Contraceptive Use and Consistency in U.S. Teenagers' Most Recent Sexual Relationships

CONTEXT: *Most U.S. teenage pregnancies are unintended, partly because of inconsistent or no use of contraceptives. Understanding the factors associated with contraceptive use in teenagers' most recent relationships can help identify strategies to prevent unintended pregnancy.*

METHODS: *Data on 1,468 participants in Waves 1 and 2 of the National Longitudinal Study of Adolescent Health who had had two or more sexual relationships were analyzed to assess factors associated with contraceptive use patterns in teenagers' most recent sexual relationship. Odds ratios were generated through logistic regression.*

RESULTS: *Many relationship and partner characteristics were significant for females but nonsignificant for males. For example, females' odds of ever, rather than never, having used contraception in their most recent relationship increased with the duration of the relationship (odds ratio, 1.1); their odds were reduced if they had not known their partner before dating him (0.2). The odds of consistent use (vs. inconsistent or no use) were higher for females in a "liked" relationship than for those in a romantic relationship (2.6), and for females using a hormonal method instead of condoms (4.5). Females' odds of consistent use decreased if the relationship involved physical violence (0.5). Among teenagers in romantic or "liked" relationships, the odds of ever-use and of consistent use were elevated among females who had discussed contraception with the partner before their first sex together (2.9 and 2.1, respectively), and the odds increased among males as the number of presexual couple-like activities increased (1.2 for each).*

CONCLUSIONS: *Teenagers must use contraception consistently over time and across relationships despite pressure not to. Therefore, they must learn to negotiate sexual and contraceptive decisions in each relationship.*

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Although the proportion of U.S. teenagers who have ever had sexual intercourse has declined in the past decade, almost half of high school–age teenagers in 2003 were sexually experienced.[1] In addition, despite recent dramatic declines,[2] U.S. teenage pregnancy rates and birthrates are much higher than those of other industrialized countries,[3] and most teenage pregnancies are unintended.[4] Unintended pregnancies among sexually experienced teenagers are due to contraceptive nonuse and contraceptive failure. A better understanding of factors associated with consistent contraceptive use can help researchers, policymakers, program administrators and service providers to identify strategies that potentially could further reduce rates of unintended pregnancy and childbearing among adolescents.

BACKGROUND

An emerging body of research suggests that teenagers make decisions about contraceptive use in the context of individual sexual relationships. For example, characteristics of teenagers' sexual partners and relationships influence their likelihood of using contraceptives consistently. Findings on a link between relationship type and contraceptive use have been mixed. Some studies have found that teenagers who define their relationship as romantic or their partner as someone they are "going steady" with are more likely to use condoms or other contraception than are those in nonromantic or more casual relationships.[5] Yet other studies have found increased condom use and consistency in more casual or "lower quality" relationships[6] or in relationships not involving a main partner.[7] However, these studies have not addressed whether less condom use in more serious relationships may be accompanied by increased use of more effective methods.

Other measures that may reflect the perceived seriousness of a sexual relationship also have possible implications for contraceptive use and consistency. On average, the more "couple-like" activities teenagers engage in before having intercourse—including thinking about themselves as a couple; going out together, alone or in a group; and meeting their partner's parents—the more likely they are to discuss contraception with their partner.[8] Teenagers who discuss contraception with their first partner before having sex are more likely than others to use contraception at first sex[9] and in their first relationship,[10] which may reflect teenagers' individual motivations to use contraception and their ability to express their needs in their relationships. Adolescents who have relatively little familiarity with their partner when the relationship begins are less likely to use contraceptives with that partner than other teenagers who have a more familiar partner are with theirs, possibly because they are less

comfortable discussing sex and contraception.[11] In fact, females who are more comfortable communicating with men in general report higher levels of contraceptive use than other female youth.[12]

As the age difference between teenagers and their partners increases, their odds of contraceptive use and consistency in first relationships, in current relationships and over time are reduced for males and females.[13] Having an older partner may reflect reduced power in a sexual relationship and reduced control over contraceptive decision-making. Some studies have found an association between physical violence in a dating relationship (an indicator of extreme power differentials) and nonuse of condoms.[14]

Compared with teenagers who have sex relatively early in a dating relationship, those who wait are more likely to use contraceptives consistently,[15] but they are no more likely to have used a condom at their most recent sex.[16] In addition, although teenagers are more likely to ever use contraceptives in longer relationships, maintaining consistent use becomes increasingly difficult as the duration of the relationship increases.[17]

In addition to being influenced by relationship and partner characteristics, teenagers may have an underlying propensity toward consistent or inconsistent contraceptive use. For example, in one study, consistent condom use at one time was strongly associated with condom use later, and an increased lifetime number of sexual relationships was associated with reduced odds of condom use.[18] Moreover, an association has been shown between younger age at first sexual experience and reduced contraceptive use and consistency.[19]

Contraceptive method choice in relationships may influence consistency of use. Teenagers using coitus-dependent methods are, on average, less consistent users than are those who use the pill.[20] Teenagers using dual methods[21] or hormonal methods in their first sexual relationship[22] are more consistent users than are teenagers using other methods.

