Patterns of Contraceptive Use Within Teenagers' First Sexual Relationships

By Jennifer Manlove, Suzanne Ryan and Kerry Franzetta

Jennifer Manlove is senior research associate, Suzanne Ryan is research associate and Kerry Franzetta is senior research assistant, all with Child Trends, Washington, DC.

CONTEXT: *Teenagers have a high unintended pregnancy rate, in part because of inconsistent use or nonuse of contraceptives. It is important to determine how partner and relationship characteristics are related to contraceptive use and consistency within adolescents' first sexual relationships.*

METHODS: *Logistic and multinomial logistic regression analyses of data from 1,027 participants in the first two waves of the National Longitudinal Study of Adolescent Health examined the influence of relationship and partner characteristics on ever-use and consistent use of contraceptive methods during teenagers' first sexual relationships.*

RESULTS: *Teenagers who had waited a longer time between the start of a relationship and first sex with that partner, discussed contraception before first having sex or used dual contraceptive methods had significantly increased odds of ever or always using contraceptives. Adolescents who had taken a virginity pledge, had an older partner, had a greater number of close friends who knew their first partner, or reported having a relationship that was not romantic but that involved holding hands, kissing and telling their partners they liked or loved them had decreased odds of contraceptive use or consistency. As relationship length increased, teenagers were more likely to ever have used a method, but less likely to always have used a method.*

CONCLUSIONS: *Parents and programs should encourage teenagers to delay sexual intercourse, discuss contraception with partners before initiating sex and be vigilant about contraceptive use, particularly in long-term sexual relationships and in relationships with older partners.*

Perspectives on Sexual and Reproductive Health, 2003, 35(6):246–255

The prevalence of unintended pregnancy is high in the United States, especially among women in their teens. Despite declines in the past decade, U.S. teenage pregnancy rates and birthrates are among the highest in the industrialized world.[1] Public concern about and efforts aimed at preventing unintended pregnancies have focused primarily on teenagers because the vast majority of teenage pregnancies and births are unintended.[2]

Teenagers may avoid unintended pregnancies by delaying early sexual intercourse and by using contraceptives consistently and effectively when they do become sexually active.[3] Among sexually experienced teenagers and young adults not actively seeking to become pregnant, approximately half of unintended pregnancies result from nonuse of contraceptives, and the other half result from ineffective use.[4] Although adolescent contraceptive use appears to be improving,[5] teenagers remain inconsistent contraceptive users.[6] However, few national-level studies have assessed factors associated with contraceptive consistency within sexual relationships.

Too often, researchers must rely on measures of contraceptive use from a single point in time: Sexually experienced women and men are classified as either users or nonusers on the basis of measures of contraceptive use at first or last intercourse. However, single-time measures are limited and do not reflect patterns of method use over time. For example, contraceptive use at first sex is a much weaker predictor of unintended pregnancy than contraceptive consistency over a 12-month period.[7]

Extensive research has examined factors associated with the transition to first sexual intercourse, and this work often has included information on contraceptive use at first sexual intercourse. Teenagers' first relationship experiences may predict how they will approach subsequent relationships, but until recently, national-level data available to tie contraceptive patterns to sexual partners have been limited.[8] Those studies that have examined consistency focus primarily on contraceptive effectiveness for a specified period without taking into consideration sexual relationships during that period,[9] but an adolescent's contraceptive use may change when he or she begins a sexual relationship with a new partner.[10]

The focus of this article is on examining how partner and relationship characteristics are associated with contraceptive consistency within first sexual relationships. We hypothesize that contraceptive use must be negotiated within each new sexual relationship, and the likelihood of sustained contraceptive use depends on the dynamics within sexual relationships.

FACTORS ASSOCIATED WITH USE

Some studies have found that partner and relationship characteristics are associated with contraceptive use at first sex,[11] recent contraceptive use,[12] ever-use of contraceptives dur-

ing a sexual relationship[13] and the likelihood of a nonmarital pregnancy.[14] These studies suggest that the type of relationship that teenagers have with their partners influences their contraceptive use patterns. Adolescent women who have just met their partners at the time of first sex and consider the relationship nonromantic are less likely than those who are going steady or in a romantic relationship to use a contraceptive method.[15] Also, contraceptive use may differ in monogamous and nonmonogamous relationships: In one study, inner-city women who reported having more than one partner were more likely to use a condom in their "other" relationship than in their main, or regular, relationship.[16] Other studies report reduced condom use in cohabiting relationships or in relationships that eventually resulted in cohabitation or marriage;[17] however, these studies do not indicate whether the female partners used a contraceptive method other than the condom.

The length of sexual relationships also is related to contraceptive use: As the length of their relationships increases, teenagers have an increased likelihood of ever using a method,[18] but a reduced likelihood of using condoms consistently.[19] It is unclear whether this is because of switching to hormonal methods, a reduction in perceived sexually transmitted disease (STD) risk or "contraceptive fatigue" (growing difficulty in sustaining consistent contraceptive use in longer relationships). In addition, teenagers who were younger at the time of their first sexual experience were less likely than those who were older to have practiced contraception at first sex[20] or during recent sexual activity.[21]

Partner characteristics are another possible influence on patterns of contraceptive use: Females with older partners are less likely to practice contraception,[22] and a greater age difference between partners is associated with reduced contraceptive use, especially among females.[23]

The type of method used during the first sexual relationship may be associated with contraceptive consistency. Bivariate analyses of National Survey of Family Growth data suggest that teenagers relying on coitus-dependent methods use contraceptives less consistently than teenagers relying on the pill.[24] It follows that adolescents using the injectable or the implant should report the greatest contraceptive consistency. Teenagers using dual methods—who tend to be more risk-averse than other sexually experienced teenagers—may also be more consistent contraceptive users.[25]

Previous research suggests that family background characteristics, including family structure and socioeconomic status, are associated with sexual and contraceptive behaviors that affect the risk of early or unintended childbearing.[26] Racial and ethnic minorities have a lower likelihood of contraceptive use than whites[27] and a greater risk of teenage pregnancy and childbearing.[28] Higher grades, test scores and educational expectations, and greater school attendance are associated with increased adolescent contraceptive use and reduced risk of pregnancy and childbearing.[29] Also, some evidence supports a positive influence of sex education on contraceptive use among female teenagers.[30]

Males play a critical role in couples' sexual decisions and contraceptive patterns. With dramatic increases in condom use for contraception at first and last sex among teenagers,[31] it is important to understand factors associated with consistent contraceptive use among males as well as females. One national study of gender differences in contraceptive use suggests that different factors may influence contraceptive use among males and females.[32] In addition, males and females may choose partners with different characteristics, which may influence their contraceptive use patterns. For example, female teenagers are more likely than males to have older partners, which places them at a reduced likelihood of contraceptive consistency.

