039
Relationship with parents				
Feels very close to or cared for by mother	63.0	61.2	1.8	0.671
Feels very close to or cared for by father	39.3	43.3	-4.0	0.719
Sample Size[a]	754	70		

Source: Baseline survey administered to study participants before the start of the program.

Notes: Reported means are from weighted regressions that account for the random assignment design. See Appendix B for a description of the measures.

[a] Reported sample size does not account for item nonresponse for any measures included in the table.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

Table A.2. Baseline exposure to information and risk behaviors

Variable	Respondent Mean	Non-Respondent Mean	Difference	*p*-value
In past 12 months, received information on (%):				
Relationships and dating	81.7	81.2	0.5	0.778
Abstinence	60.8	57.6	3.2	0.615
Methods of birth control	46.7	29.9	16.8*	0.012
Where to obtain birth control	40.4	30.9	9.5	0.162
Sexually transmitted infections	77.7	77.9	-0.2	0.893
How to talk to partner about birth control	46.1	41.2	4.9	0.654
How to say no to sex	67.4	69.6	-2.2	0.555
Reproduction	81.6	85.5	-3.9	0.488
Ever had sexual intercourse (%)	32.8	40.6	-7.8	0.291
In past three months:				
Had sexual intercourse (%)	17.4	17.2	0.2	0.821
Had unprotected sex (%)	3.9	1.6	2.3	0.397
Had sex without a condom (%)	8.0	6.3	1.7	0.907
Sample Size[a]	754	69		

Source: Baseline survey administered to study participants before the start of the program.

Notes: Reported means are from weighted regressions that account for the random assignment design. See Appendix B for a description of the measures.

[a] Reported sample size does not account for item nonresponse for any measures included in the table.

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APPENDIX B

DATA AND MEASURES

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This appendix provides more detailed information on the survey data collection and measures. We begin by describing the survey design and administration. We then provide a more detailed description of how we constructed the outcome measures. We end by listing the baseline measures considered as candidate covariates for the regression models.

A. Survey design and administration

As discussed in Chapter III, the interim impact estimates presented in this report are based on survey data collected in (1) a baseline survey administered before enrollment in the study and (2) a follow-up survey about six months later. For the baseline survey, trained data collection staff from Mathematica administered a paper-and-pencil interviewing (PAPI) questionnaire to groups of youth. For the follow-up survey, trained Mathematica staff administered the surveys by telephone to individual youth.

The baseline and follow-up surveys followed a similar structure and were designed to capture a broad range of measures of family background and demographic characteristics, exposure to information, knowledge, attitudes, future intentions, and sexual activity. The surveys were developed by the PPA research team in coordination with EngenderHealth staff and Columbia University faculty. They drew on items found in well-established surveys such as the National Longitudinal Study of Adolescent Health, the National Longitudinal Survey of Youth, the Youth Risk Behavior Survey, and the National Survey of Family Growth. In some cases, we had to adapt questions to fit the PAPI mode for the baseline survey.

We designed the questionnaire so that sensitive items related to sexual activity were asked only of youth who reported being sexually experienced. Specifically, the survey was split into three parts. Part A asked all youth general questions about family background and demographic characteristics, knowledge, attitudes, and intentions. This part of the survey concluded with a single screening question about sexual experience: "Have you ever had sexual intercourse?" Youth who answered "yes" to this screening question were then asked questions in Part B1 of the survey, which contained more detailed questions regarding sexual risk behaviors. Youth who answered "no" to the screening question were asked questions in Part B2 of the survey, which included an alternative set of questions.

As with any self-reported survey, the responses can be subject to reporting bias, which can differ between the treatment and comparison groups. For this study, we were concerned primarily with sexual risk behaviors and attitudes and intentions that potentially mediate those behaviors. For these measures, reporting bias can occur in either direction. On the one hand, youth in the treatment group may be less likely to report support for or engagement in risky sexual behaviors because they are embarrassed to admit to a behavior the program discourages. Such underreporting could lead to a spurious finding of lower rates of sexual activity or higher rates of contraceptive use. On the other hand, the program might make youth in the treatment group better informed about sexual risk behaviors and therefore more likely to report their true attitudes or involvement in them. Such an effect could lead to a spurious finding of higher rates of sexual activity or lower rates of contraceptive use among youth in the treatment group.

We took steps to minimize these risks. To help encourage honest reporting, the six-month follow-up survey was administered by independent data collectors trained and employed by Mathematica, not by EngenderHealth program staff or anyone else personally connected to the

study participants. In addition, for the six-month survey, we had the telephone interviewers use a standardized script to administer the follow-up surveys to ensure both uniformity in the data collection procedures and objectivity in the question wording. The interviewers reminded participants that their answers would be kept confidential and encouraged them to respond truthfully to the questions.

B. Outcome measures

As discussed in Chapter III, we used data from the six-month follow-up survey to construct eight groups of outcome measures: (1) exposure to information on sexual and reproductive health topics, (2) knowledge of birth control methods and sources, (3) attitudes toward pregnancy and contraception, (4) attitudes toward gender roles, (5) intentions about sex and contraceptive use, (6) perceived refusal skills, (7) sexual activity, and (8) unprotected sex. In this section, we provide more detailed information on how we constructed these outcome measures.

1. Exposure to information

The six-month survey included two questions designed to assess youth's exposure to information on reproductive health, pregnancy and STI prevention, and birth control methods. The survey first asked youth whether they had received any information in the past 12 months on the following topics:

- Relationships, dating, marriage, or family life
- Abstinence from sex
- Methods of birth control
- Where to get birth control
- Sexually transmitted infections (STIs)
- How to talk to your partner about whether to have sex or whether to use birth control
- How to say no to sex
- Reproduction

For each topic, youth answered "yes" or "no" to having received information in the past 12 months. We used responses to this question to create a series of seven binary (yes/no) measures of whether youth had received information on each topic (yes = 1, no = 0). For each topic, youth who did not respond to the question were coded as missing.

