Purpose: Studies indicate that condom use is more prevalent among casual sexual partners than committed partners because casual partners present greater risks for contracting sexually transmitted infections (STIs). This study presents updated information on teens' sexual relationship by examining the association between relationship type and contraceptive use at first intercourse.

Methods: Data from the recent cycle (2006-2008) of the National Survey of Family Growth (n = 1,379 females; n = 938 males) were used to examine the association between relationship types (committed, going steady and casual) at first intercourse and contraceptive use (any method and none) at first intercourse among adolescents. This association was identified and measured using logistic regression models.

Results: Females in committed relationships at first intercourse had marginally lower odds using a method of contraception than females in going-steady relationships (0.540), but among those who used a method, females in committed relationships more often used condoms than females in going-steady or casual relationships. Males in committed and casual relationships at first intercourse, compared to those going steady had lower odds of using any method at first intercourse (0.260, 0.640). Males in committed relationships had lower odds of condom use than their counterparts who were going steady or in casual relationships at first intercourse.

Conclusion: Teenagers' first sexual experience and relationship context in which it occurs predict the use of contraception. Adolescent sexual and reproductive health program practitioners must recognize the variations in first sexual relationships and develop both gender and method specific approaches to maximize prevention strategies.

Keywords: Contraceptive use; Contraception; Relationship type; First sex; Adolescents; Teenagers; Gender.

Implications and Contribution

The relationship context of contraceptive use at first intercourse varies by gender. Adolescents in casual and going steady relationships share equal risk of contraceptive use while those in committed have lower odds of contraceptive use. Failure to attend to adolescent's first sexual relationships may impede the effectiveness of prevention programs.

Adolescence is characterized as a period of heightened sexual exploration [1] with the majority of Americans having first sexual intercourse by age 17 [2]. Adolescent sexuality has become a public health concern [3] as teens are more likely than adults to not use contraception and/or are inconsistent contraceptive users which results in negative outcomes such as contracting of STIs and having unintended pregnancies [4]. Contraceptive use at first sexual intercourse is important because it sets the trajectory for later contraceptive use [5]. However, few recent studies [6,7] have explicitly focused on how relationship context influences contraceptive use at first intercourse.

The relationship context in which teenagers become sexually involved is important because it provides a social context for all sexual negotiations among partners [8]. Not all teens have sex in committed relationships and as such growing attention has now been directed toward understanding new relationship contexts such as the 'hook-up' and 'friends with benefits' experiences among teens [9, 10]. The fundamental concern with these types of relationships is whether they are sexually 'safe' relationships which involve negotiation and use of contraception to protect against STIs and unintended pregnancies.

Drawing on data from the 2006-2008 National Survey of Family Growth (NSFG) this study examines the influence of relationship context on contraceptive use at first intercourse

among teenagers. This study improves on work on relationship type and contraceptive use in four key ways. First, relying on recently collected national data allows assessments of contraceptive use in the contemporary climate. Second, rather than relying on just one method (condom vs. others or any contraception vs. none) I take into account condom use, chemical methods and non-use simultaneously because different methods are expected to be used in distinct types of relationships which subsequently improves our understanding of fertility and STI transmission among adolescents. Third, instead of using a dichotomous measure of relationship context I consider three types of relationships namely committed, going steady and casual thereby allowing variability in relationship experiences that might have implications for contraceptive method at first intercourse. Fourth, this paper recognizes gender differences in the association between relationship context and contraceptive use at first intercourse.

Sexual relationships are defined differently across studies. Studies have categorized relationships into three groups (romantic, liked, and non-romantic), or 'messing,' 'girlfriend/boyfriend,' and 'hubby-wifey' [7,11] while others have dichotomized classifications into new and established relationships [12]. These different definitions of relationship context have proven challenging as the meanings vary across different research samples [11]. Further, the definitions of relationships may be shifting with increase attention to casual sexual encounters.

Previous studies examining relationship context and contraceptive use consider a wide array of time reference points including first intercourse [6, 7] recent intercourse and also fuller sexual histories [13]. Thus, there is no recent work showcasing the association between relationship context and contraceptive use at first intercourse.

The use of any method of contraception at first sexual intercourse among teenagers ages 15-19 has increased only slightly during the period from 2002 to 2006-2008, with a 3% and 5% increase for females and males respectively [14]. In 2002 and 2006-2008, among teenagers, the top three methods of contraception at first sex were condoms, pills and dual methods; however, there was a significant 10% increase in condom use for males over the period [14].

