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Patterns of contraceptive consistency among young adult women in southeastern Michigan: Longitudinal findings based upon journal data

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Introduction

Nearly half of the 6.6 million pregnancies that occur annually in the United States (US) are unintended, and women aged 18–24 account for the highest proportion of unintended pregnancies (Lawrence B. Finer & Zolna, 2014). Within this age group, 18- and 19-year old women have the highest rate of unintended pregnancy after adjusting for the frequency of sexual activity (L. B. Finer, 2010). Age-level differences in reproductive knowledge, attitudes, and behavior likely contribute to this finding. For example, Craig and colleagues found that among a nationally representative sample of 18–29 year old women, 18–19 year olds were less informed than their older counterparts regarding contraception, including the fact that an IUD insertion does not require surgery and that oral contraceptive pills do not provide extended pregnancy protection upon stopping use (Craig, Dehlendorf, Borrero, Harper, & Rocca, 2014). The lower level of contraceptive knowledge among 18–19 year olds is concerning because young women are less likely to desire pregnancy compared to older women (Rocca, Harper, & Raine-Bennett, 2013), which is reflected by the higher percentage of unintended pregnancies among 18–19 year olds compared to 20–24 year olds (77% vs. 64% in 2008, respectively) (Lawrence B. Finer & Zolna, 2014).

Differences in reproductive behavior between 18–19 year old women and their *younger* counterparts have been documented as well. Gleit and colleagues reported that 15–17 year old females have 71% lower odds of contraceptive use compared to slightly older females

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(Glei, 1999). While pregnancy rates have declined for all women < 20 years of age since 1990, the decline in pregnancies among 18–19 year olds has been almost entirely attributed to an increase in contraceptive use, whereas for 15–17 year olds, this decline has been attributed to reduced sexual activity as well as increased contraceptive use (Santelli, Lindberg, Finer, & Singh, 2007).

The above literature supports the need for a separate and descriptive study of contraceptive behavior among 18–19 year old females as they transition out of adolescence and into young adulthood. This developmental period is marked by life changes that may include moving away from home, leaving support networks, embarking on a school-to-work pathway, assuming financial independence, or pursuing secondary education (Lenz, 2001). Relatively few studies have been devoted to examining the contraceptive behavior of 18–19 year old females, who are usually grouped either with younger adolescents or with women in their 20's (Frost, Singh, & Finer, 2007a, 2007b; Jones, Lindberg, & Higgins, 2014). Identifying the strongest predictors of reproductive behavior can inform policies and interventions to reduce the rate of unintended pregnancy among 18–19 year olds, as well as explore factors that may be shared with younger or older women. The primary study aims were to: 1) determine patterns of contraceptive consistency over a 12-month period among 18–19 year old women; and 2) identify the socio-demographic and personal factors associated with these patterns.

Methods

Sampling frame and study period

We conducted a secondary analysis of data from the Relationship Dynamics and Social Life (RDSL) study, which focused on how the relationships, contraceptive use, and attitudes of young women relate to their risk of unintended pregnancy. The original study methods are described elsewhere (J. Barber, Kusunoki, Gatny, & Yarger, 2013; J. S. Barber, Kusunoki, & Gatny, 2011; Chang et al., 2015). The RDSL was a longitudinal cohort study that collected data from a sample of young women (aged 18–19 at the time of recruitment) who were representative of a single county in southeastern Michigan. Names and contact information were randomly selected from the Michigan Department of State Driver's License and Personal Identification Card (PID) Databases. Eligible women were contacted by mail or phone and invited to participate in a baseline interview between March 2008 and March 2009. The baseline interview had a response rate of 83% and a cooperation rate of 93%. Respondents were then invited to participate in a weekly journal-based study for a period up to 2.5 years; 79% of the original cohort completed at least 12 months of journals online and/or via phone. While the actual period between journals ranged from 5–13 days (with a median value of 8), we refer to this period as a “week” for shorthand (J.S. Barber, Kusunoki, Gatny, & Schulz, 2013).

Data collection

A trained interviewer obtained informed consent and conducted an approximately one hour-long, in-person baseline interview. Respondents answered questions regarding demographics, sexual experiences, pregnancy desires, contraceptive use, pregnancy history,

and current relationship characteristics. Respondents received modest incentives (\$1–5) for participation and completion of weekly journals.