The survey then asked youth how frequently they had received such information from different sources. For this analysis, we focused specifically on the following six sources:

1. Summer youth program
2. School class
3. Community center, youth organization, or afterschool activity
4. Doctor, nurse, or clinic

5. Religious institution
6. Internet or media

For each source, the survey asked youth to respond in one of the following four categories: "never," "1–3 times," "4–9 times," or "10 or more times." We used responses to create a series of six binary (yes/no) variables indicating whether youth had received information from each source.

2. Knowledge

The survey asked youth five questions about their knowledge of condoms, birth control pills, pregnancy, and STIs. Four questions focused on knowledge about the efficacy of birth control pills and condoms in preventing pregnancy and STIs, and the fifth question asked about perceived knowledge of where to access female birth control. Using these five questions, we constructed three measures: (1) knowledge of birth control pills (based on two questions), (2) knowledge of condoms (based on two questions), and (3) perceived knowledge of female birth control sources (based on one question). For the first two measures, we totaled the number of correct responses to two knowledge questions to create a summary index with a value range of 0 to 2 (Table B.1). For the third measure, we created a binary variable that equals one if youth responded that they would "definitely" know where to access female birth control methods and zero otherwise (Table B.1)

Table B.1. Questions used to construct knowledge outcomes

Question	Response categories
Knowledge of birth control pills	
If birth control pills are used correctly and consistently, how much can they reduce the risk of pregnancy?	"not at all," "a little," "a lot," "completely," or "don't know" [correct response: "a lot"]
If birth control pills are used correctly and consistently, how much can they reduce the risk of getting HIV, the virus that causes AIDS?	"not at all," "a little," "a lot," "completely," and "don't know" [correct response: "not at all"]
Knowledge of condoms	
If condoms are used correctly and consistently, how much can they reduce the risk of pregnancy?	"not at all," "a little," "a lot," "completely," or "don't know" [correct response: "a lot"]
If condoms are used correctly and consistently, how much can they reduce the risk of getting HIV, the virus that causes AIDS?	"not at all," "a little," "a lot," "completely," or "don't know" [correct response: "a lot"]
Perceived knowledge of female birth control sources	
How true do you think it is that you would know where to go for birth control methods like the pill or the shot for you or your partner?	"definitely true," "probably true," "probably false," "definitely false," or "don't know."

3. Attitudes toward pregnancy and contraceptives

We constructed four measures of youth's attitudes toward pregnancy and contraceptive use: (1) attitudes toward pregnancy, (2) perceived importance of condom use for safe sex, (3) perceived need for consistent condom use, and (4) perceived need for consistent female birth control use.

For the measure of youth's **attitudes toward pregnancy**, the survey asked youth to respond to the following three questions or statements:

1. If you got pregnant now/got someone pregnant now, how would you feel?

2. Getting pregnant/getting a girl pregnant in the next year or two would hurt my chances of being successful in life.

3. If I got pregnant/got a girl pregnant in the next year or two my life would become a lot better.

For the first question, the possible response categories were "very happy," "a little happy," "neither happy nor upset," "a little upset," and "very upset." For the second and third statements, the response categories were "strongly agree," "agree," "disagree," and "strongly disagree." The second item was reverse coded so that higher values on all three items represented greater disappointment with the idea of becoming pregnant or getting a girl pregnant. Given the different numbers of response categories for each item, we created a standardized scale, with higher values indicating stronger attitudes against becoming pregnant or getting a partner pregnant. A factor analysis confirmed that all three items load onto a single construct. The scale has moderate internal reliability (alpha coefficient = 0.61 for the full sample, 0.57 for females, and 0.65 for males at baseline; and 0.61 for control group youth, 0.66 for control group females, and 0.57 for control group males at the six-month follow-up).

For the **perceived importance of condom use for safe sex** measure, the survey asked youth whether they agreed or disagreed with the following statement: "Condoms are important to make sex safer." The five response categories were "strongly agree," "agree," "neither agree nor disagree," "disagree," and "strongly disagree." We constructed an indicator variable for whether youth "strongly agreed" with the statement.

For the measure of **perceived need for consistent condom use**, the survey asked youth whether they agreed or disagreed with the following statement: "Condoms should always be used if a person your age has sexual intercourse." The five response categories were "strongly agree," "agree," "neither agree nor disagree," "disagree," and "strongly disagree." We constructed an indicator variable for whether youth "strongly agreed" with the statement.

For the measure of **perceived need for consistent female birth control use**, the survey asked youth whether they agreed or disagreed with the following statement: "Birth control should always be used if a person your age has sexual intercourse." The five response categories were "strongly agree," "agree," "neither agree nor disagree," "disagree," and "strongly disagree." We constructed an indicator variable for whether youth "strongly agreed" with the statement.

4. Attitudes toward gender roles

We constructed four measures of gender role attitudes: (1) beliefs about masculinity, (2) beliefs about males' role in sex, (3) beliefs about females' obligation to have sex, and (4) beliefs about the importance of boyfriends to girls' self-esteem (female youth only).

For the measure of youth's **beliefs about masculinity**, the survey asked youth whether they agree or disagree with the following four statements:

1. The best way for a boy to show he is strong is to act tough.

2. In a good dating relationship the boy gets his way most of the time.

3. It's embarrassing for a boy when he needs to ask for help.

4. If a girl and a boy have sex, the girl is more responsible for preventing pregnancy than the boy.

The four response categories were "strongly agree," "agree," "disagree," and "strongly disagree." We created a scale with a value range of 1 to 4 by averaging responses across the four items. Higher values indicate less traditional attitudes toward masculinity. A factor analysis confirmed that all four items load onto a single construct. The scale has marginal internal reliability (alpha coefficient = 0.52 for the full sample, 0.50 for females, and 0.50 for males at baseline; and 0.58 for the full sample of control group youth, we well as for male and female control group youth, at the six-month follow-up).