Several individual-level factors are associated with contraceptive use. Racial and ethnic minorities, especially Hispanic teenagers, report lower levels of contraceptive use than non-Hispanic white teenagers do; moreover, higher test scores and better self-reported grades are associated with greater use and consistency.[23] Formal sex education may be linked to increased contraceptive use.[24] Moreover, although more frequent attendance at religious services and stronger religious beliefs are associated with delaying sexual initiation,[25] when more religious teenagers become sexually experienced, they often are less likely than other teenagers to use contraception.[26] Family characteristics are also important: Living with two biological parents and having parents with higher educational levels are associated with increased use among teenagers.[27]

Although males may play an important role in sexual and contraceptive decision-making in relationships, few studies have examined gender differences in factors associated with contraceptive use and consistency. Meanwhile, different factors may be important for males and females. For example, females with positive self-perceptions and high levels of communication report increased contraceptive use, as do males reporting high relationship quality and those with relatively nontraditional attitudes regarding gender roles.[28]

OBJECTIVES AND HYPOTHESES

This article builds on prior research on contraceptive use in several ways. First, we examine contraceptive use and consistency throughout teenagers' most recent sexual relationship instead of examining only contraceptive use at most recent sex. Second, we examine how characteristics of teenagers' relationships and sexual partners influence contraceptive use and consistency. Third, we test whether contraceptive use in teenagers' first sexual relationship and other characteristics of their sexual history are associated with current use, net of most recent partner and relationship factors. Fourth, we compare factors associated with contraceptive use among males versus females. Finally, we test for potential sample selection bias.

We examine five hypotheses: that characteristics of the most recent sexual relationship and partner are associated with contraceptive use in that relationship; that contraceptive use and consistency in first relationships will be associated with contraceptive use in most recent relationships and that as teenagers' number of sexual relationships increases, their consistency of use decreases; that users of hormonal methods and dual methods are more consistent users than those who rely on other methods and single methods are; that family and individual characteristics are associated with contraceptive use and consistency; and that predictors of contraceptive use and consistency will differ by gender.

METHODS

Data Source

Data for this study come from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative school-based survey of U.S. adolescents in grades 7–12 in 1995.[29] Add Health has involved three waves of in-home interviews and several data collection components. At Wave 1, in 1995, more than 20,700 adolescents and their parents completed in-home interviews, answering a wide range of detailed questions about health behaviors, relationships and parent-child interactions. Approximately 14,700 students were reinterviewed for Wave 2 in 1996, and 15,200 at Wave 3, in 2002.

For this study, information on participants' contraceptive use and characteristics of their most recent sexual relationship was drawn from the Wave 2 survey; individual and family background characteristics came from the Wave 1 survey. Characteristics of teenagers' first sexual relationships came from either Wave 1 or Wave 2, depending on the timing of the respondent's first sex. The longitudinal nature of the Add Health data allowed us to examine how first sexual relationships, as well as individual characteristics and partner and relationship characteristics, are asso-

ciated with contraceptive use in teenagers' most recent relationship.

Sample

We drew our sample from 5,023 unmarried, sexually experienced adolescents who participated in both survey waves and had valid sample weights and partner-specific information about sexual relationships. We excluded 1,658 teenagers with only one lifetime sexual partner, because we were interested in teenagers with multiple lifetime partners; in addition, we excluded 1,612 whose first sexual relationship had occurred more than 18 months before the interview, because Add Health did not collect partner-specific information for their first relationship. To include independent variables measured before the most recent sexual relationship, we excluded 151 teenagers with at least two sexual partners before, but not since, the Wave 1 interview. Furthermore, we excluded 125 teenagers with incomplete or inconsistent partner-specific information on dates of first sex in their relationships; this allowed us to conclusively identify respondents' first sexual partner.* The 1,468 adolescents in our sample reported 2–10 lifetime sexual partners.† We examined characteristics only from participants' first and most recent sexual partnerships.

Measures

• *Dependent variables.* Our dependent variables were derived from two questions about adolescents' contraceptive use with their most recent sexual partner: "Did you or [your partner] ever use any method of birth control?" and "Did one or the other of you use some method of birth control every time you and [your partner] had sexual intercourse?" Using these questions, we constructed two dichotomous dependent variables. The first compared teenagers who had ever used contraception with those who had never used contraception in their most recent sexual relationship. The second compared teenagers who had always used contraception with those who had only sometimes or never used contraception.

• *Characteristics of most recent partner and relationship.* We used two measures to describe the most recent sexual partner: age difference between respondent and partner, and information on how the couple met. For the latter, we noted whether the partner was a stranger before the relationship began, compared with whether the couple had met through a friend or a friend of a friend, at their school or place of worship, or in some other way.

Our first relationship measure describes the type of relationship. Respondents could identify their relationship as romantic, "liked" (identified in Add Health as relationships not defined as romantic but in which the respondents had held hands with and kissed their partner, and had told their partner they liked or loved him or her) or nonromantic (relationships categorized as neither romantic nor liked).