Our study expands on prior research in several ways: by assessing contraceptive use and consistency throughout sexual relationships instead of examining contraceptive use only at first and last sex; by focusing on teenagers' first sexual relationships, to provide previously unavailable detail on the types of partners teenagers choose, characteristics of their relationships and how these are associated with contraceptive use and consistency over time; by examining how method choice and dual method use contribute to contraceptive consistency; and by exploring how the links between partner and relationship characteristics and contraceptive outcomes differ by gender.

We have four hypotheses. First, characteristics of teenagers' first sexual partners and relationships will be associated with contraceptive use and consistency during those relationships. Second, teenagers' individual and family background characteristics will also be associated with contraceptive use and consistency. Third, teenagers using hormonal methods will use contraceptives more consistently than those using condoms, and teenagers using dual methods will practice contraception more consistently than those using single methods. Finally, the associations between partner and relationship characteristics and contraceptive consistency will differ by gender.

DATA AND METHODS

Data

The National Longitudinal Study of Adolescent Health (Add Health) is a nationally representative survey of U.S. students who were in grades 7–12 in 1995. Add Health provides an exceptionally rich data source because it involves multiple waves of in-home interviews and several data collection components.[33] In 1995, more than 90,000 adolescents in 80 high schools and feeder schools completed a self-administered in-school questionnaire, and data on each school were collected through a survey completed by a school administrator. In 1995 (Wave 1), more than 20,700 students and their parents completed comprehensive in-home interviews, answering detailed questions about the teenagers' health behaviors, friendship networks, romantic partners and relationships with their parents. Approximately 14,700 students were reinterviewed at home in 1996 (Wave 2).*

*Data from a third wave of interviews became available after we completed our analyses.

For our study, we relied upon data from both Wave 1 and Wave 2 in-home interviews. Information on contraceptive consistency, sexual relationships and partner characteristics was drawn from the Wave 2 survey, whereas individual and family background characteristics were taken from the Wave 1 survey. Add Health data are longitudinal, which allowed us to examine how individual characteristics at Wave 1 influenced contraceptive use between waves.

Our sample consisted of adolescents who participated in both survey waves, initiated their first sexual relationship between interviews and had valid sample weights.* Some 5,230 adolescents were excluded because they had initiated sexual intercourse before Wave 1, and 7,212 because they had never had sexual intercourse by Wave 2. The survey posed questions about the onset of sexual activity in several ways, and the teenagers were not always consistent in their responses.† To account for these inconsistencies, we assumed that teenagers who said they had ever had sexual intercourse or reported a date of first sex with a partner in Wave 1 were sexually experienced by the first interview and, therefore, excluded them from our sample.

With these restrictions, the sample included 1,126 adolescents. We eliminated 83 respondents who gave incomplete information on date of first sex (reported only month or year of partner-specific first sex) at Wave 2 and one who reported a date of first sex that fell after the reported date of last sex. In addition, we eliminated nine respondents who were married and six who were missing data on the dependent variable, leaving a final sample of 1,027.‡

Measures

• *Dependent variables.* We derived our dependent variable of contraceptive consistency from two questions about teenagers' first sexual relationship: "Did you or [your partner] 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 responses to these questions, we constructed a measure with three categories: never used a contraceptive method (nonuse), sometimes used a contraceptive method (inconsistent use) and always used a contraceptive method (consistent use). A second dependent variable compared teenagers who had ever practiced contraception at any point during their first sexual relationship with those who had not.

• *Demographic characteristics.* We controlled for a number of individual characteristics: gender, race and ethnicity (non-Hispanic white, non-Hispanic black, Hispanic and other), and whether the respondent had received pregnancy and AIDS education in school or had taken a virginity pledge. We measured cognitive ability by score on a modified Peabody Picture Vocabulary Test, for which the national average is 100.[34] Also, we controlled for two family characteristics—family structure (two biological or adoptive parents versus all others) and educational level of the more highly educated parent in the family.

• *Relationship and partner characteristics.* Respondents could identify their first sexual relationship as being one of three types: romantic, liked (defined in Add Health as relationships that were not self-identified as romantic, but in which respondents had held hands, kissed and told their partners they liked or loved them) or nonromantic (neither romantic nor liked). Measures describing the first sexual relationship were respondent's age at first sex, length of the sexual relationship (in months), and number of months between the start of the relationship and sexual initiation (for romantic or liked relationships).

Measures of partner's characteristics were age difference between respondent and partner, the presence of verbal or physical abuse in the relationship, the number of the respondent's close friends who knew the partner before the start of the relationship (for romantic and liked relationships) and whether the couple had ever discussed contraception prior to first sex (for romantic and liked relationships). Verbal abuse was defined as name-calling, insults, disrespectful treatment, swearing or threatening the use of violence; physical violence was defined as pushing, shoving or throwing dangerous items.

• *Contraceptive method use.* We included two measures of contraceptive method use. First, we created a four-category measure of the most effective method used during the relationship: hormonal (i.e., the pill, implant, injectable or contraceptive ring), condoms, other methods (i.e., IUD, withdrawal, rhythm, vaginal sponge, foam, jelly, cream, suppositories, diaphragm, contraceptive film or some other method) or no method. (Because only 22 respondents reported using the injectable or implant, we grouped all hormonal methods together.) Second, for teenagers who reported ever having used a method, we measured dual contraceptive use—comparing those who always used two or more methods when they practiced contraception with those who sometimes used dual methods or used only a single method. (Note that inconsistent contraceptive users could be classified as always using dual methods as long as they used dual methods every time they practiced contraception.)