Most prior research of relationship context and contraceptive use have focused exclusively on condoms or alternatively grouping all contraception methods into a single category. Condoms were more likely to be used in a new relationship rather than an established one [12]. Majority (52%) of teenage females who had just met their first sexual partner did not use a method of contraception while a large proportion of those who were engaged also did not use any method of contraception at first sexual intercourse [6].

Prior work indicates gender distinctions in the association between contraceptive use patterns and relationships context. 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 pre-sexual couple-like activities increased (1.2 for each), [15]. Additional research [16] suggested that men hold both positive and negative beliefs about the outcomes of using different contraceptive methods and reported that their partners had opinions about whether they should use each method of contraception.

Notwithstanding research attention given to adolescent contraceptive use, several key questions are still unanswered to provide clear understanding of the dynamics between relationship context, contraceptive use and first sexual intercourse. Three main hypotheses were proposed for this study. First, that relationship type at first intercourse should be associated with

contraceptive use at first intercourse. Second, that casual relationship types at first sex should be associated with greater contraceptive use among males (particularly condoms) and females (specifically chemicals). Third, irrespective of gender, adolescents in committed relationships should have higher odds of non-use of contraceptive methods compared to their counterparts in casual and going steady relationships.

Methods

Data

This study relied on the 2006-2008 National Survey of Family Growth (NSFG). The NSFG is a national area probability survey of a cross-sectional sample of 6,140 non-institutionalized males and 7,356 females aged 15-44 residing in households in the United States [14]. The NSFG was particularly appropriate for this research because of its currency and inclusion of data on female's and male's contraceptive use and relationship context at first sex. Second, information about key factors that may have influenced contraceptive use at first sex was included in the NSFG. Caution should be taken when analyzing data based on retrospective life histories [17], however, our sample was limited to men and women under age 25 and relationships were likely to be salient to individuals and recalling did not seem to be a highly complex task [18,19].

Analytic Sample

The analytic sample consisted of adolescents and young adults aged 15-24 who had engaged in sexual intercourse at least once during adolescence. They also had valid responses to the questionnaire items relating to relationship type at first intercourse and contraceptive method used at first intercourse. The final analytic sample comprised 1,379 females and 938 males.

Measures

Dependent variable. The dependent variable of interest for both female and male samples was contraceptive method used at first sexual intercourse. Female and male respondents were asked to select "contraceptive method used at first sex." This particular variable was only for contraceptive methods first mentioned and allowed respondents to list all possible contraceptives. This item was recoded into a dichotomous variable - any method versus no method. No method used at first sexual intercourse included withdrawals. A second indicator was created that distinguished type of methods used into condoms and non-condoms. Condoms were the most common method while the non-condom category comprised of all other methods of contraceptive use including chemical methods such as the pill.

Independent variable. The main independent variable for this study was *relationship type at first intercourse*. For the female sample, they were asked: "At the time you first had sexual intercourse with, how would you describe your relationship with him?" The response categories included "married; engaged; living together in a sexual relationship but not engaged; going steady with him; going out once in a while; just friends; had just met; and something else." These categories were recoded into three groups: committed (married, engaged, and living together in a sexual relationship but not engaged); going steady; and casual (going out once in a while, just friends, had just met and something else). For the male sample, respondents were asked to describe the relationship with first sexual partner at time of first sex. The categories were nearly identical to that of the female sample except for one addition. Being engaged was dichotomized into living or not living with female partner and I categorized all males who were engaged into the committed category. The variables were coded similarly for males and females.

Control variables. Socio-economic and demographic indicators were included in the analyses as controls because of their potential confounding associations between relationship context and contraceptive use at first sex. *Race/ethnicity* was categorized into Hispanic, non-Hispanic Black and non-Hispanic White (reference category), [20]. *Nativity* was dichotomized into foreign and native born [21]. *Age at first sexual intercourse* was coded as a continuous variable ranging from 15 to 24 years. The *age homogamy* was the difference between the respondent's and their partners reported age at first intercourse [22,23]. When age differences were negative, sex partners were older than the respondent and positive age differences indicated respondents were older than their first sexual partner. *Family structure* was based on the question "did respondents live in an intact family (both biological and/or adoptive parents) up to age 18?" and respondents were divided into intact and non-intact family structures [24,25]. *Mother's education* was categorized into less than high school, high school graduate (reference category), some college education, and college degree or greater [24,25]. The final control variable used was *importance of religion*. This was based on the question, "Currently, how important is religion in your daily life? Would you say it is very important, somewhat important, or not important?" Religious importance was recoded into three dummy variables with 'very important' classified as the reference category [26,27]. Missing values observed in each control variable were coded into the modal group for categorical variables and for continuous control variables missing data were assigned the mean value. No more than 5% of responses were missing for any covariate. To avoid collinearity and for ease of interpretation, age at first intercourse was centered in the models.

