HHS Public Access

Author manuscript

Perspect Sex Reprod Health. Author manuscript; available in PMC 2017 June 01.

Published in final edited form as:

Perspect Sex Reprod Health. 2016 June ; 48(2): 57–64. doi:10.1363/48e8616.

Abusive Experiences and Young Women's Sexual Health Outcomes: Is Condom Negotiation Self-Efficacy a Mediator?

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Abstract

CONTEXT—Intimate partner violence and reproductive coercion are associated with unintended pregnancies and STDs. Greater condom negotiation self-efficacy among young women may mediate these associations.

METHODS—A sample of 841 female adolescents (aged 16–19) and 1,387 young adult women (aged 20–24) recruited from 24 family planning clinics in western Pennsylvania in 2011–2012 reported on intimate partner violence, reproductive coercion, condom negotiation self-efficacy and sexual health outcomes at baseline and four- and 12-month follow-ups. Mixed models were used to test associations of intimate partner violence and reproductive coercion with unintended pregnancy and STD diagnosis. The Sobel test of mediation was used to measure indirect effects of condom negotiation self-efficacy.

RESULTS—At baseline, 15% of adolescents and 11% of young adults reported recent intimate partner violence victimization; 7% and 6%, respectively, reported recent reproductive coercion. For both age-groups, intimate partner violence and reproductive coercion were associated with a reduced level of condom negotiation self-efficacy (coefficients, −0.27 to −0.13) and increased odds of STD diagnosis (odds ratios, 1.03–1.1). However, only reproductive coercion was associated with unintended pregnancy (odds ratios, 1.1 for each group). The only association that condom negotiation self-efficacy mediated was between reproductive coercion and unintended pregnancy among young adults (17% of total effect).

CONCLUSIONS—Targeting condom negotiation self-efficacy alone in abusive relationships would likely not translate into improved sexual health outcomes in this population. Other strategies are needed to prevent unintended pregnancy and STDs.

Unintended pregnancy and STDs are highly prevalent among adolescent and young adult females in the United States. Some 77% of births to 15–19 year olds and 50% of those to 20–24-year-olds result from unintended pregnancy.[1] Half of all new cases of STDs, which may lead to pelvic inflammatory disease, infertility and ectopic pregnancy,[2] occur in these age-groups.[3] Thus, reducing unintended pregnancies and STDs in these populations are national health objectives.[4]

Two experiences associated with unintended pregnancy and STDs are intimate partner violence and reproductive coercion.[5–11] Intimate partner violence is defined as physical or

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sexual violence perpetrated by a current or former partner.[12] One in three adult women in the United States have experienced this type of violence in their lifetime, the majority of them (69%) before the age of 25.[12] Reproductive coercion has been defined as attempts to control the pregnancy and pregnancy outcomes of female partners.[5] It can take various forms, including pressuring or coercing a partner to become pregnant, or sabotaging birth control (e.g., putting holes in a condom or taking a condom off during sex for the purpose of impregnation).[5] Reproductive coercion is reported by 9% of adult women nationally,[12] and although it may occur in the absence of intimate partner violence, these abusive experiences often coincide.[5,6,12,13] For example, in one study, reproductive coercion was reported by 35% of women who also reported physical or sexual intimate partner violence, compared with 15% of women who did not report such violence.[5]

Studies have shown that adolescent and young adult women (generally younger than 30) who have experienced intimate partner violence, reproductive coercion or both have higher odds of unintended pregnancy[5,6] and greater difficulty obtaining and using contraceptives[14] than women who have not had these experiences of abuse. Women who have experienced intimate partner violence are also more likely than others to report a history of STDs[9,11,15] and to test positive for STDs.[15] Partner abuse may be linked to unintended pregnancy and STDs because of condom nonuse: Young women who experience intimate partner violence report less condom use[9,15–20] and greater barriers to condom use, such as violence and threats of violence in response to requests for condom use,[19,21–23] than other women. To improve intervention efforts that aim to reduce unintended pregnancy and STDs, as well as intimate partner violence and reproductive coercion, it is necessary to understand the associations between these abusive experiences and reproductive outcomes among adolescent and young adult women.