Analytic Methods

We used chi-square tests to assess bivariate associations between the three-level dependent variable and characteristics of teenagers' relationships and sexual partners. For multivariate analyses, we used logistic regression to examine whether teenagers who ever use contraceptives differ from those who do not, and multinomial logistic regression to ex-

*Twelve percent of the teenagers who participated in both waves of the survey did not have sample weights because they were not part of the initial probability sample (source: reference 33).

†Questions asked if the respondent ever had sex, the date of first sexual intercourse and the date of first sexual intercourse with specific partners. Inconsistent responses were largely random and did not affect substantive conclusions (source: reference 41).

‡When data for the explanatory variables were missing data, we substituted the mean or mode of the nonmissing values. If more than 5% of respondents had missing data on a particular measure, we also included a measure of missing data in the multivariate models. None of these measures were significantly associated with contraceptive use or consistency. For the 31 adolescents who reported the same date of first sex for more than one partner, we randomly selected one partner to include in our analyses.

TABLE 1. Percentage distribution of respondents to the National Longitudinal Study of Adolescent Health who first had intercourse between the 1995 and 1996 interviews, by selected characteristics, according to gender

Characteristic	All (N=1,027)	Female (N=608)	Male (N=419)
DEMOGRAPHIC			
Gender			
Male	41.4	na	na
Female	58.6	na	na
Race/ethnicity			
White	70.5	72.3	68.0
Hispanic	12.2	10.5	14.6
Black	11.6	11.4	11.9
Other	5.6	5.8	5.4
Cognitive test score			
Below mean	41.0	47.3	32.2***
Above mean	59.0	52.7	67.9
Received pregnancy/AIDS education in school			
Yes	84.7	84.6	84.8
No	15.3	15.4	15.2
Took a virginity pledge			
Yes	16.7	20.6	11.2**
No	83.3	79.4	88.8
Lives with two biological/adoptive parents			
Yes	50.6	52.3	48.2
No	49.4	47.7	51.8
Parent's education†			
≤high school	45.7	48.2	42.2
>high school	54.3	51.8	57.8
RELATIONSHIP AND PARTNER			
Age at first sex			
≤14	21.4	23.0	19.1*
15	22.2	25.2	18.0
16	22.8	23.5	21.7
≥17	33.7	28.4	41.2
Type of first sexual relationship			
Romantic	82.5	89.0	73.4***
Liked	8.8	5.6	13.2
Nonromantic	8.7	5.4	13.5
RELATIONSHIP AND PARTNER (continued)			
Length of first sexual relationship			
One-night stand	23.4	21.2	26.5
1–3 months	36.6	35.3	38.5
≥4 months	40.1	43.5	35.1
Time between start of relationship and first sex‡			
Same month	24.3	23.2	26.0
1–3 months	37.5	37.2	38.0
≥4 months	38.2	39.6	35.9
First partner's age vs. respondent's			
≥1 year younger	18.1	7.5	38.1***
Same	25.4	20.2	32.9
1 year older	22.6	24.9	19.4
≥2 years older	31.8	47.4	9.7
Physical/verbal violence during first sexual relationship			
Yes	27.0	25.8	28.8
No	63.0	74.2	71.2
No. of close friends who knew first partner at start of relationship‡			
None/had no close friends	7.0	5.7	9.0
One/a few	32.6	34.0	30.5
Most/all	60.4	60.3	60.5
Talked about contraception before first sex‡			
Yes	51.4	54.3	46.9
No	48.6	45.7	43.1
CONTRACEPTIVE USE			
Method used in first sexual relationship§			
Hormonal	19.9	17.8	23.1
Condom	56.8	57.9	55.9
Other	1.8	1.8	1.8
None	21.0	22.5	19.2
Used dual method in first sexual relationship††			
Yes	24.7	22.0	29.7
No	75.3	78.0	70.3
Total	100.0	100.0	100.0

*p<.05. **p<.01. ***p<.001. †Educational level of the more highly educated parent of the family. ‡Among 953 respondents reporting romantic or liked relationships. §Most effective method reported. ††Among 802 respondents who had used a method. *Notes:* na=not applicable. Significance indicates the difference between males and females.

amine whether teenagers who always use a method differ from those who do so only sometimes. Using multinomial logistic regression for the latter comparisons allowed us to compare consistent users with inconsistent users, controlling for nonusers;[35] we present only the results for the comparison of inconsistent and consistent users.* Although categorical measures were used in the bivariate analyses, for the multivariate analyses, continuous measures were used for cognitive test score, age at first sex, length of first sexual relationship, time between start of relationship and first sex, partner age and number of close friends who knew partner.

Multivariate analyses were conducted both on the full sample of 1,027 teenagers and on a "romantic" sample of the 953 teenagers in romantic or liked relationships. Analyses restricted to the second sample allowed us to include measures that were not asked of adolescents in nonromantic relationships.

We hypothesized that among sexually inexperienced adolescents at Wave 1, those teenagers who had sex by Wave 2 differed systematically from those who remained sexually inexperienced.† We tested for potential sample selection effects using Heckman selection models in Stata. (We used the heckprob command to analyze probit models adjusted for selection characteristics, and because we had a three-category outcome variable, we constructed a series of probit models to compare all the groups with each other.) The rho values for the selection equations were not signif-

*We recognized the implicit ordered nature of our dependent variable and, therefore, tried using an ordered logit model, but it violated the assumption of proportional odds. An underlying assumption of the ordered logit model is that "the influence of the explanatory variables is independent of the cutpoint for the cumulative logit" (source: reference 35); however, this does not hold true for our data. The effect of some predictor variables on the step from the "never" category to "sometimes" is distinct from "sometimes" to "always," with some effects in opposing directions.

†A bivariate comparison showed that compared with teenagers who first had sex between Waves 1 and 2, those who remained sexually inexperienced at Wave 2 were younger and more likely to be male, living with both parents and have better educated parents.