Weeks of analysis

We included data from the first 12 months of the study when response rates remained highest (79%). Our selection criterion was designed to capture weeks during which women were at risk of unintended pregnancy, defined as being heterosexually active and not strongly desiring pregnancy. First, we excluded weeks contributed by 242 women who were abstinent during the entire 12 months. Next, we removed weeks during which women reported being pregnant (4.6% of total weeks) or having a male sexual partner who had a vasectomy (0.1% of total weeks). There were no weeks reported for female sterilization. Finally, we restricted the remaining weeks to those during which women did not strongly desire pregnancy. Our conceptualization of pregnancy desires draws upon prior literature citing the need to replace binary and static survey items (e.g. do you want to have a child in the future?) with more dynamic measures of pregnancy intent that represent a spectrum of psycho-cognitive attitudes towards pregnancy (Kavanaugh & Schwarz, 2009; Luker, 1999; Schwartz, Peacock, McRae, Seymour, & Gilliam, 2010). Each week, women were asked to report their pregnancy desires in two dimensions (scale 0–5, such that 0=don't at all want to, 5=really want to), reflecting their desires to both: 1) *get* pregnant and; 2) *avoid getting* pregnant. Based upon these responses, we identified and excluded weeks during which women were the most “pro-natal”, that is, reported both a strong desire to become pregnant and no desire to avoid pregnancy. This eligibility criterion was based upon our prior work with the RDSL data showing that women who are the *most pronatal* are the *most likely* to report subsequent pregnancies as intended- the remaining women did not differ significantly in their classification of subsequent pregnancies (unpublished data).

Journals

The final analytic sample included 688 women who contributed 18,404 journals; 93% of women completed at least half of their journals within 14 days. The mean number of journals was 30.1 (median 34, range 2–64). Minority women and women of lower SES completed fewer journals and had longer gaps between journals than white women and women of higher SES. For example, the mean number of journals completed by women on public assistance was 23.1 (S.E. 1.01, 95% CI 21.2–25.1) and 32.9 (S.E. 0.62, 95% CI 31.7–34.1, $p < 0.001$) for women not on public assistance. Women who experienced changes in sexual and contraceptive behavior also were more likely to submit “late” journals (greater than 14 days since the last journal); however, these same women had lower levels of attrition and completed more interviews overall than women who experienced no changes in pregnancy-related behavior.

Dependent Variables

Women who were sexually active during a given week were asked whether any birth control, regardless of which method, was used for each act of intercourse that week. We created a variable that summarized patterns of contraceptive consistency as: 1) *always consistent* (used contraception for each act of intercourse during all sexually active weeks); 2) *sometimes consistent* (used contraception for each act of intercourse for some but not all sexually active

weeks); or 3) *never consistent* (used contraception for some but not every act of intercourse for all sexually active weeks). Only 19 women were true “non-users”, that is, did not use any contraception during all sexually active weeks. Non-users were combined with *never consistent* users for all analyses given the small cell count and separate analyses that these two groups were demographically similar (data not shown). Respondents who answered affirmatively to using any method were first asked about non-coital methods: oral contraceptive pills (OCPs), contraceptive patch, vaginal ring, progestin shot (depomedroxyprogesterone acetate, or “DMPA”), subdermal implant, intrauterine device (IUD), or rhythm method. Respondents who reported having sex during the past week were also asked about the use of a coital-specific method(s): male condom, diaphragm or cervical cap, spermicide, female condom, or withdrawal. Women were also given an opportunity to report any other methods not mentioned already. We created a measure to describe the *most effective* method used (i.e., for dual method users, the more effective method used that week was selected) during a given week using the following mutually exclusive categories: (a) long-acting reversible contraception (e.g., the IUD or implant referred to as “LARC” hereafter), (b) DMPA (c) OCPs, birth control patch, or vaginal ring (hereafter called “the pill” because 93% of women in this group used OCPs) (d) condom, and (e) withdrawal. Among women who used at least one contraceptive method during the 12 month period, their most frequently used method (hereafter called “dominant” method) was determined by dividing the number of weeks a method was used by the total number of weeks of any contraceptive use. The journal format was designed to ask women to report contraceptive behavior since the last journal (no matter how much time had lapsed since the last journal) to encourage reporting of any and all changes in contraceptive behavior.