Self-efficacy, or a person's beliefs that he or she can accomplish certain tasks and goals,[24] may serve as a mediator between abuse and reproductive health outcomes. In particular, sexual self-efficacy indicates the belief that one can engage in protective health behaviors, such as negotiating condom use, refusing unwanted sex or using condoms. Sexual self-efficacy has been associated with adolescent and young adult women's condom and other contraceptive use.[25–30] Thus, sexual self-efficacy is a promising avenue for exploration as a mediator between abuse and unintended pregnancies and STDs. Establishing this relationship may ultimately inform future interventions, such as programs that increase young women's sexual self-efficacy.

To further our understanding of how intimate partner violence and reproductive coercion are linked to unintended pregnancy and STDs, we have identified condom negotiation self-efficacy (a specific form of sexual self-efficacy) as a possible mediator in the relationship between abusive experiences and those reproductive health outcomes among adolescent and young adult women. Condom negotiation self-efficacy is particularly relevant because condom use requires a male partner's cooperation and protects against STDs. Additionally, because the literature has shown that partner violence is associated with greater barriers to and perceived consequences of condom negotiation,[19,21–23] we hypothesized that condom negotiation self-efficacy would be directly associated with intimate partner violence and reproductive coercion.

Sexual self-efficacy increases with age[31] and is greater among sexually experienced adolescents than among those who have not had sex.[32] Also, associations between sexual self-efficacy and behavior may vary by age. For example, in one cross-sectional study, birth control self-efficacy was associated with contraceptive use among females in 10th or 11th grade, but not among those in grades 7–9.[33] In another study, communication with a partner about contraception prior to sex was associated with use of effective contraceptives among 13–20-year-olds, but not 21–25-year-olds.[34] Further, a review found that early pubertal timing and advanced pubertal status were positively associated with the number of sexual acts and participation in risky sexual behaviors among adolescents.[35] Because sexual self-efficacy develops during adolescence and as female adolescents become more sexually experienced, age should be considered in assessments of intimate partner violence, reproductive coercion, condom negotiation self-efficacy and reproductive health. Thus, we chose to focus on younger women (aged 16–24).

This study uses longitudinal data from clients at 24 family planning clinics to test associations among age, condom negotiation self-efficacy, intimate partner violence, reproductive coercion and reproductive health. Participating clinics were located primarily in areas designated as rural by the Census Bureau.[36] Although the prevalence of intimate partner violence does not vary between rural and urban settings,[37,38] victims of such violence in rural areas have access to fewer victim services and supports, including women's shelters, health care providers and mental health professionals,[38–40] than women residing in urban settings, and thus are at greater risk for poor health outcomes. Therefore, studies that include sampling from rural communities are needed.

We hypothesized that condom negotiation self-efficacy would be lower among adolescent women than among young adult women. Additionally, we hypothesized that among these two age-groups, women who have experienced recent intimate partner violence or reproductive coercion would have lower condom negotiation self-efficacy and a higher level of unintended pregnancy and STDs than women who have not recently had these abusive experiences. Finally, we hypothesized that condom negotiation self-efficacy would mediate associations between intimate partner violence and reproductive coercion and these reproductive health outcomes for both age-groups.

METHODS

Study Design and Sample

The present study uses data that were collected as part of the Addressing Reproductive Coercion in Health Settings (ARCHES) Intervention Study, a cluster randomized controlled trial that was conducted in 24 western Pennsylvania family planning clinics and enrolled women between October 2011 and November 2012. Clinicians in intervention clinics were trained to deliver a brief intervention on intimate partner violence and reproductive coercion to all female patients; the intervention consisted of discussing harm reduction strategies for those experiencing or at risk for partner violence, referring patients to advocates as appropriate, and discussing healthy and unhealthy relationships with all patients, regardless of abuse history. Business card–sized brochures were used to facilitate the conversation between clinician and patient. Control clinics continued with usual care. To prevent

contamination of the control condition, randomization occurred at the clinic level; clinics that shared providers were considered as one cluster, so the total number of clusters was 17.