For the measure of youth's **beliefs about males' role in sex**, the survey asked youth whether they agree or disagree with the following six statements:

1. It is embarrassing for a 16-year-old boy if he has never had sexual intercourse.

2. It is alright for a boy to pressure a girl to have sex if she has had sex with him in the past.

3. When a girl says no to sex, she expects the boy to keep trying.

4. One way for a guy to prove he is a real man is to have sex with a lot of girls.

5. A guy should have sexual intercourse as early as he can in his life.

6. It is alright for a boy to pressure a girl to start having sex if they have been dating for nine months.

The four response categories were "strongly agree," "agree," "disagree," and "strongly disagree." We created a scale with a value range of 1 to 4 by averaging responses across the six items. Higher values indicate less traditional attitudes toward males' role in sex. A factor analysis confirmed that all six items load onto a single construct. The scale has high internal reliability (alpha coefficient = 0.80 for the full sample, 0.75 for females, and 0.79 for males at baseline; and 0.79 for the full sample of control group youth, and 0.75 and 0.81 for females and male control group youth, respectively, at the six-month follow-up).

For the measure of **beliefs about female's obligation to have sex,** the survey asked youth whether they agreed or disagreed with the following statement: "A girl who really likes a guy needs to have sex with him to prevent him from finding someone else." The four response categories were "strongly agree," "agree," "disagree," and "strongly disagree." Based on

responses to this question, we created a continuous variable that ranges from 1 to 4, with higher values indicating greater disagreement and less traditional attitudes.

For the measure of youth's **beliefs about the importance of boyfriends to girls' self-esteem**, the survey asked female youth whether they agreed or disagreed with the following three statements:

1. Teenage girls who have a boyfriend feel better about themselves than girls who don't have a boyfriend.

2. When a teenage girl has a boyfriend, other girls look up to her.

3. A girl is likely to feel bad about herself if she never has a boyfriend.

The four response categories were "strongly agree," "agree," "disagree," and "strongly disagree." We created a scale with a value range of 1 to 4 by averaging responses across the six items. Higher values indicate greater disagreement with statements that link having a boyfriend to a girl's self-esteem. A factor analysis confirmed that all three items load onto a single construct. The scale has moderate internal reliability (alpha coefficient = 0.67 for the full female sample at baseline and 0.71 for female control group youth at the six-month follow-up).

5. Intentions toward sex and contraceptive use

The survey included the following three questions about youth's intentions toward sexual activity and contraceptive use:

1. Do you intend to have sexual intercourse in the next year, if you have the chance?

2. If you were to have sexual intercourse in the next year, do you intend to use or have your partner use a condom?

3. If you were to have sexual intercourse in the next year, do you intend to use (or have your partner use) any of these other methods of birth control? Birth control pills, the shot (Depo-Provera), the patch, the ring (NuvaRing), IUD (Mirena or Paragard), implants (Implanon)

The response categories for all three questions were "yes, definitely"; "yes, probably"; "no, probably not"; and "no, definitely not." For each question, we constructed a binary measure comparing youth who responded "yes, definitely" to youth who responded in any of the other three categories. For each question, youth who did not respond to the question were coded as missing. Based on questions 2 and 3 above, we also constructed a fourth composite binary measure of whether youth reported an intention to use a condom or female birth control method if they have sexual intercourse in the next year. We estimated impacts of the *GEN.M* program separately for each measure.

6. Refusal skills

To measure sexual refusal skills, we constructed two versions of composite measure of perceived refusal skills, one for male youth and one for female youth. The measure for male youth is based on two questions asked of both male and female youth. The measure for female

youth is based on those same two questions and one additional question asked of female youth only (as part of the same series of questions). All three questions were prefaced with the following instruction: "For these questions, imagine you are alone with someone you liked very much." The survey then asked male and female youth the following questions:

1. How likely is it that you could stop them if they wanted to touch your private parts below the waist, meaning the parts of the body covered by underwear, and you did not want them to do that?
2. How likely is it that you could avoid having sexual intercourse if you didn't want to?

The survey also asked female youth only the following question:

3. "How likely is it that you could stop them if they wanted to touch your chest and you did not want them to do that?"

The response categories for all three questions were "not at all likely," "a little bit likely," "somewhat likely," and "very likely." For male youth, we averaged responses across the first two questions to create a summary index with values ranging from 1 to 4. For female youth, we averaged responses across the three items to create a scale ranging from 1 to 4. A factor analysis of the female youth scale confirmed that the items load strongly onto a single construct, and the scale has high internal reliability (alpha coefficient = 0.80 at baseline and 0.73 among control group youth at the six-month follow-up).

7. Sexual activity

As discussed in Chapter III, we constructed two variables that capture whether or not youth were sexually active at the time of the six-month follow-up: (1) a binary (yes/no) indicator for whether youth reported ever having had sex and (2) a binary indicator for whether youth reported having had sex in the past three months. Below, we provide more detail on how we constructed each measure and the decision rules used to resolve inconsistent or missing responses.

Ever had sexual intercourse. Coding for this measure was done in three steps. First, youth who answered "no" to the screening question ("have you ever had sexual intercourse") at the end of Part A of the questionnaire (discussed above) were coded as not having had sex. Second, youth who answered "yes" to the screening question were coded as either 0 or 1 depending on their responses to the more-detailed sexual activity questions asked in Part B1 of the survey. In some cases, youth could not be coded using these two steps because they provided incomplete or inconsistent responses about their sexual experience. In these cases, we also examined responses to the baseline survey to determine whether responses to sexuality activity questions at baseline consistently indicated any lifetime sexual experience. For two cases we still had no firm basis for determining whether the youth had ever had sexual intercourse, so we recoded these cases as missing values.