TABLE 2. Percentage distribution of adolescents, by consistency of contraceptive use, according to selected characteristics

Characteristic	Never	Sometimes	Always	Total
All	**21.0**	**15.6**	**63.4**	**100.0**
DEMOGRAPHIC				
Gender*				
Male	19.1	11.9	69.0	100.0
Female	22.4	18.2	59.4	100.0
Race/ethnicity***				
White	17.0	17.4	65.6	100.0
Hispanic	36.2	10.2	53.5	100.0
Black	23.3	10.4	66.3	100.0
Other	34.3	15.5	50.3	100.0
Cognitive test score**				
Below mean	27.3	14.4	58.3	100.0
Above mean	16.7	16.4	66.9	100.0
Received pregnancy/AIDS education in school				
Yes	21.0	15.6	63.4	100.0
No	21.1	15.3	63.7	100.0
Took a virginity pledge*				
Yes	24.7	23.7	51.6	100.0
No	20.3	14.0	65.7	100.0
Lives with two biological/adoptive parents				
Yes	18.8	13.1	68.2	100.0
No	23.4	18.1	58.5	100.0
Parent's education				
≤high school	20.8	16.1	63.2	100.0
>high school	21.0	14.9	64.2	100.0
RELATIONSHIP AND PARTNER				
Age at first sex				
≤14	24.0	16.7	59.3	100.0
15	22.1	15.0	62.9	100.0
16	23.6	16.6	59.8	100.0
≥17	16.6	14.5	68.9	100.0
Type of first sexual relationship**				
Romantic	18.4	17.3	64.3	100.0
Liked	38.1	7.1	54.8	100.0
Nonromantic	28.5	7.7	63.7	100.0
RELATIONSHIP AND PARTNER (continued)				
Length of first sexual relationship***				
One-night stand	29.0	0.0	71.0	100.0
1–3 months	22.4	14.5	63.2	100.0
≥4 months	14.5	26.1	59.4	100.0
Time between start of relationship and first sex†				
Same month	24.3	18.1	57.5	100.0
1–3 months	20.5	20.7	58.9	100.0
≥4 months	16.4	12.5	71.1	100.0
First partner's age vs. respondent's				
≥1 year younger	17.9	9.0	73.1	100.0
Same	22.9	12.5	61.9	100.0
1 year older	17.7	17.5	64.8	100.0
≥2 years older	24.1	18.7	57.2	100.0
Physical/verbal violence during first sexual relationship*				
Yes	15.8	20.7	63.5	100.0
No	23.0	13.6	63.4	100.0
No. of close friends who knew partner at start of relationship†				
None/had no close friends	18.3	17.5	64.2	100.0
One/a few	17.0	13.5	69.5	100.0
Most/all	22.4	17.7	60.0	100.0
Talked about contraception before sex*,†**				
Yes	12.2	20.8	67.1	100.0
No	29.0	11.6	59.5	100.0
CONTRACEPTIVE USE				
Method used in first sexual relationship*,‡**				
Hormonal	na	16.0	84.0	100.0
Condom	na	20.4	79.6	100.0
Other	na	37.2	62.8	100.0
None	100.0	na	na	100.0
Used dual method in first sexual relationship,§**				
Yes	na	11.3	88.7	100.0
No	na	22.5	77.5	100.0

*p<.05. **p<.01. ***p<.001. †Among 953 respondents reporting romantic or liked relationships. ‡Most effective method reported. §Among 802 respondents who had used a method. *Notes:* Significance indicates the overall chi square for the association between consistency and the predictor variable. na=not applicable.

icant in any models, indicating that adolescents who had never had sex and those who had first had sex between interviews had similar family and individual characteristics. (We tested selection models comparing our sample with a sample of teenagers who had first had sex before Wave 1 and with a sample combining teenagers who had had sex before Wave 1 and teenagers who had never had sex. We found no evidence of significant selection effects for any of these comparisons). Overall, we felt confident in using models that did not adjust for selection.

After examining the main effects models, we constructed logit models comparing only the consistent and inconsistent contraceptive users to incorporate measures of the type of contraceptive method used. Finally, we tested for interaction effects by gender. All analyses were weighted and adjusted for the data's clustered sampling design by using survey estimation procedures in Stata 7.0.

*Fifty-two percent of teenagers who were sexually inexperienced at Wave 1 were female.

RESULTS

Sample Characteristics

Fifty-nine percent of teenagers were female,* and 71% were white (Table 1, page 249). More than half of adolescents (59%) received an above-average score on the Peabody Picture Vocabulary Test; a significantly greater proportion of males than of females scored above the mean (68% vs. 53%). The majority (85%) of adolescents reported having received pregnancy and AIDS education in school. Only 17% had taken a pledge to abstain from sex until marriage; a significantly greater proportion of females than of males had taken a virginity pledge (21% vs. 11%). Half of teenagers reported living with two biological or adoptive parents, and slightly more than half (54%) reported that their more highly educated parent had more than a high school education.

The average age at first sex was 15.8 years; females had a lower mean age than males (15.7 vs. 16.0—not shown). The majority (83%) of adolescents reported that their first sexual relationship was romantic; 9% reported having had a liked and 9% a nonromantic first sexual relationship. A

significantly greater proportion of females than of males reported that their first sexual relationship was romantic.

On average, adolescents' first sexual relationships lasted for 3.8 months, and females reported longer relationships than males (4.2 vs. 3.4—not shown).* Interestingly, a substantial proportion of teenagers' first sexual relationships were one-night stands: Almost one-quarter (23%) of all teenagers, and 68% of those reporting nonromantic relationships (not shown), said that they had had sex with their first partner only one time. Among teenagers in romantic or liked relationships, 24% initiated sex in the month their relationship began, 38% waited 1–3 months and 38% waited four or more months.

Twenty-five percent of teenagers were the same age as their first sexual partner; 18% had a younger partner, and 54% had an older partner. On average, first sexual partners were one year older than the respondents (not shown); females reported that their partners were 1.8 years older, and males reported that their partners were 0.1 years younger. Twenty-seven percent of teenagers had experienced some type of abuse during their first sexual relationship. Sixty percent of teenagers reported that all or most of their close friends knew their partner at the start of the relationship, 33% that one or a few knew, and 7% that none knew or that they did not have any close friends.