The parent study protocol has been described in detail elsewhere.[41] Briefly, women aged 16–29 (the ages most commonly served in these clinics) who were seeking care for any reason (e.g., STD testing, contraceptive counseling, annual exam) were eligible to participate. Research staff approached women when they arrived for their appointments and obtained oral consent from those who were interested in enrolling. Parental consent was waived for minors, because they were receiving confidential services. A total of 3,687 women enrolled at baseline (of whom 2,697 were aged 16–24).

Surveys were conducted at baseline (prior to intervention) and four and 12 months later. Participants completed the baseline survey in a private area of the clinic using audio computer-assisted self-interview software on a laptop computer; they could complete the follow-up surveys on a laptop at the clinic or, alternatively, online (for those aged 18 and older only) or by telephone at another location (e.g., at home or in another private setting). The University of Pittsburgh Institutional Review Board approved all study procedures. A federal certificate of confidentiality was obtained to protect participant confidentiality.

Because the focus of the parent study was reducing reproductive coercion and unintended pregnancy, women not engaging in heterosexual sex were not asked all of the survey questions that are key for the present study. Thus, we restricted our sample to women who reported a history of heterosexual intercourse on a survey and provided complete information for all key measures. This resulted in the exclusion of 469 baseline surveys, 526 four-month follow-up surveys and 344 of the 12-month follow-up surveys. Eligibility did not depend on a woman's having a current relationship, as young adults often engage in sexual activity outside of established relationships,[42–45] and single or dating women report more reproductive coercion than do women who are in committed, nonmarital relationships.[13] Those missing values on demographic characteristics were assigned the modal response for modeling. The final baseline sample size for this study was 2,228—841 adolescents (those aged 16–19) and 1,387 young adults (aged 20–24). Retention at follow-up was 1,652 at four months (74% of baseline) and 1,757 at 12 months (79% of baseline).

Measures

Intimate partner violence in the last three months was assessed using three items modified from the Revised Conflict Tactics Scale[46] and the Sexual Experiences Survey[47]: one for physical ("been hit, pushed, slapped, choked or otherwise physically hurt") and two for sexual intimate partner violence ("used force or threats to make you have sex when you didn't want to" and "made you have sex when you didn't want to, but didn't use force or threats"). Reproductive coercion in the past three months was assessed using 10 items developed by Miller and colleagues for use in adolescent and young adult populations.[5,6] Reproductive coercion items included questions of whether a partner had "tried to force or pressure you to become pregnant" and had "taken off the condom while you were having sex, so you would get pregnant." Answering yes to one or more items was coded as positive for recent intimate partner violence or reproductive coercion. These measures were assessed at baseline and at each follow-up.

Past-year unintended pregnancy was assessed at baseline and the 12-month follow-up. Seven items from the National Survey of Family Growth were used to assess the timing of the last pregnancy (on time or later than wanted, earlier than wanted or unwanted) and whether the women had planned and desired the pregnancy (e.g., "Would you say that you wanted to have a baby with your partner at the time?" and "How much were you trying to get pregnant?").[48] Any woman who gave a response indicating that the pregnancy had been unintended was coded as having had an unintended pregnancy. Lifetime history of unintended pregnancy was assessed at baseline with one item: "How many times have you been pregnant when you didn't want to be?" STD diagnosis was assessed at each time point by asking women whether they had been told by a doctor or other health care professional that they had any of the following: "chlamydia, gonorrhea (also known as the clap), syphilis, herpes, genital warts, Hepatitis B and HIV." The baseline survey used referent time periods of lifetime and the past three months, and the follow-up surveys specified the past three months only. Lifetime reports of unintended pregnancy and STDs were used to characterize the sample at baseline, while unintended pregnancy in the past year and STDs in the past three months were used as outcomes at follow-up to limit recall bias in the models.

Condom negotiation self-efficacy was assessed at baseline and at each follow-up using five items that assessed participants' confidence to request condom use and refuse unprotected sex (e.g., "I feel confident in my ability to suggest using condoms with a new partner" and "If my partner didn't want to use a condom during sex, I feel confident in my ability to refuse to have sex"). Items were adapted from the 28-item Condom Use Self-Efficacy Scale, which was originally created for young adults (college students).[49] Response options were on a five-point Likert scale, on which a score of 1 indicated "strongly disagree" and 5 indicated "strongly agree," and the mean score was calculated (possible range, 1–5). Higher scores indicate higher condom negotiation self-efficacy.