Had sexual intercourse in the past three months. This binary variable was coded in a stepwise fashion from a series of sexual behavior questions. First, youth who had never had sexual intercourse or for whom lifetime sexual experience could not be determined (based on the variable described above) were coded as not having had sexual intercourse in the past three

months or as missing values, respectively. Second, for respondents who had some lifetime experience with sexual intercourse, we proceeded as follows:

- **Youth who reported having had sexual intercourse once**. The survey asked these youth, "Have you had sexual intercourse more than one time?" Youth who replied "no" were then asked, "When you had sexual intercourse, what month and year was it?" This question was used to determine the number of months between follow-up survey administration and date of first sex for respondents who had only had sexual intercourse one time. If the number of months was three or less, youth were coded as having had sexual intercourse in the past three months. If the date of first sex was missing, we coded the cases as missing values.

- **Youth who reported having had sexual intercourse more than once.** For these youth, the survey later asked, "Now please think about the past 3 months. In the past 3 months, how many TIMES have you had sexual intercourse?" If youth responded with a number of one or greater, they were coded as having had sexual intercourse in the past three months. If the information on the number of times that youth had sexual intercourse in the past three months was missing, we used responses to a question that asked them the date of *most recent* sexual intercourse to determine whether they had had sexual intercourse in the past three months. In the few cases in which this information was also missing, we coded the cases as missing values.

8. Unprotected sex

As discussed in Chapter III, the survey included different sets of questions about use of contraception during sexual intercourse for (1) youth who reported having sexual intercourse only once and (2) youth who reported having sexual intercourse more than once. For those who reported having sexual intercourse once, the survey asked the following two questions about contraceptive use:

1. "Birth control methods are something used to reduce the risk of pregnancy, and some can reduce the risk of sexually transmitted diseases, also known as STIs. When you had sexual intercourse, did you or your partner use any type of birth control—including condoms or any other method?"
2. Respondents who replied "yes" to the above question were then asked a series of questions about specific methods of birth control using the following question stem: "When you had sexual intercourse, did you or your partner use…?" The specific methods asked about were: (a) condoms, (b) birth control pills or the patch, (c) Depo-Provera or other injectable birth control, (d) withdrawal or pulling out, (e) another method (for which responses were back-coded to capture respondents who had used a modern birth control method).

Among respondents who reported having had sex more than once in their lifetime, only youth who reported having sexual intercourse in the past three months were asked the following two questions about contraceptive use:

1. "In the past 3 months, how many TIMES have you had sexual intercourse without using a condom?"

2. "The next question is about your use of the following methods of birth control: condoms, birth control pills, the shot of Depo-Provera, the patch, the ring or NuvaRing, IUS or Mirena or Paraguard, implants or Implanon. In the past 3 months, how many TIMES have you had sexual intercourse without using any of these methods of birth control?"

Based on responses to these two sets of questions, we created two binary (yes/no) indicators for whether a participant reported having (1) unprotected sex in the past three months, defined as having sexual intercourse in the past three months without any modern contraceptive method (including condoms or a modern female contraceptive method), and (2) having sex without a condom. Youth who did not have sexual intercourse in the past three months were coded as not having unprotected sex (and not having sex without a condom). Youth who did not respond to the questions about contraceptive use in the past three months were coded as missing values.

C. Baseline measures considered as candidate covariates

As discussed in Chapter III, to improve the precision of the impact estimates, we used a data-driven stepwise selection process to identify baseline covariates that are strongly correlated with our outcome measures. Including such covariates can help improve the precision of the impact estimates by reducing the amount of residual variation in the outcome measures. Table B.2 lists all the candidate covariates we considered for the impact models. This list includes variables for which the observed difference between the treatment and control groups had a *p*-value of 0.20 or less and variables shown in the literature to be correlated with sexual risk behaviors.

For the selection of covariates for the benchmark impact models, we used stepwise regression methods to identify candidate covariates with significant explanatory power in regression models for the sexual behavior outcomes. The stepwise regression models for all outcomes included a core, fixed set of covariates, which included key demographic variables highly correlated with the outcomes of interest (age, gender, and race/ethnicity) and a baseline measure of the outcome variable (where applicable). Additional candidate covariates were selected using the stepwise selection procedure. At each step of the stepwise procedure, the variable with the smallest *p*-value below a preset threshold level was included in the model while variables already selected were evaluated to see if any could be removed; the variable with a *p*-value greater than the critical value of 0.32 and whose removal would least lower the adjusted R^2 was removed. The critical *p*-value was set at 0.32 to correspond to a t-statistic of 1, which is the smallest value of the t-statistic at which the addition of a variable in the model increases the adjusted R^2 value.

To identify a common set of covariates to use in all of the final impact models, we compared the covariates selected by the stepwise regression procedure for each sexual behavior outcome. Along with the core set of covariates included in all models (age, gender, race/ethnicity, and the baseline outcome measure [if applicable]), a variable was included in the final covariate set if (1) there was a statistically significant treatment-control group baseline difference in the variable and it was selected in the final stepwise model for at least one of the sexual behavior outcomes or (2) there was no treatment-control group difference at baseline, but the variable was selected by the stepwise regressions for about 60 percent or more of the sexual behavior outcomes. The results of the selection procedure identified three variables to include in the benchmark impact

models, in addition to the core covariate set: (1) father's employment status, (2) family structure, and (3) beliefs about masculinity.