Analysis

Logistic regression models were used for this research predicting first whether contraception was used and a second series of models predicting type of contraception among users. This analytic approach was appropriate as it allowed for the determination of statistical relationships between explanatory variables and the dichotomous dependent variable [28]. The odds ratios used in the logistic regression models measured the association between the relationship type at first intercourse and the probability of being in each outcome category (any versus no method) and a second set of models predicting whether or not condoms were used. To account for the complex sampling strategies the models were weighted.

Models were presented separately for males and females to highlight the different variation in relationship types based on contraceptive use at first intercourse. First, a zero-order model estimating the association between the focal independent variable and contraceptive use at first intercourse was conducted. This was followed by a more complete model including all the control variables.

Results

Descriptive statistics for the data used in this study are shown in Table 1. Sharp gender discrepancies were illustrated for both the focal independent and dependent variables. The contraceptive method used by most females at first intercourse was chemical methods (57%) while for males it was condoms (75.6%). A minority of 23% of females and 16.3% males used no method at first intercourse. In terms of relationship type, most females, 67.4%, were going steady with their first sexual partner in contrast to almost half (48.3%) of males. A little over one- fifth (22.6%) of females were in casual relationships while twice as many males (44.6%) reported being in casual relationships at first sex.

The distribution of the control variables illustrated that the majority of the sample was non-Hispanic white (62.7% of females and 59.4% of males). The vast majority of the sample is native born. The mean age of respondents at first intercourse across samples is 16.4 years. Males as well as females reported engaging in first sexual intercourse with older partners. The majority of female (58.2%) and male (57.8%) respondents lived in intact families before the age of 18. Gender similarities were evidenced by mother's education level with 31% of females' mothers attaining at least high school education compared to 33.6% of males' mothers. Across samples religion was considered important in the daily lives of respondents.

[Table 1 here]

Table 2 presents the zero order model predicting whether contraception was used at first intercourse among females (n=1,379). The results indicated that among females there were no statistical association between relationship type and any method used. Females in committed relationships were as likely to use a method of contraception as females going steady and females who were in casual relationships shared similar odds of contraceptive use as females who were going steady. Model 2 adds control variables and indicates a significant association between relationship type and contraceptive use at first intercourse. Females in committed relationships at first intercourse had lower odds of using any form of contraception (0.540) than those who were going steady. Supplementary analyses revealed that mean age at first intercourse was driving the association between relationship type and contraceptive use. Females' mean age at first intercourse for those in committed relationships was 18.9 years compared to 16.4 and 15.9 years for those in going steady and casual relationships, respectively (results not shown). Therefore, this result indicated that females in committed relationships were engaging in first intercourse at older ages and were less likely to use any form of contraception. Being Hispanic (0.591) and having a mother with less than a high school diploma (0.553) was associated with

lower odds of contraceptive use at first intercourse. With each additional year increase at age at first sexual intercourse females odds of using any form of contraception increased, (1.188) by 19%. Females who reported religion being 'somewhat' or 'not at all important' had greater odds of contraceptive use at first intercourse (1.572, 2.675) than females who reported religion was 'very important.'

The next two models in Table 2 present the odds ratio of contraceptive use among males (n = 938). At the zero-order (model 3), males in casual relationships at first intercourse had significantly lower odds of using any form of contraception (0.558) than males who were going steady with their first sexual partner. Males in committed relationships shared similar odds of using a method as males who were going steady. Model 4 tests whether the association between relationship type and contraceptive use at first intercourse changes with the inclusion of other explanatory variables. In this model, males who were in casual relationships continued to have significantly lower odds of using contraception at first intercourse (0.640) than males who were going steady. In this model male respondents in committed relationships now had significantly lower odds of using any form of contraception (0.260) than males going steady. Supplementary analyses indicated that mean age at first sex accounted for the greater effect in the association between males in committed relationships and contraceptive use. Similar to the results of the female sample, males in committed relationships engaged in first sexual intercourse at older ages, mean age 20.4, compared to males in going steady (16.0) and casual relationships (15.4) (results not shown). Therefore, the significantly low odds of contraceptive use among males in committed relationships may be attributed in part to their developmental stage. Other results from model 4 illustrated that foreign born respondents had significantly lower odds of using any

form of contraception (0.453) while each additional year increase in the age at first intercourse increased the odds of contraceptive use among males (1.243).