Single items were used to assess age, race or ethnicity (baseline only) and relationship status at the time of the survey. Rural-urban classification was assigned at the clinic cluster level using designations from the Census Bureau;[36] a cluster with multiple clinics may comprise only rural, only urban, or both rural and urban clinics.

Analysis

Chi-square analyses assessed whether demographic characteristics differed between adolescents and young adults, and between women included in and those excluded from the analytic sample. Statistical tests were used to determine if the outcomes of interest varied by age-group—chi-square testing for intimate partner violence and reproductive coercion, and linear regression testing for condom negotiation self-efficacy. Scores for condom negotiation self-efficacy were skewed, averaging 4.5 on a five-point Likert scale; standard transformation did not restore normality to this variable. It was left as continuous (instead of being made categorical) to retain the richness of information available in the continuous format.

To conduct the mediation analysis, an SAS macro created by Jasti and colleagues[50] was used. This macro is based on work by Mackinnon and Dwyer,[51] who described standardizing the coefficients from logistic regression models to allow for a Sobel test to be

used in cases of binary outcomes or mediators. Thus, we used this SAS macro for binary regression models and adapted it for use with clustered data. Using the macro, we ran adjusted linear and logistic regression mixed models to determine the association between each type of abuse and condom negotiation self-efficacy; the association between each type of abuse and unintended pregnancy or STD diagnosis; and the combined associations of each type of abuse and condom negotiation self-efficacy with unintended pregnancy and STD diagnosis. A Sobel test was then conducted with the linear regression coefficients and standardized logistic regression coefficients. Use of the mixed models allowed for recent intimate partner violence, recent reproductive coercion, condom negotiation self-efficacy, unintended pregnancy and STD to be time-varying (i.e., all data points collected on these measures were used). We adjusted for race or ethnicity and intervention arm in all models.

Mixed models accounted for within-patient and within-clinic correlations using random effects. All analyses were conducted using SAS version 9.4 and with a significance level set at alpha=.05.

RESULTS

Participant Characteristics

Participants were predominantly white (80%); no racial or ethnic differences by age-group were found (Table 1). Adolescents were more likely than young adults to be in a serious relationship (68% vs. 62%), and young adults were more likely than adolescents to be married (6% vs. 1%). The majority of women (72%), regardless of age-group, were receiving care at clinics designated as rural. Adolescents were more likely to report recent intimate partner violence (15%) than were young adults (11%); there was no difference between age-groups in reporting of reproductive coercion (6–7% overall). Two percent of participants reported both recent intimate partner violence and reproductive coercion (not shown). Young adults were more likely to report ever having had an unintended pregnancy (20%) and ever having received an STD diagnosis (31%) than were adolescent women (11% and 20%, respectively). Mean condom negotiation self-efficacy was 4.5 for both age-groups (observed range, 1.6–5.0).

Women who were excluded entirely from the present analysis were more likely than those who were included to be adolescents (47% vs. 39%, p=.04) and to report being single or dating more than one person at baseline (58% vs. 31%, p<.01), and less likely to report a lifetime history on unintended pregnancy at baseline (13% vs. 15%, p=.03; not shown). Those who were excluded did not differ from included participants on baseline intimate partner violence, reproductive coercion or lifetime STD diagnosis.

Eleven percent of adolescents reported recent intimate partner violence at the four-month follow-up and 9% reported it at the 12-month follow-up (Table 2); 2% and 5% of adolescents reported reproductive coercion at the four-month and 12-month follow-ups, respectively. Among young adults, 7% reported recent intimate partner violence at the four-month follow-up and 6% at the 12-month follow-up; 3% of young adults reported recent reproductive coercion at each follow-up. Past-year unintended pregnancy was reported at the 12-month follow-up by 17% of adolescents and 16% of young adults. Recent STD diagnosis

was reported by 5% of adolescents at the four-month follow-up and 4% at the 12-month follow-up. Among young adult women, recent STD diagnosis was reported by 4% at each follow-up. Condom negotiation self-efficacy for adolescents and young adults was 4.5 at the four-month follow-up; at the 12-month follow-up, it was 4.5 for adolescents and 4.6 for young adults.