Table B.2. Measures of baseline sample characteristics

Measure	Definition
Socio-demographic characteristics	
Age at random assignment	Continuous variable based on date of birth and date of baseline questionnaire administration.
Female	Binary variable: equals 1 if participant reported being female and 0 if participant reported being male.
Race/ethnicity	Categorical variable with categories for (1) Hispanic, (2) non-Hispanic white, (3) non-Hispanic black, and (4) non-Hispanic "other" or multiple race.
Main language spoken at home not English	Binary variable: equals 1 if participant reported primarily speaking a language other than English at home; equals 0 if participant reported speaking primarily English at home.
Importance of religion	Binary variable: equals 1 if participant reported that religion is very important in her life; equals 0 if participant reported religion is somewhat important or not at all important.
Religious attendance	Binary variable: equals 1 if participant reported attending religious services once per week or more often; equals 0 if participant reported attending religious services less than once per week.
Family structure	Categorical variable with categories for (1) lives with both biological parents in same household, (2) lives with exactly one biological parent, (3) lives with neither biological parent.
Mother's employment status	Binary variable: equals 1 if participant reported that mother is working at a part-time or full-time job; equals 0 if participant reported that mother is not working at a paid job.
Father's employment status	Binary variable: equals 1 if participant reported that father is working at a part-time or full-time job; equals 0 if participant reported that father is not working at a paid job.
Relationship quality with mother	Binary variable: equals 1 if participant reported that mother both cares very much about and is very close to the participant; equals 0 if the participant reported a lower level of caring or closeness.
Relationship quality with father	Binary variable: equals 1 if participant reported that father both cares very much about and is very close to the participant; equals 0 if the participant reported a lower level of caring or closeness.
Exposure to information on sexual and reproductive health topics	
Received information on relationships and dating	Binary variable: equals 1 if participant received any information in the past 12 months on relationships, dating, marriage, or family life; equals 0 if participant did not receive this information.
Received information on abstinence	Binary variable: equals 1 if participant received any information in the past 12 months on abstaining from sex; equals 0 if participant did not receive this information.
Received information on methods of birth control	Binary variable: equals 1 if participant received any information in the past 12 months on methods of birth control; equals 0 if participant did not receive this information.
Received information on where to obtain birth control	Binary variable: equals 1 if participant received any information in the past 12 months on where to get birth control; equals 0 if participant did not receive this information.
Received information on sexually transmitted infections	Binary variable: equals 1 if participant received any information in the past 12 months on STIs; equals 0 if participant did not receive this information.
Received information on how to talk to partner about birth control	Binary variable: equals 1 if participant received any information in the past 12 months on how to talk to partner about whether to have sex or use birth control; equals 0 if participant did not receive this information.
Received information on how to say no to sex	Binary variable: equals 1 if participant received any information in the past 12 months on how to say no to sex; equals 0 if participant did not receive this information.
Received information on reproduction	Binary variable: equals 1 if participant received any information in the past 12 months on how babies are made; equals 0 if participant did not receive this information.
Knowledge of birth control methods and sources	
Knowledge of birth control pills	Index variable: sum of correct responses to two survey questions; variable ranges from 0 to 2, with higher values indicating greater knowledge.
Knowledge of condoms	Index variable: sum of correct responses to two survey questions; variable ranges from 0 to 2, with higher values indicating greater knowledge.

Measure	Definition
Perceived knowledge of female birth control sources	Binary variable: equals 1 if youth report that they "definitely" know where to obtain birth control; equals 0 if youth report a lower level of perceived knowledge.
Attitudes toward pregnancy and contraception	
Attitudes toward pregnancy	Continuous scale variable: standardized scale based on four survey questions; variable ranges from -2.6 to 0.9, with higher values indicating stronger attitudes against becoming pregnant or getting a partner pregnant.
Perceived importance of condom use for safe sex	Binary variable: equals 1 if youth reported that they "strongly agree" that condoms are important to make sex safer; equals 0 if youth did not strongly agree.
Perceived need for consistent condom use	Binary variable: equals 1 if youth reported that they "strongly agree" that condoms should always be used if a person their age has sexual intercourse; equals 0 if youth did not strongly agree.
Perceived need for consistent female birth control use	Binary variable: equals 1 if youth reported that they "strongly agree" that birth control should always be used if a person their age has sexual intercourse; equals 0 if youth did not strongly agree.
Intentions about sex and contraceptive use	
Intentions to have sexual intercourse	Binary variable: equals 1 if youth reported that they "definitely" intended to have sexual intercourse in the next year; equals 0 if youth reported less intention.
Intentions to use a female method of birth control	Binary variable: equals 1 if youth reported that they "definitely" intended to use a female birth control method during sexual intercourse in the next year; equals 0 if youth reported less intention.
Intentions to use condoms	Binary variable: equals 1 if youth reported that they "definitely" intended to use a condom during sexual intercourse in the next year; equals 0 if youth reported less intention.
Intentions to use a female birth control or condoms	Binary variable: equals 1 if youth reported that they "definitely" intended to use a female birth control method or condom during sexual intercourse in the next year; equals 0 if youth reported less intention.
Attitudes toward gender roles	
Beliefs about masculinity	Continuous scale variable: average of responses to four survey questions; variable ranges from 1 to 4, with higher values indicating less traditional views.
Beliefs about male role in sex	Continuous scale variable: average of responses to six survey questions; variable ranges from 1 to 4, with higher values indicating less traditional views.
Beliefs about females' obligation to have sex	Based on a single survey question: variable ranges from 1 to 4, with higher values indicating less traditional views.
Perceived refusal skills	
Perceived refusal skills	Average of two (male youth) or three (female youth) survey questions; variable ranges from 1 to 4, with higher values indicating a greater perceived refusal skills.

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APPENDIX C

SENSITIVITY ANALYSIS

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The main impact findings presented in Chapter IV of this report are derived from a particular set of analytic decisions, ranging from the data-cleaning procedures used to construct the outcome measures to the specification of the regression models. We made these decisions in accordance with established research standards and the particular features of our study design. However, we also investigated the sensitivity of our results to alternative analytic decisions. In this appendix, we present findings from three types of sensitivity tests. First we examine the sensitivity of our results to alternative data-cleaning procedures for the measures of sexual risk behavior. We then examine the sensitivity of our results to the specification of the regression models used to estimate program impacts. We end by discussing the sensitivity of our results to the adjustment for multiple hypothesis testing.

A. Data-cleaning procedures

As described in Appendix B, our analysis of the self-reported survey data uncovered some inconsistent or discrepant responses to the questions on sexual risk behaviors. For the main impact findings presented in this report, we accounted for these discrepancies when creating our outcome measures by considering the preponderance of evidence across all relevant questions in the survey (see Appendix B for a more detailed description). However, we also examined the sensitivity of our results to three alternative methods for cleaning the data:

1. Coding a respondent as having engaged in a specific behavior if *any* survey item indicates he or she did so.
2. Coding a respondent as *not* having engaged in a specific behavior if any survey item indicates he or she did *not* do so.
3. Dropping a respondent from the analysis if the survey items show a pattern of inconsistent responses.