Three characteristics describe the relationship before the partners had sex for the first time: length of presexual relationship (number of months between the start of the dating relationship and sexual initiation), number of couple-like activities before first sex with most recent partner and whether the couple had discussed contraception before having first sex. Couple-like activities included thinking of themselves as a couple, telling others they were a couple, going out together (alone or in a group), exchanging "I love you's," meeting each other's parents, exchanging presents and spending less time with friends in order to spend more time together. Data on these three measures were collected only from teenagers in romantic or liked relationships.

Our final two measures of relationship characteristics were physical abuse in the relationship (whether the partner had pushed, shoved or thrown harmful items at the respondent) and duration of the sexual relationship (number of months between first and most recent sex with the partner).

• *Sexual history.* Measures of sexual history were whether respondents were at least 15 years of age at first sex, the consistency of contraceptive use in their first sexual relationship (categorized as never, sometimes or always used a method) and the total number of sexual partners.‡ In preliminary analyses, we tested other characteristics of the first relationship (i.e., relationship type, discussions about contraception and frequency of sex) but found no significant association with contraceptive consistency in the most recent relationship.

• *Method use in most recent relationship.* We created a four-category measure of most effective method used during the relationship: hormonal methods (the pill, implant, injectable or contraceptive ring), condoms, other (IUD, withdrawal, rhythm, vaginal sponge, foam, jelly, cream, suppositories, diaphragm, contraceptive film or some other method) or no method. (Because only 63 participants, and only 8% of female contraceptive users, reported using a long-lasting method, such as an injectable or implant, we grouped all hormonal methods together.) For teenagers who reported ever having used a method, we also measured dual contraceptive use, comparing those who used two or more methods every time they used contraception with those who used

*Questions about the onset of sexual activity were repeated in several ways, and the teenagers were not always consistent across their responses. The multiple items regarding sexual experience included questions asking whether the respondent had ever had sex, the date of first sexual intercourse and the date of first sexual intercourse with specific nominated partners. We excluded 67 teenagers who gave incomplete partner-specific dates of sex, making it impossible for us to identify the first and most recent partners, and 58 who had had at least two partners but whose first partner was also their most recent partner.

†We excluded nine with missing information for the dependent variable. Also, when data for explanatory variables were missing, we substituted the mean or mode of the nonmissing values. Furthermore, we included a measure of missing data in the multivariate models for measures in which data were missing for more than 5% of respondents.

‡We also created a "missing" category for the 5% of the sample who had provided no information on consistency of contraceptive use in their first sexual relationship. This category had a statistically significant negative association with always using contraception for females (not shown). In addition, we controlled for whether respondents had begun having sex with their first partner before Wave 1 (only 7–9% had), which was not significantly associated with outcomes for males or females, and for the length of time between first sex with the first and the most recent partners, which had a statistically marginal positive association with consistent use among females.

TABLE 1. Selected characteristics of sexually experienced teenagers, by gender, National Longitudinal Study of Adolescent Health, Waves 1 (1995) and 2 (1996)

Characteristic	Males (N=606)	Females (N=862)
Consistency of contraceptive use (%)		
Never	20.7	20.2
Sometimes	17.8	21.4
Always	61.5	58.4
Characteristics of most recent relationship		
Mean no. of yrs. partner is older than respondent (range, 0–20)	0.1	2.1***
Met partner as stranger (%)	5.5	6.0
Type of relationship (%)		
Romantic	71.5	88.1**
Liked	11.2	9.0
Nonromantic	17.4	9.8
Mean no. of mos. of presexual relationship (range, –24 to 65)‡,§	4.3	4.5
Mean no. of presexual couple-like activities (range, 0–8)‡	4.9	5.4**
Discussed contraception before sex (%)‡	41.2	55.7***
Physical violence (%)	11.1	10.1
Mean no. of mos. of sexual relationship (range, 1–42)	5.0	6.3**
Sexual history		
Aged ≥15 at first sex (%)	65.3	62.8
Consistency of contraceptive use in first relationship (%)		
Never	23.4	23.4*
Sometimes	13.6	21.5
Always	63.0	55.1
Mean lifetime no. of partners (range, 2–10)	3.3	3.3
Contraceptive use in most recent relationship (%)		
Most effective method used		
Hormonal	18.3	33.6***
Condom	58.4	43.7
Other	1.8	2.0
None	21.6	20.8
Dual method use (%)	25.6	25.0
Family characteristics		
Two biological/adoptive parents (%)	40.5	41.7
Mean parental education (range, 1–7)††	4.6	4.5
Individual characteristics		
Race/ethnicity (%)		
White	61.2	67.1†
Hispanic	14.4	9.1
Black	17.9	18.6
Asian	1.8	2.2
Other	4.8	3.1
Mean cognitive test score (range, 13–131)‡‡	101.7	100.1†
Mean religious services attendance (range, 0–4)§§	1.5	1.9***
Had pregnancy/AIDS education in school (%)	87.0	88.3

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Among the 1,297 respondents with a romantic or liked partner. §Negative numbers in the range reflect that among the teenagers in a romantic or liked relationship, some respondents reported that they had had sex with their partner at an earlier date than they considered their romantic/liked relationship to have begun. ††Highest educational level attained by a parent; 1=less than high school, 7=at least some graduate or professional school. ‡‡Modified Peabody Picture Vocabulary Test. §§0=never (or no religion), 4=at least once per week. *Notes:* Data are weighted. Significance tests for categorical variables measure between-group differences among all categories.

a single method or only sometimes used dual methods. Of note, inconsistent contraceptive users could have been classified as dual method users if they had used two or more methods every time they had used contraception.