[Table 2 here]

Table 3 presents the type of method used for both females (n = 1,042) and males (n = 763) who report using a method of contraception at first intercourse. Results from model 1 showed that females in committed relationships had higher odds of using condoms than females in going steady relationships (6.216). The odds of condom use were similar among female contraceptive users in casual and going steady relationships. In supplementary analysis, not shown, findings reveal that 23% of females in casual and going steady relationships used a condom and 64% in committed relationships did so. Model 2 indicates that the association between relationship type and contraceptive method persisted with the inclusion of the control variables. Each additional year increase in age at first intercourse is tied to higher odds of using condoms (1.179). Females who view religion as not important had lower odds of using condoms (0.424).

The last two columns of Table 3 present the odds of using condoms rather than chemical methods among males who report using a method at first intercourse. Males in committed relationships had significantly lower odds of using condoms than males in going steady relationships (0.067). Ninety-five percent of male contraceptive users in casual relationships, 94% in going steady and 39% in committed relationships used a condom (results not shown). This association persisted with the inclusion of control variables (Model 4). None of the socio-demographic indicators were tied to method type in the multivariate model.

[Table 3 here]

Discussion

The most common relationship context for teenagers to have first sexual intercourse was going steady, but there is wide variation in the experiences of teenage females and males. These patterns may be indicative of how definitions of relationships differ according to gender [11]. Females in committed relationships at first intercourse were tied to marginally lower odds of contraceptive use. These results may indicate greater long-term commitment and trust. In contrast, males in casual relationships had lower contraceptive use compared to males in going steady relationships. Females in casual relationships shared similar odds of contraceptive use as peers who were going steady. These findings suggest that females in casual relationships experience similar sexual risk protection as females in more serious relationships. However, males who have the greatest sexual risk (casual relationships) are the least likely to protect themselves.

Although the majority of female respondents used chemical methods (primarily the pill) at first intercourse, those in committed relationships had higher odds of using condoms. It is possible that females in committed relationships have more autonomy in their relationships and are able to negotiate condom use more effectively than females in casual and going steady relationships. The results also suggest that young women in casual relationships, who face the greatest risk and not taking any greater precaution to avoid STIs than women in going steady relationships.

Males in committed relationship report lower odds of using condoms which may be indicative of having reached a level of trust and openness in the relationship that means they are most interested in avoiding pregnancy and not STIs.

A critical challenge underlying previous studies is that the categorization of relationships allowed for a wide variation in meaning and therefore relationship types can overlap [7,11]. This study improved on prior research by focusing on three relationship types at first intercourse which allowed less ambiguity in meaning and mutual exclusivity. By dichotomizing serious relationships into committed and going steady the results reflected in all models show gender differences in contraceptive use and contraceptive method used. These significant findings suggest that previous studies classifying all non-casual relationships into one category as stable, steady, serious or committed may have produced misleading results when examining contraceptive use among teenagers and adults alike.

Although this study has many merits, including the use of recent large nationally representative samples of adolescents, there are at least three important caveats that must be considered when interpreting the results. First, the data set was not longitudinal and as such casual inferences cannot be made but the relationship did exist temporally before sex occurred. Second, the retrospective nature of this survey may have influenced how males and females viewed their first sexual partner. However, the results from the sample was limited to men and women under age 25 and relationships were likely to be salient to respondents; therefore, recalling the relationship context was not believed to be challenge. Third, the data are not couple based and so sexual experiences were not symmetrical among respondents. Future work should consider couple based models but may result in selection issues.

As it relates to policy and program implications, sex education programs must not only focus on abstinence or improving teens' knowledge of contraceptive methods but also channel programs towards improving communication and negotiation skills within adolescent relationships. It should never be assumed that teenagers have the requisite skills to confront

general life issues, more so, relationship and contraceptive issues. Second, the findings of this study overwhelmingly indicate that current and future programs related to adolescent sexual and reproductive health must consider a gendered approach when teaching adolescents about relationship types and dynamics and the importance of contraceptive use [29]. Finally, key findings of this study illustrates that respondents in casual and going steady relationships are equally at risk and those in committed relationships have lower odds of using any form of contraceptive. Most STIs prevention programs fail to attend to the relationship status of individuals and the need to promote safe sex practices within committed and casual relationships [30]. Current programs which focus exclusively on more vulnerable teenagers in casual relationships need to broaden its scope to include teenagers in all types of relationship. Taken together, the meaning of relationships differs and has specific implications for contraceptive use.