The results of these analyses showed that our findings are generally robust to alternative data-cleaning procedures (Table C.1). For the measure of ever having had sex, the reported impact estimates show changes in rates of sexual initiation from -0.1 to 3.3. For the measure of having had sexual intercourse in the prior three months, the reported impact estimates range from 2.2 to 5.1. For the measure of unprotected sex, the reported impact estimates show increases in rates of unprotected sex ranging from 0.3 to 6.5 percentage points. Finally, for the measure of having sexual intercourse without a condom, the impact estimates range from a decrease of 0 percentage points to a decrease of 2.9 percentage points. In none of these models was the impact estimate statistically significant.

Table C.1. Sensitivity of impacts to data-cleaning procedures

Outcome	Primary Method			Alternative Method 1			Alternative Method 2			Alternative Method 3		
	Control group mean	Diff.	*p*-value	Control group mean	Diff.	*p*-value	Control group mean	Diff.	*p*-value	Control group mean	Diff.	*p*-value
Sexual Activity												
Ever had sexual intercourse (%)	39.9	-0.1	0.99	39.9	-0.1	0.99	32.1	3.3	0.73	34.6	2.6	0.99
Had sexual intercourse in the past three months (%)	19.9	2.4	0.73	21.6	2.2	0.83	15.5	5.1	0.12	18.0	3.8	0.29
Unprotected Sex												
Had unprotected sex in past three months (%)	6.4	0.5	0.99	6.5	0.5	0.99	5.5	0.7	0.99	6.2	0.3	0.99
Had sex without a condom in past three months (%)	9.7	-2.5	0.53	10.1	-2.9	0.41	5.7	-1.8	0.51	6.4	0.0	0.99

Source: Youth surveys administered by the study team.

Note: For each outcome, the numbers in the columns labeled "Control group mean" are regression-adjusted predicted values of the outcomes at the six-month follow-up survey. The numbers in the columns labeled "Diff." indicate the regression-adjusted average difference in outcomes between the treatment and control groups at the six-month follow-up survey. All regressions are weighted to account for the random assignment design. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the measures and analytic methods.

p-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a description of the outcome measures and analytic methods.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

B. Alternative specification of regression models

As discussed in Chapter III, we specified our regression models to include the following covariates: a binary indicator for treatment status, three key demographic variables that are highly correlated with our key outcomes of interest (age, gender, and race/ethnicity), a baseline measure of the outcome (if applicable), and additional baseline covariates empirically selected through a data-driven forward selection procedure developed previously in the literature (Social and Character Development Research Consortium 2010). To examine the sensitivity of our results to alternative combinations of covariates, we estimated comparable regression models when (1) including only the baseline outcome measure and (2) excluding all covariates (Table C.2). For most outcomes, using the alternative combinations of control variables did not change the direction, general magnitude, or statistical significance of the reported impact estimates. The one exception is the estimated program impact on intentions to use a female birth control method. When estimated with a reduced set of covariates, the program impact on this outcome reaches statistical significance, at the 5 percent level, a result of a modest increase in the magnitude of the estimate.

Table C.2. Sensitivity of impacts to specification of covariates

Outcome	Main Findings			Controls for Baseline Outcome Measures Only			No Covariates		
	Diff.	*p*-value	R^2	Diff.	*p*-value	R^2	Diff.	*p*-value	R^2
Mediating outcomes									
Exposure to information									
Percentage of youth who reported receiving information on the following topics:									
Methods of birth control	27.8**	<.001	0.15	27.1**	<.001	0.13	26.6**	<.001	0.06
Where to obtain birth control	29.7**	<.001	0.16	30.0**	<.001	0.13	30.6**	<.001	0.08
How to say no to sex	16.5**	<.001	0.15	16.5**	<.001	0.12	16.7**	<.001	0.06
Reproduction	7.9**	0.03	0.12	8.4**	0.03	0.07	8.8**	0.02	0.03
How to talk to partner about birth control	28.6**	<.001	0.10	28.0**	<.001	0.09	27.4**	<.001	0.07
Sexually transmitted infections	11.9**	0.01	0.05	12.0**	0.01	0.03	11.9**	0.01	0.03
Abstinence	15.8**	0.002	0.06	16.1**	0.002	0.04	15.9**	0.003	0.02
Relationships and dating	14.6**	0.004	0.06	14.9**	0.004	0.03	14.9**	0.004	0.02
Knowledge of birth control methods and sources									
Knowledge of birth control pills	0.1	0.06	0.19	0.1	0.08	0.18	0.1	0.10	0.01
Knowledge of condoms	0.2	0.06	0.12	0.2	0.04	0.10	0.1	0.05	0.01
Perceived knowledge of female birth control sources	14.9	0.001**	0.09	14.9	0.001**	0.06	13.8	0.003**	0.02
Attitudes toward pregnancy and contraception									
Views on pregnancy	0.006	0.99	0.29	0.0	0.99	0.27	0.0	0.99	0.00
Percentage of youth who "strongly agree" that:									
Condoms are important to make sex safer	9.3	0.08	0.07	10.2	0.05	0.05	11.5	0.03	0.01
Condoms should always be used by someone their age during sexual intercourse	2.8	0.99	0.07	3.3	0.99	0.04	3.7	0.99	0.00
Female birth control should always be used if someone their age is having sexual intercourse	2.7	0.99	0.05	3.7	0.99	0.03	4.5	0.99	0.00
Attitudes toward gender roles									
Beliefs about masculinity	0.0	0.99	0.17	0.0	0.98	0.16	0.0	0.99	0.00
Beliefs about males' role in sex	0.0	0.99	0.24	0.0	0.99	0.21	0.0	0.99	0.00
Beliefs about females' obligation to have sex	0.0	0.99	0.16	0.0	0.99	0.11	0.0	0.99	0.00
Intentions about sex and contraceptive use									
Intentions to not have sexual intercourse in the next year	-5.2	0.43	0.22	-4.3	0.70	0.18	-4.5	0.86	0.00
Intentions to use a female birth control method or condoms if have sexual intercourse in the next year	1.2	0.99	0.10	1.5	0.99	0.08	2.6	0.99	0.00
Intentions to use condoms if have sexual intercourse in the next year	3.5	0.81	0.11	3.7	0.70	0.08	5.0	0.32	0.01
Intentions to use a female method of birth control if have sexual intercourse in the next year	9.8	0.05	0.11	10.4**	0.04	0.07	11.7**	0.03	0.01
Perceived refusal skills									
Perceived refusal skills	0.0	0.57	0.17	0.0	0.43	0.12	0.0	0.48	0.00
Sexual behavior outcomes									
Ever had sexual intercourse	-0.1	0.99	0.06	n.a.	n.a.	n.a.	-0.3	0.99	0.00
Had sexual intercourse in the past 3 months	2.4	0.73	0.33	1.3	0.99	0.31	3.4	0.61	0.00
Had unprotected sex in the past 3 months	0.5	0.99	0.20	-0.5	0.99	0.12	-0.4	0.99	0.00
Had sex without a condom in the past 3 months	-2.5	0.53	0.25	-3.6	0.18	0.21	-3.0	0.38	0.01