Half (51%) of adolescents had discussed contraception with their partner before having sex for the first time. For 57% of teenagers, the most effective contraceptive method used during their first sexual relationship was the condom; 20% used a more effective hormonal method and 2% used some other less effective method. Among teenagers who had ever used a method with their first partner, one-quarter had used two or more every time they practiced contraception—14% a condom plus a hormonal method, and 11% other combinations (not shown).

Bivariate Analyses

Overall, 63% of teenagers reported always using contraceptives in their first sexual relationship, 16% using inconsistently and 21% never using (Table 2). In bivariate analyses of contraceptive consistency, a significantly greater proportion of males than of females reported always using a method (69% vs. 59%). White and black adolescents reported higher levels of consistent contraceptive use (66% each) than did either Hispanic teenagers (54%) or those of other races (50%); Hispanic teenagers were the most likely to report never using a method (36%). Contraceptive consistency was associated with scores on the Peabody Picture Vocabulary Test: Sixty-seven percent of those who scored above the mean always used a method, compared with 58% of those who scored below average. Of note, a greater proportion of teenagers who had taken a virginity pledge than of those who had not reported using contraceptives only sometimes (24% vs. 14%), whereas a greater proportion of those who had not taken a pledge than of those who had reported always using contraceptives (66% vs. 52%).

The majority (55–64%) of teenagers in all three types of relationships reported always using contraceptives; however, a smaller proportion of adolescents in romantic relationships (18%) than in liked (38%) or nonromantic relationships (29%) reported never practicing contraception. Among teenagers who had sex with their first partner only once, 71% reported using contraceptives during that episode. Inconsistent contraceptive use increased with the length of the relationship: from 15% among those in a 1–3-month relationship to 26% among those whose relationship lasted four months or longer. A greater proportion of

TABLE 3. Odds ratios from logistic and multinomial logistic regression analyses of the likelihood that teenagers ever and always used contraceptives in their first sexual relationship, by selected characteristics, according to sample

Characteristic	All		Romantic/liked	
	Ever	Always‡	Ever	Always‡
Demographic				
Male	1.36	1.28	1.11	1.42
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Hispanic	0.44**	1.45	0.39***	1.69
Black	1.02	1.61	1.01	1.37
Other	0.37*	0.82	0.38*	0.85
Cognitive test score	1.03***	0.99	1.03**	0.99
Received pregnancy/AIDS education in school	0.87	1.05	0.99	1.14
Took a virginity pledge	1.08	0.43*	1.11	0.54†
Lives with two biological/ adoptive parents	1.26	1.85*	1.25	1.64†
Parent's education	0.94	0.96	0.98	0.97
Relationship and Partner				
Age at first sex	1.06	0.93	1.06	0.93
Type of first sexual relationship				
Romantic (ref)	1.00	1.00	1.00	1.00
Liked	0.34**	1.55	0.39*	1.57
Nonromantic	0.61	1.33	na	na
No. of months in first sexual relationship	1.10*	0.86***	1.08†	0.87***
No. of months between start of relationship and first sex§	na	na	1.00	1.05*
No. of years partner was older than respondent	0.96	0.89*	0.92	0.91
Physical/verbal violence during first sexual relationship	1.41	0.73	1.22	0.78
No. of close friends who knew partner at start of relationship§	na	na	0.81*	0.90
Talked about contraception before sex§	na	na	2.12**	0.74
F	*3.36***	*2.96***	*3.58***	*2.31***
df	*17*	*34*	*20*	*40*

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Versus sometimes. §Among respondents reporting romantic or liked relationships. *Notes:* ref=reference category. na=not applicable.

*The length of the reported first sexual relationship is limited because teenagers could report only relationships that began between interviews (a period averaging 11.1 months).

TABLE 4. Odds ratios from logistic regression analysis of the likelihood that teenagers who ever used contraceptives in their first sexual relationship always did so, by selected characteristics, according to sample

Characteristic	All	Romantic/liked
Most effective method used		
Hormonal (ref)	1.00	1.00
Condom	0.76	0.89
Other	0.32†	0.39
Used dual methods‡	1.83†	2.51**
F	*2.73****	*2.11***
df	*20*	*23*

**p<.01. ***p<.001. †p<.10. ‡Reference group includes both those who used one method only and those who alternated between using single and dual methods. *Note:* The model includes all other covariates shown in Table 3.

teenagers who had experienced abuse in their first sexual relationship than of those who had not reported using contraceptives inconsistently (21% vs. 14%).

A greater proportion of teenagers who talked about contraception before sex than of those who did not reported always using a method (67% vs. 60%). Eighty-four percent of those who used a hormonal method reported consistent contraceptive use, compared with 80% of condom users and 63% of those who used other methods. Furthermore, a greater proportion of those who used dual methods during their first sexual relationship than of those who did not reported always using contraceptives.

Multivariate Analyses

• *Contraceptive consistency in the full sample.* Our logistic regression models comparing teenagers who ever and never used a method showed that Hispanics and teenagers of other races or ethnicities had lower odds than whites of ever using contraceptives (odds ratio, 0.4 for each—Table 3, page 251). Adolescents who scored higher on the Peabody Picture Vocabulary Test had slightly greater odds of at least sometimes using a contraceptive method (1.03).

Certain characteristics of teenagers' first sexual relationships were associated with ever using a contraceptive method. Teenagers who reported being in liked relationships had lower odds than those in romantic relationships of ever using contraceptives (odds ratio, 0.3). Surprisingly, we found no significant differences in contraceptive consistency between teenagers in romantic and nonromantic relationships. In addition, ever using contraceptives was positively associated with length of relationship: For each one-month increase in duration of the relationship, the odds that teenagers were at least occasional contraceptive users increased by 10%.