Mediation Analysis

Condom negotiation self-efficacy was significantly lower among adolescents and young adults who reported recent intimate partner violence than among others (coefficients, –0.19 and –0.13, respectively—Table 3). Similarly, adolescents and young adults who reported recent reproductive coercion had reduced condom negotiation self-efficacy (−0.27 and −0.20, respectively). Condom negotiation self-efficacy was negatively associated with past-year unintended pregnancy among adolescents and young adults (odds ratio, 0.7 for each), and was negatively associated with recent STD diagnosis among young adults only (0.7).

Intimate partner violence was not associated with unintended pregnancy among adolescents or adults; thus, this null association was not tested for mediation. Reproductive coercion was, however, associated with unintended pregnancy among adolescents (odds ratio, 1.1) and young adults (1.1). Condom negotiation self-efficacy mediated this association among young adults (accounting for 17% of the total association), but not among adolescents.

Intimate partner violence was associated with odds of reporting an STD among adolescents (odds ratio, 1.1) and young adults (1.03); this association was not mediated by condom negotiation self-efficacy. Likewise, reproductive coercion was associated with reporting an STD among adolescents (1.1) and young adults (1.1), but condom negotiation self-efficacy did not mediate these associations.

DISCUSSION

This study represents an important first step in determining the role that intimate partner violence and reproductive coercion may play in reproductive health outcomes for younger women in primarily rural settings. These findings indicate that recent exposure to intimate partner violence or reproductive coercion is negatively associated with condom negotiation self-efficacy, and positively associated with recent STD diagnosis among adolescent and young adult women; additionally, reproductive coercion is positively associated with past-year unintended pregnancy among both age-groups. However, condom negotiation self-efficacy, for the most part, did not mediate these relationships.

Contrary to our hypothesis and the literature on sexual self-efficacy in general, condom negotiation self-efficacy did not vary by age-group. This may be a result of how ages were categorized in the study: 16–19 and 20–24. This grouping may not capture the correct “turning point” for the increase in sexual self-efficacy, which perhaps occurs at a younger age. However, these age-group designations were chosen on the basis of the literature on adolescent behavior and the categorizations used in the National Survey of Family Growth.[1] Another possibility is that sexual experience is more important than age for young females’ sexual self-efficacy. Women who had not had sex were excluded from this sample, which

may have obscured certain differences. Finally, abusive experiences, including being controlled by an abuser and having low self-efficacy, are associated with barriers to obtaining health care.[52–54] This clinic-based sample is likely biased toward women who could overcome these barriers (such as by having greater sexual self-efficacy).

Intimate partner violence was more prevalent among adolescent than among young adult women, and it was associated with lower condom negotiation self-efficacy, as hypothesized. The latter finding is consistent with those of previous studies. For example, Wingood and DiClemente found that physical intimate partner violence was associated with anticipated and actual consequences of condom use negotiation, such as fearing or experiencing verbal abuse or threats of physical abuse.[21] Beadnell and colleagues similarly showed that physically abused women had lower condom negotiation self-efficacy than women who were not abused.[55]

Condom negotiation self-efficacy was negatively associated with the odds of unintended pregnancy for both age-groups, but surprisingly, it was negatively associated with STD diagnosis only among young adult women. Sexual self-efficacy has been positively associated with the likelihood of any contraceptive use in past studies[26,56,57] and therefore may help to explain why condom negotiation self-efficacy was associated with unintended pregnancy for both age-groups in this study. For STDs, however, because women report multiple barriers to condom negotiation and use with abusive partners,[19,21–23] condom negotiation self-efficacy may not translate into actual condom use. In other words, a woman's condom negotiation self-efficacy may not necessarily influence her partner's condom use behaviors. Although other contraceptives can provide pregnancy prevention in the absence of partner condom use, condoms remain the only protection against STDs. Given that condom negotiation self-efficacy was only associated with STD diagnosis in young adults and that condom negotiation self-efficacy did not mediate any associations between abuse and STD diagnosis, this suggests that other variables (that possibly differ by age) are more important to maintaining sexual health.