Source: Youth surveys administered by the study team.

Note: For each outcome, the numbers in the columns labeled "Diff." indicate the regression-adjusted average difference in outcomes between the treatment and control groups at the six-month follow-up survey. All regressions are weighted to account for the random assignment design. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the measures and analytic methods.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

C. Adjustment for multiple hypothesis testing

For the main findings presented in Chapter IV, we adjusted the statistical significance tests (*p*-values) to account for multiple hypothesis testing. As described in Chapter III, our analysis used multiple outcomes to answer some of the key research questions. For example, we constructed eight separate measures of exposure to information, three of knowledge, and four of intentions. Unless we account for this multiplicity, it could increase the chances of making a false discovery and lead to spurious claims about the program's effectiveness. To account for this feature, we adjusted our *p*-values to correct for multiple hypothesis testing within each outcome domain, using a procedure outlined by Hothorn et al. (2008) and Schochet (2009).

To examine the sensitivity of our results to this adjustment, we estimated comparable regression models without adjusting for multiple hypothesis testing. The adjusted and unadjusted *p*-values are reported in Table C.3 with the main impact finding. As shown in Table C.2, using the unadjusted *p*-values changes the reported statistical significance levels of three outcomes: (1) knowledge of birth control pills, (2) knowledge of condoms, (3) perceived importance of using condoms to make sex safer, and (4) intentions to use a female method of birth control. For these outcomes, the reported impact estimates reach statistical significance at the 5 percent level when not adjusting for multiple hypothesis testing.

Table C.3. Sensitivity of impacts to adjustment for multiple hypothesis testing

Outcome	Control group mean	Diff.	Adjusted *p*-value (adjusted for multiple comparisons)	Unadjusted *p*-value (ignoring multiple comparisons)
Mediating outcomes				
Exposure to information				
Percentage of youth who reported receiving information on the following topics:				
Methods of birth control	51.7	27.8	<.001**	<.001**
Where to obtain birth control	48.7	29.7	<.001**	<.001**
How to say no to sex	76.1	16.5	<.001**	<.001**
Reproduction	84.6	7.9	0.03*	0.001**
How to talk to partner about birth control	54.0	28.6	<.001**	<.001**
Sexually transmitted infections	75.5	11.9	0.01*	<.001**
Abstinence	61.4	15.8	0.002**	<.001**
Relationships and dating	63.8	14.6	0.004**	<.001**
Knowledge of birth control methods and sources				
Knowledge of birth control pills	1.0	0.1	0.06	0.01*
Knowledge of condoms	0.8	0.2	0.06	0.01*
Perceived knowledge of female birth control sources	22.4	14.9	0.001**	<.001**
Attitudes toward pregnancy and contraception				
Views on pregnancy	-0.006	0.006	0.99	0.90
Percentage of youth who "strongly agree" that:				
Condoms are important to make sex safer	54.3	9.3	0.08	0.01*
Condoms should always be used by someone their age during sexual intercourse	70.8	2.8	0.99	0.39
Female birth control should always be used if someone their age is having sexual intercourse	41.2	2.7	0.99	0.47
Attitudes toward gender roles				
Beliefs about masculinity	3.2	0.0	0.99	0.50
Beliefs about male role in sex	3.4	0.0	0.99	0.36
Beliefs about females' obligation to have sex	3.5	0.0	0.99	0.91
Intentions about sex and contraceptive use				
Intentions to have sexual intercourse	34.0	-5.2	0.43	0.09
Intentions to use a female birth control method or condoms	89.4	1.2	0.99	0.59
Intentions to use condoms	84.4	3.5	0.81	0.18
Intentions to use a female method of birth control	46.5	9.8	0.05	0.005**
Perceived refusal skills				
Perceived refusal skills	3.5	0.0	0.57	0.57
Sexual behavior outcomes				
Ever had sexual intercourse	39.9	-0.1	0.99	0.97
Had sexual intercourse in the past 3 months	19.9	2.4	0.73	0.35
Had unprotected sex in the past 3 months	6.4	0.5	0.99	0.80
Had sex without a condom in the past 3 months	9.7	-2.5	0.53	0.25

Source: Youth surveys administered by the study team.