Many of the characteristics that were significantly associated with teenagers' ever using contraceptives (race and ethnicity, cognitive ability and relationship type) were not significant in the multinomial model comparing consistent and inconsistent users. One result—for relationship length—is in the opposite direction of that observed in the first model: For each additional month in duration of the relationship, the odds that teenagers maintained consistent contraceptive use decreased 14%.

Three characteristics that were not significantly associated with ever using contraceptives were significantly associated with always using. Living with two biological or adoptive parents was associated with more consistent contraceptive use (odds ratio, 1.9). In addition, teenagers who had taken a virginity pledge were less likely than others to always practice contraception (0.4). Finally, teenagers who dated older partners had decreased odds of consistent contraceptive use: For each year a partner was older than the respondent, the odds of always using a contraceptive method were reduced by 11%.

• *Contraceptive consistency in the romantic sample.* The results for ever-use of contraceptives among the romantic sample were virtually the same as those among the full sample, except that the result for length of relationship was only marginally significant. In addition, two of the measures assessed only for teenagers in romantic or liked relationships were significantly associated with ever-use. First, the odds of teenagers' ever using contraceptives decreased with an increased number of close friends who knew the teenager's sexual partner prior to the relationship (odds ratio, 0.8). Second, teenagers who discussed contraception with their partners before first sexual intercourse had more than twice the odds of those who had not of ever using contraceptives (2.1).

As in the full sample, increased length of sexual relationship in the romantic sample was significantly associated with reduced odds of always using contraceptives (odds ratio, 0.9). In addition, for each month that a teenager delayed first sex after the start of a relationship, the odds of consistent contraceptive use increased by 5%. Family structure and having taken a virginity pledge were only marginally significant, and partner age difference was nonsignificant in the romantic sample.

• *Method use and contraceptive consistency.* Table 4 summarizes the findings of logistic regression models, based on samples restricted to adolescents who sometimes or always used contraceptives. These models added two measures to the analyses: most effective type of method used during the relationship and simultaneous use of dual meth-

TABLE 5. Odds ratios from logistic and multinomial logistic regression analyses of the association between length of relationship and the likelihood that teenagers ever and always used contraceptives in their first sexual relationship, by gender, according to sample

Measure	All		Romantic/liked	
	Ever	Always‡	Ever	Always‡
Gender x length of relationship	0.86*	0.90†	0.85*	0.89†
Length of relationship				
Males	0.99	0.80***	0.98	0.80***
Females	1.16**	0.89**	1.14*	0.90*
F	*3.48****	*3.02****	*3.70****	*2.25****
df	*18*	*36*	*21*	*42*

*p<.05. **p<.01. ***p<.001. †p<.10. ‡Versus sometimes. *Note:* The model includes all other covariates shown in Table 3.

ods. The table provides only the odds ratios for these constructs, but the models also included all the measures shown in Table 3.

Teenagers who had used a hormonal method during their first sexual relationship did not have increased odds of ever or always using contraceptives compared with those whose most effective method was the condom. The only significant finding was that among the romantic sample, dual method users had increased odds of always using a method (odds ratio, 2.5); results for use of other methods and dual method use were marginally significant among the full sample.

• *Interaction effects by gender.* For both the full sample and the romantic sample, the interaction between gender and length of relationship was significantly associated with ever-use: The odds ratio of 0.9 in each sample indicates that the influence of relationship length on use was weaker for males than for females (Table 5). In analyses of the main effect of relationship length for each gender, taking into account the interaction effect, females in longer relationships had elevated odds of ever using a method: For each additional month that a relationship lasted, the odds that females took the step from never to at least sometimes using a contraceptive method increased by approximately 15%. This association was not significant among males.

The interaction effect of gender and relationship length was only marginally significant in the comparison of always use with sometimes use of contraceptives among both samples. The main effects were reduced for males and females, although the reduction was greater for males than for females (odds ratios, 0.8 vs. 0.9). This suggests that although longer sexual relationships were associated with reduced contraceptive consistency among both males and females, the reduction was less among females.

DISCUSSION

This article extends our understanding of factors associated with contraceptive use and consistency by examining the link between partner and relationship characteristics and contraceptive use within teenagers' first sexual relationships. Also, it builds upon previous research that highlights the importance of understanding sexual, contraceptive and birth outcomes within the context of sexual relationships.[36]

Our analyses show that characteristics of teenagers' first sexual partners and relationships were associated with contraceptive use and consistency within that relationship. Factors associated with greater contraceptive use and consistency included waiting a longer time between the start of a relationship and first sex, discussing contraception with one's partner before first sex and using dual contraceptive methods. Taking a virginity pledge, having an older partner and being in a liked (as opposed to a romantic) relationship were related to decreased odds of contraceptive use or consistency. Increased relationship length was associated with increased odds of ever use but decreased consistent use. Our findings for the full sample of teenagers were similar to those for the romantic sample, except that several significant variables in the full sample lost significance in the smaller sample, perhaps because the romantic sample was more homogeneous.

Some relationship characteristics that we hypothesized to be associated with contraceptive consistency did not show a significant association in our models. In contrast to other studies that show a link between the type of relationship and contraceptive use at first sex or contraceptive use during relationships,[37] our multivariate analyses did not show an association between nonromantic sexual partners and contraceptive consistency. However, our data showed a reduced likelihood of ever using contraceptives in liked relationships. Other characteristics of teenagers' partners and relationships measured in these models, such as relationship length and partner's age difference, may help explain the bivariate association between nonromantic relationships and reduced contraceptive consistency.*

One counterintuitive finding was that as the number of close friends who knew a teenager's partner at the start of the relationship increased, the likelihood of ever-use of a contraceptive method declined. This may reflect a reduced concern about contracting STDs among teenagers who have a greater sense of familiarity with their partners and, therefore, view them as low-risk.