• *Family and individual characteristics*. Family characteristics controlled for in our analyses were family structure (two biological or adoptive parents vs. all others) and parental education; the scale for the latter variable ranged from a score of one (never completed high school) to seven (at least some graduate or professional school). Individual characteristics were race or ethnicity (Hispanic, white, black,* Asian or other), cognitive ability (measured by respondents' self-reported score on a modified Peabody Picture Vocabulary Test, in which the national average is 100),[30] religious service attendance (for which scores range from zero, denoting never or no religion, to four, for attend at least once a week) and whether the respondent had received pregnancy and AIDS prevention education in school.†

Statistical Analysis

We were interested primarily in two questions: whether teenagers who ever used contraception in their most recent sexual relationship differ from those who never used a method and whether teenagers who always used a method differ from those who never or only sometimes did.‡

We used chi-square statistics to test gender differences in relationship and partner characteristics, and to assess bivariate associations between the dependent variables and these characteristics. We then used logistic regression to analyze data on the full sample. In supplementary analyses restricted to the 1,297 teenagers in romantic or liked relationships (referred to as the romantic sample), we included measures not asked of adolescents in nonromantic relationships.

To examine method type and dual method use, we used logistic regression to compare teenagers who always versus sometimes used contraception. All analyses were conducted separately for males and females, and were weighted and adjusted for the data's clustered sampling design by using survey estimation procedures in Stata.[31]

We expected that the teenagers in our sample might differ systematically from sexually experienced teenagers who were excluded (including those who had had only one sexual partner and those for whom data on first sexual experience had not been collected).§ Therefore, we tested for potential sample selection effects using probit Heckman models in Stata to adjust for selection characteristics. The rho values for the selection equations were not significant in any models, indicating that our sample did not differ from other sexually experienced respondents on preexisting family and individual characteristics. Consequently, we felt confident using models without an adjustment for sample selection.

RESULTS

Characteristics of Participants

A majority of males and females (62% and 58%, respectively) reported consistent use of contraception in their most recent relationship, 20–21% reported no use and the remaining 18–21% reported inconsistent use (Table 1).

*Throughout this article, white and black refer to non-Hispanic white and non-Hispanic black.

†Teenagers were asked whether they had learned about pregnancy and AIDS in a class at school, but there was no opportunity to report when they received this education or the content of the class.

‡Males may not accurately report whether their partner used hormonal methods. Therefore, we performed additional analyses (not shown) for males' reports of relationships using only coitus-specific methods; results were similar to those reported here.

§In bivariate analyses (not shown), sexually experienced teenagers excluded from our sample were less likely than those in our sample to have first had sex before age 15.

TABLE 2. Selected characteristics of teenagers, by consistency of contraceptive use in most recent sexual relationship and gender

Characteristic	Use never vs. ever				Use never/sometimes vs. always			
	Males		Females		Males		Females	
	Never (N=123)	Ever (N= 483)	Never (N=173)	Ever (N=689)	Never/ sometimes (N=229)	Always (N=377)	Never/ sometimes (N=359)	Always (N=503)
Consistency of use (%)‡								
Never	100.0	100.0	100.0	0.0	53.8	0.0	48.7	0.0
Sometimes	0.0	22.4	0.0	26.8	46.2	0.0	51.4	0.0
Always	0.0	77.6	0.0	73.2	0.0	100.0	0.0	100.0
Characteristics of most recent relationship								
Mean no. of yrs. partner is older than respondent	0.1	0.1	2.1	2.1	0.0	0.1	2.2	2.1
Met partner as stranger (%)	5.4	5.5	13.8	4.1***	3.8	6.5	8.3	4.4*
Type of relationship (%)								
Romantic	71.2	71.5	79.7	81.6	78.4	67.1†	85.1	78.5*
Liked	10.3	11.4	6.5	9.7	9.7	12.0	5.0	11.9
Nonromantic	18.5	17.1	13.8	8.7	11.9	20.9	9.9	9.6
Mean duration of presexual relationship (mos.)‡	3.2	4.6	4.5	4.5	3.8	4.7	4.5	4.5
Mean no. of presexual couple-like activities‡	3.7	5.2***	4.8	5.6**	4.6	5.1	5.2	5.6
Discussed contraception before sex (%)‡	30.3	44.0*	34.8	60.7***	38.4	43.2	47.3	61.6**
Physical violence (%)	14.5	10.2	11.3	9.7	15.4	8.3*	14.1	7.2**
Mean duration of sexual relationship (mos.)	4.2	5.3	4.3	6.8***	6.1	4.4*	7.0	5.9*
Sexual history (%)								
Aged ≥15 at first sex	61.0	66.5	72.1	60.5*	63.5	66.4	65.1	61.2
Contraceptive use in first relationship								
Never	38.2	19.4*	37.5	19.8**	28.1	20.3**	28.3	20.0**
Sometimes	16.0	12.9	21.8	21.4	20.5	9.0	28.5	16.6
Always	45.8	67.7	40.7	58.8	53.1	70.7	43.2	63.4
Mean lifetime no. of partners	3.2	3.3	3.5	3.3	3.2	3.3	3.6	3.2***
Contraceptive use in most recent relationship (%)§								
Most effective method used								
Hormonal	na	23.3	na	42.4	23.5	23.3	25.7	48.6
Condom	na	74.4	na	55.1	75.4	74.1	69.7	49.6
Other	na	2.3	na	2.6	1.1	2.7	4.6	1.8
Dual method use	na	25.6	na	25.0	26.8	25.2	15.7	28.5**
Family characteristics								
Two biological/adoptive parents (%)	35.0	42.0	44.2	41.1	33.8	44.7*	45.2	39.2
Mean parental education††	4.6	4.6	4.3	4.5	4.5	4.7	4.4	4.5
Individual characteristics (%)								
Race/ethnicity								
White	59.5	61.6	60.1	68.9	66.7	57.7*	65.4	68.2
Hispanic	13.4	14.7	14.3	7.8	13.6	14.9	10.6	8.0
Black	22.0	16.8	18.8	18.5	15.8	19.2	7.9	19.1
Asian	3.5	1.3	4.1	1.8	2.5	1.3	2.9	1.8
Other	1.7	5.6	2.8	3.1	1.4	6.9	3.2	3.0
Mean cognitive test score‡‡	97.9	102.7*	98.1	100.6†	100.1	102.7†	100.0	100.2
Mean religious services attendance§§	1.1	1.6**	1.8	2.0	1.3	1.7**	1.9	2.0
Had pregnancy/AIDS education in school (%)	84.8	87.5	90.7	87.7	87.8	86.4	89.7	87.4