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Table 1
Percent distribution and means (and standard deviations) of dependent, focal independent and socio-demographic variables for females and males at first intercourse

Characteristics	Percentages/Mean	
	Female (N=1,379)	Male (N=938)
Contraceptive Type at First Intercourse		
Condoms	21.0	75.6
Chemicals	57.0	8.1
No Method	23.0	16.3
Relationship Context		
Committed	10.0	7.1
Going Steady	67.4	48.3
Casual	22.6	44.6
Race/Ethnicity		
Hispanic	19.6	22.8
Black	17.7	17.8
Non Hispanic White	62.7	59.4
Born in U.S. (Nativity)		
Yes	88.9	87.4
No	11.1	12.6
Age at first sex		
Mean	16.6 (5.5)	16.1 (6.7)
Age difference between respondent and partner at first sex		
Mean	-4.3 (3.3)	-0.5 (2.8)
Intact Family		
Yes	58.2	57.8
No	41.8	42.2
Mother's Education Level		
< High School	19.3	17.3
High School/GED	31.0	33.6
Some College	28.7	24.0
Bachelor's Degree or higher	21.0	25.1
Importance of Religion		
Very important	42.0	43.2
Somewhat important	50.0	44.1
Not important	8.0	12.7

Notes: Percentages are weighted; NSFG 2006-2008

Table 2
Logistic regression odds ratio estimating any contraceptive method use at first intercourse for females and males

	Female (N=1,379)		Male (N=938)	
	Model 1	Model 2	Model 3	Model 4
Characteristics				
Relationship Context				
Committed	0.629 (0.231)	0.540† (0.181)	0.592 (0.260)	0.260* (0.167)
Going Steady[a]	1.000	1.000	1.000	1.000
Casual	0.723 (0.160)	0.826 (0.186)	0.558* (0.144)	0.640† (0.154)
Race/Ethnicity				
Hispanic		0.591* (0.132)		1.193 (0.422)
Black		0.736 (0.175)		0.999 (0.320)
Non Hispanic White[a]		1.000		1.000
Born in US				
Yes[a]		1.000		1.000
No		0.964 (0.262)		0.453* (0.146)
Age at first sex[b]				
Mean		1.188*** (0.055)		1.243* (0.128)
Age difference between respondent and partner at first sex				
Mean		1.004 (0.001)		0.971 (0.074)
Intact Family				
Yes[a]		1.000		1.000
No		1.148 (0.217)		0.676 (0.179)
Mother's Education Level				
< High School		0.553* (0.165)		0.986 (0.406)
High School/GED[a]		1.000		1.000
Some College		0.845 (0.226)		0.707 (0.198)
Bachelor's Degree or higher		1.237 (0.525)		1.141 (0.274)
Importance of Religion				
Very Important[a]		1.000		1.000
Somewhat Important		1.572† (0.374)		1.531 (0.487)
Not Important		2.675* (1.223)		0.843 (0.463)

Notes: † p≤.10; *p≤.05, **≤.01, ***≤.001; NSFG 2006-2008
[a]Reference category
[b]Variable is mean-centered

Table 3
Logistic regression odds ratio of condom versus chemical use at first intercourse for female and male contraceptive method users

	Female (N=1,042)		Male (N=763)	
	Model 1	Model 2	Model 3	Model 4
Characteristics				
Relationship Context				
Committed	6.216** (3.187)	4.586** (2.049)	0.042*** (0.023)	0.067*** (0.044)
Going Steady[a]	1.000	1.000	1.000	1.000
Casual	1.043 (0.355)	1.085 (0.379)	1.135 (0.394)	1.164 (0.459)
Race/Ethnicity				
Hispanic		0.877 (0.293)		1.025 (0.568)
Black		0.641 (0.223)		1.361 (0.788)
Non Hispanic White[a]		1.000		1.000
Born in US				
Yes[a]		1.000		1.000
No		0.526 (0.231)		1.706 (0.970)
Age at first sex[b]				
Mean		1.179** (0.056)		0.883 (0.100)
Age difference between respondent and partner at first sex				
Mean		0.998 (0.001)		1.176 (0.122)
Intact Family				
Yes[a]		1.000		1.000
No		0.839 (0.207)		0.800 (0.257)
Mother's Education Level				
< High School		0.818 (0.393)		1.659 (1.177)
High School/GED[a]		1.000		1.000
Some College		1.439 (0.413)		0.549 (0.318)
Bachelor's Degree or higher		1.002 (0.291)		0.698 (0.414)
Importance of Religion				
Very Important[a]		1.000		1.000
Somewhat Important		0.911 (0.208)		1.126 (0.487)
Not Important		0.424* (0.169)		2.037 (1.199)

Notes: † p≤.10; *p≤.05, **≤.01, ***≤.001; NSFG 2006-2008
[a]Reference category
[b]Variable is mean-centered