Contraceptive methods used in teenagers' first sexual relationships appear to have an association with contraceptive consistency. Among teenagers in romantic or liked relationships, those who reported dual method use every time they practiced contraception in their first sexual relationship had more than twice the odds of those who used a single method or who varied between using single and dual methods of always using a method. This finding supports the notion that teenagers who use dual methods may be more risk-averse than other teenagers and more likely to use contraceptives consistently. However, the type of method used during a relationship was not significantly associated with contraceptive consistency: Teenagers who used hormonal methods were no more likely than those who used condoms to be consistent contraceptive users. This may reflect that many teenagers use condoms at the beginning of their sexual relationships but eventually switch to more effective methods.[38] One potential side effect of switching methods is the possibility of a lapse in contraceptive coverage before hormonal methods become effective.[39]

Study Limitations

It is important to note some of the study's limitations. Teenagers provided information on their sexual activity and contraceptive use retrospectively, on the basis of two questions; ideally, we would have had them record this information in a daily calendar format. The short duration between Waves 1 and 2, however, does not allow for as much recall bias as in data files that require respondents to look back several years to their first relationships.

*The analyses included a very small number of nonromantic relationships (66), which may have made it difficult to detect significant associations. This small sample may be due, in part, to underreporting of nonvoluntary sexual experiences.

In addition, because contraceptive use was self-reported, it is possible that not all teenagers provided reliable responses. For example, males in our sample reported more consistent contraceptive use than females, which may reflect their assumption that their partners were using a method when, in fact, some were not. Note that Add Health incorporated audio computer-assisted self-interviews to help increase the validity of self-reports of risky or sensitive behaviors, including sexual activity and contraceptive use.[40] Certain populations (e.g., males) are more likely than others to inconsistently report sexual behaviors; however, incorporating these inconsistencies with consistent responses does not influence substantive conclusions about sexual behaviors,[41] and Add Health reports of sexual behaviors and STDs appear to be valid.[42] Furthermore, we controlled for social and demographic characteristics in all models, tested interactions by gender, and found no major differences in the influence of partner and relationship characteristics on contraceptive use and consistency for males and females.

Policy and Program Implications

Our results suggest multiple policy approaches to improving contraceptive consistency and reducing the risk of unintended pregnancy and STDs among teenagers. Programs should emphasize waiting to have sex as long as possible within a relationship because teenagers who delay sexual intercourse with their partners may be more likely to plan their first sexual encounter and, thus, be more prepared to practice contraception. The majority of sexually experienced teenagers in romantic or liked relationships, however, initiated sex within three months of the start of their relationship, indicating that the window of time after relationships begin during which parents and service providers can intervene to help teenagers delay sexual intercourse or emphasize using contraceptives consistently is small.[43] Thus, pregnancy prevention services should provide clear messages to teenagers before they initiate romantic relationships.

Teenagers who discussed contraception with their partners before sexual initiation had twice the odds of those who did not of at least sometimes using a method. This suggests that teaching teenagers to be vigilant about and comfortable with such discussions may be an effective way to improve contraceptive consistency. Indeed, sex education programs that actively engage teenagers in role-playing to learn to negotiate contraceptive use have shown positive results.[44]

Length of relationship was negatively associated with consistent contraceptive use, a finding that has also been shown in a study of condom use among males.[45] With more episodes of sexual activity, it is harder to maintain perfect consistency, particularly if teenagers and their partners are not using a long-acting contraceptive method. Thus, teenagers in longer relationships represent a group that is at an increased risk of unintended pregnancy. These adolescents need to hear a clear message that it is important to use a contraceptive method every time they have sex.

Our findings showed a relationship between having an older partner and reduced contraceptive use. They did not, however, show any moderating effects by gender, so both males and females with older partners were less likely than others to use contraceptives consistently. Some researchers with similar findings suggest that having a much older partner may be associated with an uneven balance of power that may influence contraceptive use and consistency.[46] Consequently, parents and providers should encourage teenagers to choose partners their own age. Statutory rape laws require service providers to report to legal authorities young teenagers with much older sexual partners, but parents also should be aware of the risks associated with their daughter's or son's having an older partner.

Sexually experienced teenagers who took a virginity pledge were substantially less likely than others to consistently use contraceptives. This finding corroborates other research that showed that although adolescents who took a virginity pledge have a later age at sexual initiation,[47] those who break their pledge have reduced odds of practicing contraception at first sex.[48] Having taken a pledge, these teenagers do not differ from other adolescents with regard to ever practicing contraception; however, using contraceptives may be viewed as a concrete sign of a behavior they pledged to avoid and, therefore, they are not diligent about using a method every time they have sex. Thus, it is important to accompany abstinence messages with a message that if and when teenagers do become sexually experienced, they should consistently use contraceptives to avoid unintended pregnancy and STDs.

CONCLUSIONS

Our study indicates that relationship and partner characteristics are important factors associated with contraceptive use within adolescents' first sexual relationships, and the findings confirm the importance of assessing factors associated with contraceptive use within sexual relationships. The policy implications of these findings are that parents, educators and service providers should be particularly aware of relationships that teenagers are engaged in to help reduce early sexual activity, contraceptive inconsistency, unintended pregnancy and STDs.

REFERENCES

1. Singh S and Darroch JE, Adolescent pregnancy and childbearing: levels and trends in developed countries, *Family Planning Perspectives*, 2000, 32(1):14–23.

2. Henshaw SK, Unintended pregnancy in the United States, *Family Planning Perspectives*, 1998, 30(1):24–29 & 46.

3. Jones JM et al., *The Declines in Adolescent Pregnancy, Birth, and Abortion Rates in the 1990s: What Factors are Responsible?* Fanwood, NJ: Consortium of State Physicians Resource Councils, 1999.

4. Brown SS and Eisenberg L, *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families,* Washington, DC: National Academy Press, 1995.

5. Centers for Disease Control and Prevention (CDC), Trends in sexual risk behaviors among high school students—United States, 1991–2001, *Morbidity and Mortality Weekly Report*, 2002, 51(38):856– 859.

6. Terry E and Manlove J, *Trends in Sexual Activity and Contraceptive Use Among Teens,* Washington, DC: National Campaign to Prevent Teen-Pregnancy, 2000.

7. Glei DA, Measuring contraceptive use patterns among teenage and adult women, *Family Planning Perspectives*, 1999, 31(2):73–80.

8. Moore KA et al., *Adolescent Sex, Contraception, and Childbearing: A Review of Recent Research*, Washington, DC: Child Trends, 1995.