This sample of adolescent and young adult women had high lifetime prevalence of STD diagnoses and unintended pregnancy at baseline, consistent with findings in more urban family planning populations.[5,58] Although partner violence and condom negotiation self-efficacy were associated with the odds of unintended pregnancy and STDs, these associations were relatively small. Taken together, this implies that we should explore associations between abuse, sexual self-efficacy and sexual health outcomes among younger girls who have not yet experienced unintended pregnancy or STDs.

Strengths and Limitations

Because the majority of prior studies examining whether condom negotiation self-efficacy mediates associations between abusive experiences and unintended pregnancy or STDs have been cross-sectional, an important strength of this study is the longitudinal design, which allows us to demonstrate temporal relationships. Using time-varying measures of intimate partner violence, reproductive coercion, condom negotiation self-efficacy and the outcomes of interest allows for changes in these measures that we would expect a young woman to experience over the course of a year. Thus, the associations assessed here use measures that

are closest in time to when the outcomes also occurred. Also, women were recruited into this study from primarily rural family planning clinics in western Pennsylvania. Rural young women engage in more sexual risk behaviors and have poorer sexual health outcomes,[59–61] receive less reproductive health care,[62–64] and have less access to resources for dealing with intimate partner violence than urban young women;[38–40] this study therefore provides important insight into a population that is particularly vulnerable to poor reproductive health outcomes. However, our results may not be generalizable to a more urban and racially or ethnically diverse population.

Women excluded from the analysis because of missing data were younger, less likely to be in stable relationships and less likely to have had a previous unintended pregnancy at baseline than were those in our sample. However, because there were no differences in baseline reports of intimate partner violence, reproductive coercion or lifetime STD diagnosis, we do not believe that the missing data exclusions substantially impacted our results. Our models did not include condom and other contraceptive use; thus we cannot know whether or how these variables are associated with the observed relationships. Condom negotiation self-efficacy was skewed, averaging 4.5 on a five-point Likert scale; this suggests that the five-item scale may not be nuanced enough to pick up small differences in level of self-efficacy or may be affected by social desirability bias, in which individuals report high self-efficacy because they believe they should. We left this variable as continuous to retain the richness of information available in the continuous format; the large sample size helps to balance limitations of the skewed variable.

Conclusion

In a sample of sexually active adolescent and young adult women, intimate partner violence and reproductive coercion were associated with increased odds of unintended pregnancy and STD diagnosis within a one-year period; however, these associations were not, for the most part, mediated by condom negotiation self-efficacy as hypothesized. Given that many young women in our sample already had experienced unintended pregnancy and STDs, these associations should be explored in a younger population who has not yet experienced these poor sexual health outcomes. Future research should also identify more salient constructs of safer sex practices (such as concrete condom negotiation skills and access to contraception) instead of aiming solely to increase self-efficacy.

Acknowledgments

The authors acknowledge the staff of Planned Parenthood of Western Pennsylvania and Adagio Health, as well as the domestic violence and sexual assault victim advocates in western Pennsylvania who were involved with this project; Heather McCauley, who provided vital insight on the interpretation of study results; Heather Anderson, who coordinated the project; and Sam Ciaravino, Hillary Darville, Jill Etienne, Tarrah Herman, Angela Hicks, Claire Raible and Sarah Zelazny, who provided invaluable research assistance. This work was supported by grant R01HD064407 from the National Institute of Child Health and Human Development. The findings and conclusions expressed are those of the authors and do not necessarily represent the views of the National Institutes of Health or of the Planned Parenthood Federation of America.

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TABLE 1

Selected baseline characteristics of adolescent and young adult female participants in a study of a clinic-based intervention addressing intimate partner violence and reproductive coercion, by age-group, western Pennsylvania, 2011–2012

Characteristic	All (N=2,228)	Adolescents (N=841)	Young adults (N=1,387)
Race/ethnicity			
Black	14.1	14.6	13.8
White	79.5	78.8	80.0
Other	6.0	5.8	6.1
Relationship status**			
Single	29.6	29.3	29.6
Dating more than one person	1.6	1.2	1.9
In a serious relationship	64.1	67.8	61.9
Married	4.1	0.8	6.1
Clinic location			
Rural	71.7	74.7	69.8
Urban	9.7	8.7	10.2
Both	18.7	16.7	19.9
Recent intimate partner violence*	12.1	14.6	10.5
Recent reproductive coercion	6.2	6.9	5.7
Lifetime unintended pregnancy***	16.2	10.5	19.6
Lifetime STD diagnosis***	27.0	19.7	31.4
Mean condom negotiation self-efficacy score (range, 1–5)	4.46 (0.01)	4.45 (0.02)	4.46 (0.02)

Notes: Adolescents were aged 16–19; young adults, 20–24. "Recent" refers to events occurring within three months of the survey. Unless otherwise noted, data are percentages; figures in parentheses are standard errors. Percentages may not total 100.0 because of missing data and rounding.