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Among the 1,297 respondents with a romantic or liked partner. §Among the 1,172 respondents reporting any method use. ††Highest educational level attained by a parent; 1=less than high school, 7=at least some graduate or professional school. ‡‡Modified Peabody Picture Vocabulary Test. §§0=never (or no religion), 4=at least once per week. *Notes:* na=not applicable. Data are weighted. Significance tests for categorical variables measure between-group differences among all categories.

Females reported a significantly greater age difference between themselves and their partners than did males (two years, on average, compared with less than one). Six percent of males and females had met their most recent partner as a stranger; a higher proportion of females than males described their most recent sexual relationship as romantic (88% vs. 72%). On average, teenagers' most recent dating relationship had lasted about four months before the couple began having sex. Females reported more presexual couple-like activities than males did; females also were more likely than males to have discussed contraception with their most recent partner. One in 10 males and females re-

TABLE 3. Odds ratios from logistic regression analyses assessing associations between selected characteristics and teenagers' use of contraceptives ever and always in their most recent sexual relationship, by gender

Characteristic	Use ever (vs. never)		Use always (vs. never/ sometimes)	
	Males (N=606)	Females (N=862)	Males (N=606)	Females (N=862)
Most recent relationship				
No. of yrs. partner is older than respondent	1.06	1.00	1.02	0.98
Met partner as stranger	1.05	0.21**	1.97	0.49†
Type of relationship				
Romantic (ref)	1.00	1.00	1.00	1.00
Liked	1.53	2.02†	1.39	2.57**
Nonromantic	0.94	0.66	1.70	0.97
Physical violence	0.82	0.65	0.70	0.49*
Duration of sexual relationship	1.05	1.11**	0.97	0.99
Sexual history				
Aged ≥15 at first sex	1.48	0.49**	1.40	0.77
Consistency of contraceptive use in first relationship				
Never	0.34*	0.36**	0.55	0.49**
Sometimes	0.49	0.52†	0.31**	0.36**
Always (ref)	1.00	1.00	1.00	1.00
Lifetime no. of partners	1.03	0.85†	1.08	0.80**
Family characteristics				
Two biological/ adoptive parents	1.23	1.03	1.64*	0.81
Parental education	0.93	1.07	1.01	1.03
Individual characteristics				
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Hispanic	1.09	0.53*	1.32	0.65
Black	0.92	0.71	1.39	0.77
Asian	0.53	0.42	0.47	0.82
Other	2.93	1.46	4.68*	0.97
Cognitive test score‡	1.03*	1.01	1.01	1.00
Religious services attendance	1.30*	1.09	1.17†	1.01
Had pregnancy/AIDS education in school	1.47	0.68	0.96	0.61
F statistic	*1.79**	*5.42****	*2.34***	*2.89****
df	*22*	*22*	*22*	*22*

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Modified Peabody Picture Vocabulary Test.
Notes: ref=reference category. df=degrees of freedom. Data are weighted. The model controls for whether respondent had had sex before Wave 1 and for time between first sex with first partner and first sex with most recent partner.

ported experiencing physical violence in their most recent sexual relationship. On average, females' relationships had lasted longer than males' relationships.

Two-thirds of both males and females had been aged 15 or older at first sex. Sixty-three percent of males and 55% of females reported consistent use of contraception with their first sexual partner. Both males and females had had an average of 3.3 lifetime sexual partners. Females were more likely than males to report that the most effective method used with their most recent partner had been a hormonal method (34% vs. 18%). In contrast, 58% of males reported that condoms had been the most effective method used with their most recent partner, compared with 44% of females. Finally, females reported more frequent attendance at religious services than males did.