9. Glei DA, 1999, op. cit. (see reference 7).

10. Ku L, Sonenstein F and Pleck J, The dynamics of young men's condom use during and across relationships, *Family Planning Perspectives*, 1994, 26(6):246–251.

11. Ibid.; and Manning WD, Longmore MA and Giordano PC, The relationship context of contraceptive use at first intercourse, *Family Planning Perspectives*, 2000, 32(3):104–110.

12. Glei DA, 1999, op. cit. (see reference 7); and Ku L, Sonenstein F and Pleck J, 1994, op. cit. (see reference 10).

13. Ford K, Sohn W and Lepkowski J, Characteristics of adolescents' sexual partners and their association with use of condoms and other contraceptive methods, *Family Planning Perspectives*, 2001, 33(3): 100–105 & 132.

14. Zavodny M, The effect of partners' characteristics on teenage pregnancy and its resolution, *Family Planning Perspectives*, 2001, 33(5):192–199 & 205.

15. Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11); and Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13).

16. Santelli JS et al., Stage of behavior change for condom use: the influence of partner type, relationship and pregnancy factors, *Family Planning Perspectives*, 1996, 28(3):101–107.

17. Ibid.; and Ku L, Sonenstein F and Pleck J, 1994, op. cit. (see reference 10).

18. Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13).

19. Ku L, Sonenstein F and Pleck J, 1994, op. cit. (see reference 10).

20. Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11).

21. Glei DA, 1999, op. cit. (see reference 7).

22. Ibid.; and Abma J, Driscoll A and Moore K, Young women's degree of control over first intercourse: an exploratory analysis, *Family Planning Perspectives*, 1998, 30(1):12–18.

23. Glei DA, 1999, op. cit. (see reference 7); Abma J, Driscoll A and Moore K, 1998, op. cit. (see reference 22); Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13); and Zavodny M, 2001, op. cit. (see reference 14).

24. Abma JC et al., Fertility, family planning, and women's health: new data from the 1995 National Survey of Family Growth, *Vital and Health Statistics*, 1997, Vol. 23, No.19.

25. Santelli JS et al., The use of condoms with other contraceptive methods among young men and women, *Family Planning Perspectives*, 1997, 29(6):261–267.

26. Miller BC, Family influences on adolescent sexual and contraceptive behavior, *Journal of Sex Research*, 2002, 39(1):22–26; and Resnick MD et al., Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health, *Journal of the American Medical Association,* 1997, 278(10):823–832.

27. Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13); and Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11)

28. Zavodny M, 2001, op. cit. (see reference 14); and Manlove J et al., Explaining demographic trends in teenage fertility, 1980–1995, *Family Planning Perspectives*, 2000, 32(4):166–175.

29. Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11); Manlove J, The influence of high school dropout and school disengagement on the risk of school-age pregnancy, *Journal of Research on Adolescence*, 1998, 8(2):187–220; and Moore KA et al., Nonmarital school-age motherhood: family, individual, and school characteristics, *Journal of Adolescent Research*, 1998, 13(4):433–457.

30. Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11).

31. CDC, Trends in sexual risk behaviors among high school students—United States, 1991–2001, *Morbidity and Mortality Weekly Report*, 2002, 51(38):856–859.

32. Kowaleski-Jones L and Mott FL, Sex, contraception and childbearing among high-risk youth: do different factors influence males and females? *Family Planning Perspectives*, 1998, 30(4):163–169.

33. Bearman PS, Jones J and Udry JR, The National Longitudinal Study of Adolescent Health: research design, 1997, <http://www.cpc.unc.edu/projects/addhealth/design.html>, accessed Aug. 4, 2003.

34. Dunn LM and Dunn LM, *Peabody Picture Vocabulary Test–Revised Manual*, Circle Pines, MN: American Guidance Service, 1981.

35. Stokes ME, Davis CS and Koch GG, *Categorical data analysis using the SAS system,* Cary, NC: SAS Institute, 1995.

36. Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13); Ku L, Sonenstein F and Pleck J, 1994, op. cit. (see reference 10); and Zavodny M, 2001, op. cit. (see reference 14).

37. Manning WD, Longmore MA and Giordano PC, 2000, op. cit. (see reference 11); and Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13).

38. Brindis C, Pagliaro S and Davis L, *Protection as Prevention: Contraception for Sexually Active Teens,* Washington, DC: National Campaign to Prevent Teen Pregnancy, 2000.

39. Abma J and Sonenstein F, Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995, *Vital and Health Statistics,* 2001, Vol. 23, No. 21.

40. Turner CF et al., Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology, *Science*, 1998, 280(5365):867–873.

41. Upchurch DM et al., Inconsistencies in reporting the occurrence and timing of first intercourse among adolescents, *Journal of Sex Research*, 2002, 39(3):197–206.

42. Upchurch DM, Mason WM and Kusunoki Y, The influences of multiple social contexts on time to first sex, paper presented at the Add Health Users Workshop, Bethesda, MD, July 29, 2003.

43. Ryan S, Manlove J and Franzetta K, *The First Time: Characteristics of Teens' First Sexual Relationships*, Washington, DC: Child Trends, 2003.

44. Kirby D, *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy,* Washington, DC: National Campaign to Prevent Teen Pregnancy, 2001.

45. Ku L, Sonenstein F and Pleck J, 1994, op. cit. (see reference 10).

46. Ford K, Sohn W and Lepkowski J, 2001, op. cit. (see reference 13).

47. Bearman PS and Brückner H, Promising the future: virginity pledges and first intercourse, *American Journal of Sociology*, 2001, 106(4): 859–912; and Resnick MD et al., 1997, op. cit. (see reference 26).

48. Bearman PS and Brückner H, 2001, op. cit. (see reference 47).

Acknowledgments

The research on which this article is based was funded, in part, by the National Institute of Child Health and Human Development through grant R01 HD40830-01. The authors thank Constantijn Panis for his methodological advice and guidance, and Elizabeth Terry-Humen for valuable comments on conceptual design.

Author contact: *jmanlove@childtrends.org*