* Difference between age-groups significant at p<.05.

** Difference between age-groups significant at p<.01.

*** Difference between age-groups significant at p<.001.

TABLE 2

Selected outcomes at four- and 12-month follow-ups, by age-group

Outcome	Four-month follow-up		12-month follow-up	
	Adolescents (N=609)	Young adults (N=1,043)	Adolescents (N=674)	Young adults (N=1,083)
Recent intimate partner violence	10.7	7.0	8.5	6.3
Recent reproductive coercion	2.1	3.2	4.6	2.9
Past-year unintended pregnancy	u	u	16.6	16.4
Recent STD diagnosis	5.3	3.9	3.9	3.5
Mean condom negotiation self-efficacy score	4.46 (0.03)	4.47 (0.01)	4.54 (0.02)	4.55 (0.02)

Notes: "Recent" refers to events occurring within three months of the survey. Unless otherwise noted, data are percentages; figures in parentheses are standard errors. u=unavailable.

TABLE 3

Coefficients and odds ratios (and 95% confidence intervals) from linear and logistic regression analyses assessing associations between selected characteristics and outcomes, by age-group

Characteristic	Condom negotiation self-efficacy		Past-year unintended pregnancy		Recent STD diagnosis	
	Adolescents	**Young adults**	**Adolescents**	**Young adults**	**Adolescents**	**Young adults**
CONDOM NEGOTIATION SELF-EFFICACY	na	na	0.74 (0.56–0.97) *	0.68 (0.55–0.84) ***	0.79 (0.56–1.12)	0.74 (0.55–0.99) *
INTIMATE PARTNER VIOLENCE						
Models 1 and 2						
Intimate partner violence	–0.19 (–0.25 to –0.12) ***	–0.13 (–0.19 to –0.07) ***	1.01 (0.96–1.07)	1.04 (0.99–1.09)	1.05 (1.02–1.08) ***	1.03 (1.01–1.06) *
Model 3						
Intimate partner violence	na	na	na	na	1.05 (1.02–1.08) ***	1.03 (1.00–1.06) *
Condom negotiation self-efficacy	na	na	na	na	0.99 (0.98–1.01)	0.99 (0.98–1.00)
Indirect effect (standard error)	*na*	*na*	*na*	*na*	*0.0006 (0.0009)*	*0.0009 (0.0005)*
% of effect that is mediated	*na*	*na*	*na*	*na*	*3.0*	*7.4*
REPRODUCTIVE COERCION						
Models 1 and 2						
Reproductive coercion	–0.27 (–0.37 to –0.17) ***	–0.20 (–0.28 to –0.11) ***	1.13 (1.05–1.21) **	1.08 (1.01–1.16) *	1.12 (1.07–1.17) ***	1.08 (1.04–1.11) ***
Model 3						
Reproductive coercion	na	na	1.12 (1.04–1.20) **	1.07 (0.99–1.14)	1.12 (1.07–1.16) ***	1.07 (1.04–1.11) ***
Condom negotiation self-efficacy	na	na	0.98 (0.95–1.01)	0.96 (0.93–0.98) **	0.99 (0.98–1.01)	0.99 (0.98–1.00)
Indirect association (standard error)	*na*	*na*	*0.004 (0.002)*	*0.005 (0.002)***	*0.0008 (0.001)*	*0.001 (0.0008)*
% of association that is mediated	*na*	*na*	*6.8*	*17.1***	*1.6*	*4.1*

Notes: na=not applicable. All models adjust for race or ethnicity and intervention arm, and account for within-subject and within-clinic clustering.

* p<.05.

** p<.01.

*** p<.001.