Bivariate Analyses

• *Ever-use versus never-use.* Males who had ever used contraception in their most recent relationship had engaged in more presexual couple-like activities, and were more likely to have discussed contraception before sex, than never-users (Table 2, page 269). Participants who had ever used contraception were more likely than others to have always, and less likely to have never, used contraception in their first relationship. Almost half of males who had never used a method in their most recent sexual relationship reported consistent use in their first relationship, indicating considerable variation in contraceptive use across relationships. On average, ever-users had a higher cognitive test score and a higher level of religious service attendance than never-users.

Compared with females who had never used contraceptives in their most recent relationship, female ever-users were less likely to have met their partner as a stranger and had more presexual couple-like activities, a greater likelihood of having discussed contraception with their partner before sex and longer sexual relationships. Ever-users were less likely than never-users to have been aged 15 or older at first sex. Compared with never-users, females who had ever used contraception were more likely to have always, and less likely to have never, used contraception with their first sexual partner. Participants who had ever used contraception had marginally higher cognitive test scores than never-users.

• *Consistent use versus inconsistent or no use.* Compared with males who had never or sometimes used a method in their most recent relationship, male consistent users were marginally less likely to consider their partner a romantic partner and marginally more likely to have been in a liked or nonromantic relationship. In addition, males who had always used contraception in their most recent relationship reported a lower level of physical violence and a shorter sexual relationship. Male consistent users were more likely to have always, and less likely to have never, used contraception in their first sexual relationship. They also were more likely to live with two biological or adoptive parents, were less likely to be white and more likely to be black or of "other" race, had marginally higher cognitive test scores and had higher levels of religious service attendance than nonusers and inconsistent users.

Female consistent users, compared with female nonusers or inconsistent users, were less likely to have met their partner as a stranger, less likely to be in romantic and more likely to be in liked relationships, and more likely to have discussed contraception before first sex with their partner. They also were less likely to report physical violence, and on average, they reported a shorter sexual relationship. Consistent users were more likely to have always used contraception, and less likely to have never used contraception, with their first sexual partner, compared with nonusers and inconsistent users; they also reported fewer lifetime sexual partners and were more likely to have used dual methods with their most recent sexual partner.

TABLE 4. Odds ratios from logistic regression analyses assessing associations between selected characteristics and teenagers' use of contraceptives ever and always in their most recent romantic or liked sexual relationship, by gender

Characteristic	Use ever (vs. never)		Use always (vs. never/ sometimes)	
	Males (N=512)	Females (N=785)	Males (N=512)	Females (N=785)
Duration of presexual relationship	1.02	0.99	1.02	0.99
No. of presexual couple-like activities	1.24***	1.04	1.18**	1.02
Discussed contraception before sex	0.89	2.94**	0.76	2.07**
F statistic	*2.89***	*3.99***	*2.51***	*2.72***
df	*25*	*25*	*25*	*25*

**p<.01. ***p<.001. *Notes:* df=degrees of freedom. Data are weighted. The model includes all other covariates shown in Table 3.

Multivariate Analyses

• *Ever-use versus never-use.* For males, none of the characteristics specific to the most recent sexual relationship were significant, net of family, individual and first relationship factors (Table 3). However, never-use during males' first sexual relationship was associated with 66%-reduced odds of ever-use in their most recent relationship (odds ratio, 0.3). Two individual characteristics were associated with increased odds of contraceptive use: The higher the cognitive test score or the more frequent males' attendance at religious services, the greater their likelihood of ever having used a method (1.03 and 1.3, respectively).

For females, relationship characteristics associated with contraceptive use in the most recent relationship were prior familiarity with partner and length of the relationship. The odds of ever-use were reduced if females' most recent partner had been a stranger to them (odds ratio, 0.2) and increased by 11% for each additional month of the relationship (1.1). Relationship type was marginally associated with the outcome of interest.

Two aspects of sexual history were significantly related to females' contraceptive use. Teenagers who were older at first sex had reduced odds of ever having used contraception (odds ratio, 0.5). This finding seems counterintuitive, but it supports results of the bivariate analysis and remained robust across numerous alternate model specifications.* Also, females had reduced odds of ever having used contraception in their most recent relationship if they had never used contraception in their first relationship (0.4). Contraceptive inconsistency in the first relationship and number of lifetime partners were marginally associated with lower odds of contraceptive use.

Ethnicity was the only individual characteristic that predicted contraceptive use for females: Hispanic females had lower odds of ever having used contraception (0.5), compared with whites.

The predictors of contraceptive use with the most recent partner differed substantially by gender. Only the negative association with never-use in the first sexual partnership was significant for both males and females. (Assessment of gender differences was based on whether different factors were significantly associated with contraceptive use and consistency for males compared with females.)

• *Consistent use versus inconsistent or no use.* For males, contraceptive use in the first sexual relationship was associated with consistency of use with the most recent partner. Males who only sometimes used contraception in their first relationship had 69%-reduced odds of always using contraception in their most recent relationship.