Note: For each outcome, the numbers in the columns labeled "Control group mean" are regression-adjusted predicted values of the outcomes at the six-month follow-up survey. The numbers in the columns labeled "Diff." indicate the regression-adjusted average difference in outcomes between the treatment and control groups at the six-month follow-up survey. All regressions are weighted to account for the random assignment design. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the measures and analytic methods.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

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APPENDIX D

SUBGROUP ANALYSES

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As discussed in Chapter II, due to the *GEN.M* program's gender focus, we also conducted exploratory analyses to examine program impacts on subsamples of male and female youth (Table D.1). Because the study was not powered to detect program impacts for male and female youth separately, the subgroup results should be interpreted with caution; the smaller sample sizes for the subgroup analysis reduce our ability to precisely detect smaller differences in outcomes between the treatment and control groups. However, the results of the subgroup analyses were generally qualitatively consistent with the full sample results presented in Chapter IV. Both male and female youth in the treatment group were more likely to report having received information on sexual and reproductive health topics and to report greater perceived knowledge of sources of female birth control. We did not find evidence that the *GEN.M* program affected male or female youth's attitudes toward pregnancy, contraception, or gender roles, with one exception. Among female youth, we found that the program had a statistically significant effect on perceived importance of using condoms to make sex safer. As was found for the full sample, male and female youth in both study groups generally reported relatively egalitarian, or non-traditional, views on gender roles and supportive attitudes toward condoms. However, for the female-only measure of attitudes toward the importance of boyfriends to girls' self-esteem, the mean for both study groups was lower than for the other gender attitudes measures, suggesting that female youth held slightly more traditional beliefs about femininity. The treatment-control group difference for this measure, along with the other gender attitudes measures, was not statistically significant.

Table D.1. Impacts on male and female youth

Measure	MALE YOUTH				FEMALE YOUTH			
	Treatment group	Control group	Diff.	*p*-value	Treatment group	Control group	Diff.	*p*-value
Exposure to program information								
Percentage of youth who reported receiving information on the following topics:								
How to say no to sex	90.7	68.2	22.5**	<.001	94.2	82.7	11.5*	0.036
Reproduction	89.5	79.1	10.4	0.147	95.2	89.2	6.0	0.393
Sexually transmitted infections	84.7	70.3	14.3*	0.043	89.7	80.4	9.3	0.254
How to talk to partner about birth	81.6	48.1	33.5**	<.001	83.9	59.7	24.2*	0.001
Methods of birth control	73.7	41.4	32.3**	<.001	85.3	62.4	22.9**	0.001
Where to obtain birth control	71.9	37.5	34.4**	<.001	84.9	60.2	24.7**	0.001
Relationships and dating	74.4	55.9	18.5*	0.017	81.6	70.7	10.9*	0.273
Abstinence	71.3	54.9	16.4*	0.046	82.2	67.6	14.6	0.055
Knowledge of birth control methods and sources								
Knowledge of birth control pills	1.1	0.9	0.2	0.369	1.2	1.0	0.2	0.195
Knowledge of condoms	1.1	0.9	0.2	0.237	0.9	0.8	0.1	0.376
Percentage of youth reporting they "definitely" know where to obtain female birth control methods	32.5	16.2	16.3**	0.005	42.1	29.0	13.1*	0.049
Attitudes toward pregnancy and contraceptives								
Views on pregnancy	-0.1	0.0	-0.1	0.999	0.1	0.0	0.1	0.999
Percentage of youth who "strongly agree" that:								
Condoms are important to make sex safer	61.4	61.5	-0.1	0.999	65.1	47.6	17.5*	0.013
Condoms should always be used by someone their age during sexual intercourse	69.8	70.2	-0.4	0.999	77.4	71.2	6.2	0.765
Female birth control should always be used if someone their age is having sexual intercourse	44.8	40.5	4.3	0.999	42.8	41.8	1.0	0.999
Attitudes toward gender roles								
Beliefs about:								
Male gender roles	3.1	3.1	0.0	0.999	3.5	3.5	0.0	0.999
Male's role in sex	3.4	3.3	0.1	0.999	3.3	3.2	0.1	0.999
Female's obligation to have sex	3.4	3.4	0.0	0.999	3.6	3.6	0.0	0.999
Importance of boyfriends to girls' self-esteem [a]	n.a.	n.a.	n.a.	n.a.	2.8	2.7	0.1	0.999
Intentions toward sex and contraceptive use								
Percentage of youth reporting they will "definitely":								
Not have sexual intercourse in the next year	18.6	23.2	-4.6	0.999	38.8	44.9	-6.1	0.819
Use a condom or female birth control method if they have sexual intercourse in the next year	86.6	85.5	1.1	0.999	94.7	93.1	1.6	0.999
Use a condom if they have sexual intercourse in the next year	82.7	79.4	3.3	0.999	93.1	89.2	3.9	0.884
Use female birth control method if they have sexual intercourse in the	46.9	34.8	12.1	0.107	65.0	58.6	6.4	0.871
Perceived refusal skills								
Perceived refusal skills	3.3	3.2	0.1	0.283	3.7	3.8	-0.1	0.660

Measure	MALE YOUTH				FEMALE YOUTH			
	Treatment group	Control group	Diff.	*p*-value	Treatment group	Control group	Diff.	*p*-value
Sexual activity								
Ever had sexual intercourse	45.0	44.7	0.3	0.999	34.9	35.1	-0.2	0.999
Had sexual intercourse in the past three months	23.8	22.0	1.8	0.999	20.8	17.6	3.2	0.638
Unprotected sex								
Had unprotected sex in the past three months	6.8	8.0	-1.2	0.999	8.0	4.6	3.4	0.396
Had sex without a condom in the past three months	6.2	9.0	-2.8	0.568	8.2	10.7	-2.5	0.945

Source: Youth surveys administered by the study team.

Notes: For each outcome, the numbers in the columns labeled "treatment group" and "control group" are regression-adjusted predicted values of outcomes at the six-month post-test survey. All regressions are weighted to account for the random assignment design. Reported *p*-values are adjusted for multiple outcomes measured within a single domain. See Chapter III for a more detailed description of the measures and analytic methods.

[a] Measured for female youth only.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

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