Two family and individual background characteristics were related to contraceptive consistency. Males who lived in an intact family or who are of "other" race had elevated odds of always using contraception. (The relatively high odds of "other" race was probably driven by the small cell size—only 18.) Moreover, for males a higher level of religious service attendance was marginally associated with elevated odds of contraceptive consistency.

Relationship characteristics associated with females' contraceptive consistency in their most recent partnership were relationship type and violence. Teenagers in a liked relationship had higher odds of being consistent contraceptive users (odds ratio, 2.6), compared with those who considered their relationship romantic. In contrast, the odds of always using contraception were reduced by half if there was physical violence in the relationship (0.5). Having little familiarity with the partner before the relationship began had a marginally negative association with contraceptive consistency.

Among sexual history characteristics, consistency of contraceptive use with the first partner and number of lifetime partners were related to females' consistency of use with their most recent partner. Both never and sometimes using contraception in the first relationship were associated with reduced odds of consistent use in the most recent relationship (odds ratios, 0.5 and 0.4, respectively). Likewise, the odds of always using contraception were reduced by 20% for each additional partner that a female teenager had had (0.8). No family or individual characteristics were associated with contraceptive use consistency for females.

There was very little similarity between male and female predictors of always using contraception in the most recent relationship. Only contraceptive use in the first relationship was significant for both, as in the analysis of ever-use versus never-use.

• *Romantic sample.* We restricted our next analysis to the romantic sample, to examine the critical measures asked only of teenagers in romantic or liked relationships (Table 4). For males, engaging in more couple-like activities was associated with elevated odds of both ever having used con-

*We believe the association with age is because in our sample, the youngest teenagers were more likely than teenagers aged 15 or older to report hormonal method use. We also constructed alternate models: one specifying age at first sex as a continuous variable, a second dividing it into different numbers of categories, a third using age at first sex with most recent partner instead of time between relationships, a fourth removing the indicator for survey wave in which the teenager first reported sex (in case it was functioning as a proxy for age at first sex), and a fifth including only individual and family characteristics.

traception (odds ratio, 1.2) and always having used contraception (1.2). For females, having discussed contraception before sex was associated with elevated odds of ever-use and consistent use (2.9 and 2.1, respectively).

• *Method use and contraceptive consistency.* We also examined whether method choice was associated with consistency of contraceptive use. We restricted this analysis (not shown) to adolescents who had sometimes or always used contraception, and included two additional measures: most effective method used during the relationship and dual method use.

For males, consistency of contraceptive use did not differ by method type. However, among females, the odds of always having used contraception were more than four times as high for hormonal users as for those whose most effective method had been condoms (odds ratio, 4.5). Of note, 84% of hormonal users were using the pill; thus, this association is not explained by use of long-lasting methods. Dual method use had no association with consistency for either gender.

DISCUSSION

This research builds on earlier studies suggesting that decisions about contraceptive use are made in the context of particular sexual relationships and that characteristics of partners influence whether teenagers ever or always use contraception.

Our study has some limitations. Teenagers provided information on partner characteristics and contraceptive use retrospectively, whereas contraceptive use would ideally be measured by using daily calendars. Fortunately, however, the time between Waves 1 and 2 was relatively short, limiting possible recall bias. Also, Add Health incorporated audio computer-assisted self-interviews to help improve the validity of reports of risky or sensitive behaviors,[32] and analyses of Add Health reports of sexual behaviors and sexually transmitted diseases suggest they are valid measures.[33] In addition, because our sample is restricted to respondents with two or more sexual relationships, our findings apply to teenagers whose risk of unintended pregnancy may be higher than that of teenagers who have had only one relationship.

Relationship and Partner Characteristics

Consistent with other studies showing a link between unfamiliarity with a partner and reduced contraceptive use,[34] our study indicates that females whose most recent sexual partner was a stranger to them when they started dating are less likely than females who met their partner through school, friends or church to have ever or always used contraception. This finding suggests that females who do not know their partner through social networks may be less able or willing than others to communicate their reproductive health needs or to plan for sex.

How teenagers define their relationship and the types of intimate, couple-like activities in the relationship are also associated with contraceptive use and consistency. Females in romantic relationships have lower odds than those in liked relationships of ever or always having used contraception. This finding matches results of previous studies suggesting that teenagers may be less careful about contraception when they are in more committed relationships;[35] however, it contradicts previous findings of greater contraceptive use in romantic than in liked first relationships.[36] Program providers should address the possibility that decisions on contraceptive use are compromised by teenagers' needs for intimacy.[37] Females, in particular, may jeopardize contraceptive protection for an intimate male partner. In contrast, males in romantic or liked relationships who engage in more couple-like activities with their partner before having sex are more likely to use contraception, suggesting a protective effect of intimate relationships with stronger couple identities.

Having a physically violent partner is associated with reduced consistency of contraceptive use among females. Although a small proportion of teenagers in our sample reported violence, its observed link with reduced contraceptive use confirms prior research[38] and demonstrates the need for providers to explore adolescents' needs regarding violence and abuse prevention.

Females, but not males, in romantic or liked relationships who report discussing contraception with their sexual partner before onset of sexual relations are more likely to have ever and always used contraception with that partner. This finding highlights the importance of allowing teenagers, especially females, to practice negotiation and refusal skills through role-playing exercises, a primary component of effective pregnancy prevention programs.[39]

Relationship duration is also associated with consistency of contraceptive use: Females are more likely to have ever used contraceptives as the duration of their sexual relationship increases. Other studies have likewise shown that as relationship duration increases, teenagers become more likely to use contraception, although maintaining consistency over time may become increasingly difficult.[40]

Two variables that we hypothesized would be associated with contraceptive consistency—age difference between teenagers and their partners and duration of presexual relationship—had nonsignificant findings. Other relationship and partner characteristics may more substantially influence contraceptive decision-making in teenagers' most recent relationship.

Sexual History

As hypothesized, contraceptive use in the first and most recent sexual relationships are linked: Compared with teenagers who always used contraception in their first relationship, teenagers who had not used contraception in their first relationship or who had used it inconsistently had reduced odds of ever and always having used contraception in their most recent relationship. However, substantial variation in contraceptive consistency exists across individuals. For example, one in five teenagers who reported consistent contraceptive use in their most recent sexual relationship had used no method in their first relationship. In contrast, 40–45% of teenagers who had never used a

method in their most recent relationship reported that they had always used contraception in their first relationship. Thus, pregnancy prevention programs must help teenagers learn to better negotiate sexual and contraceptive decisions in each new relationship.

Among females, having more lifetime partners is associated with reduced odds of always using contraception. This finding suggests that teenage females experience "contraceptive fatigue" across relationships, and that females in greatest need of protecting themselves and their partners from unintended pregnancy (and sexually transmitted diseases) are the least likely to have engaged in protective behavior. Pregnancy prevention programs and family planning providers should thus highlight the importance of using contraception consistently across relationships.

The observed association for teenagers' age at first sex seems to operate in a counterintuitive direction for females. Teenage females who are younger at first sex are more likely to have ever used contraception. This finding seems to reflect the higher rates of hormonal method use in female teenagers' most recent sexual relationship among those who were 14 or younger at sexual initiation (not shown), possibly because of early interventions or simply misreporting method type.

Method Choice

Our analyses show that hormonal method use is associated with increased consistency of contraceptive use among females. Earlier findings[41] of no link between hormonal method use and adolescent females' consistency of contraceptive use in their first sexual relationship may reflect that few teenagers begin their first relationship using hormonal methods. Hormonal use becomes more prevalent in later relationships; however, only one-third of females in our study reported having used a hormonal method, and an even smaller proportion of males reported that their female partner had used one. The most recently developed hormonal methods—injectables and the contraceptive patch—combine consistency and effectiveness, and may be the most effective methods to promote for sexually active teenagers.[42] However, only a small proportion of teenagers in our sample reported having used a long-lasting method.

Family and Individual Characteristics

Among males, higher cognitive test scores are associated with greater contraceptive use, as other research also has suggested.[43] Of interest, males with a higher level of religious service attendance are more likely to have ever and to have always used contraception, which counters other studies in which religious attendance has been associated with reduced contraceptive use.[44] The positive link between religiosity and contraceptive use in our study may reflect—among religious males, in particular—a high level of perceived social sanctions against premarital pregnancy. By contrast, more religious females are no more likely than other females to use contraception consistently, even though they also may have strong motivations to avoid pregnancy.

Gender Differences

Factors associated with contraceptive use and consistency differ for males and females. For males, more family and individual characteristics than relationship and partner characteristics are associated with contraceptive use and consistency, whereas for females, more relationship and partner characteristics and choice of method are associated with contraceptive use and consistency. Because females are more likely than males to define their sexual relationships as romantic, these findings may reflect that females place greater importance on intimate relationships than males do. Moreover, because males may play an important role in couples' contraceptive decision-making, pregnancy prevention programs must expand their focus on male involvement; however, few evaluated programs have curricula developed specifically for males.[45]

Policy Implications

Large proportions of sexually experienced teenagers are not consistent contraceptive users, and those who use consistently in one relationship may not do so in another. Evaluations of pregnancy prevention programs have found that many positive effects on sexual and contraceptive use behaviors are only short-term;[46] as a result, some promising programs are adding booster sessions to help sustain positive outcomes over time. Parents, policymakers, providers and teenagers must continue to address ways of motivating youth to avoid pregnancy risk over time and across relationships, even in the face of potential social and partner pressures to do otherwise.

We have highlighted multiple relationship and partner characteristics associated with contraceptive use and consistency. Currently, the primary relationship characteristics that pregnancy prevention programs focus on involve sexual abuse or statutory rape, because of reporting requirements in federally funded programs.[47] Effective programs often maintain a critical focus on communication and negotiation skills between teenagers and their partners,[48] and we find that communication between partners is strongly associated with contraceptive use and consistency. However, only about half of teenagers report having discussed contraception with their most recent partner before having sex with that partner. To be effective among teenagers, programs must also address whether power differences in a relationship—due, for example, to not knowing the partner well, to experiencing physical violence in the relationship or even to desires for intimacy—may compromise decision-making or negotiating skills.

Parents, policymakers, providers and teenagers must continue to address ways of motivating youth to avoid pregnancy risk over time and across relationships.

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