Independent Variables

Socio-demographic and personal characteristics were obtained from the baseline interview at the start of the study: age (18, 19 or 20 years), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other), religion is highly important to the respondent (yes=very important or more important than anything else, no=not important or somewhat important), raised by two biological parents (yes/no), biological mother’s first birth occurred at <20 years old (yes/no), public assistant recipient (yes/no), grade point average (GPA) reported for the last semester of high school completed (<3.0, 3.0 to <3.5, 3.5), employment status (employed/not employed). To determine if women were virgins at the baseline interview, they were asked if they had ever had heterosexual intercourse, defined as “when a man inserts his penis into a woman’s vagina” (yes/no). For those who reported prior heterosexual intercourse, we then determined the age of first intercourse and categorized their response as occurred at 16 years (yes/no) and if they had had more than one lifetime heterosexual partner (yes/no).

Because the frequency of sexual activity has been shown to be independently associated with contraceptive use and consistency (Frost et al., 2007a; Gleit, 1999; Wu, Meldrum, Dozier, Stanwood, & Fiscella, 2008), we created a measure to summarize sexual frequency. The following quartiles represent the percentage of weeks during which sexual activity was reported divided by the total number of journal weeks: Quartile 1 (<25%), Quartile 2 (>25% to 50%), Quartile 3 (>50 to 83%), and Quartile 4 (>83% to 100%).

Multiple studies have reported that contraceptive behavior varies depending on the level of commitment to a romantic relationship (Ku, Sonenstein, & Pleck, 1994a; Kusunoki & Upchurch, 2011; Manlove, Ryan, & Franzetta, 2007). To assess the effect of relationship status on contraceptive consistency, we created a summary measure of time spent in a “serious relationship” that indicated if the respondent was involved in a serious relationship(s) for more than half the year (yes/no). The seriousness of a relationship-week was based on several questions about marriage and engagement, cohabitation, and commitment. A relationship-week was coded as “serious” if the respondent and her partner were married, engaged, cohabiting, or committed that week; we counted these weeks and divided by the total number of journal weeks in the first 12 months.

Statistical analysis

Using Stata 14.2 (StatCorp LMP, College Station, TX), we calculated frequencies for categorical variables and means for continuous variables. To highlight socio-demographic characteristics and personal factors associated with contraceptive patterns, we used multinomial logistic regression with *always consistent* as the reference group. All point estimates were reported as odds ratios with associated 95% confidence intervals. We set alpha at <0.05. The institutional review board of the University of X (*name removed to maintain blinding for review*) approved the study protocol.

Results

Socio-demographic characteristics, prior history of sex and pregnancy, sexual activity and relationships during the study period (Table 1)

This cohort was predominantly white (57.7%) or black (31.5%). Religion was described as being highly important by 45.9% of women. Only 8.7% of women reported being virgins at their baseline interview; all of these women initiated heterosexual intercourse by the end of the study period, reflecting our selection criteria to include only women who were sexually active during the 12 months. The remaining majority of women (n=628, 91.3%) reported prior heterosexual activity at their baseline interview, and of these women, 78.7% had a history of more than one lifetime sexual partner. Almost all women (98.3%) were unmarried (results not shown). The distribution of GPAs was approximately one-third in each group: <3.0, 3.0 to <3.5, or ≥3.5. One out of two women (51.3%) reported current employment at the baseline interview. Seventy percent of women were in a serious relationship(s) for more than half of the year. The mean number of weeks of sexual activity was 12.7 (S.D. ± 11.8 weeks) (results not shown).

Dependent Outcome, Patterns of Contraceptive Consistency (Figure 1)

The distribution of contraceptive consistency patterns was: *always consistent* (40%), *sometimes consistent* (49%), and *never consistent* (11%).

Most effective (“Dominant”) Contraceptive Method Used (Figure 2)

Figure 2 summarizes the “dominant” method (most frequently used) during the 12-month period among all 665 contraceptive users. The most common method(s) reported were the

pill (41.4%) and male condoms (35.0%), followed by withdrawal (14.6%) and DMPA (6.3%). Few women (2.7%) used IUDs/implants.

Multinomial Logistic Regression (Table 2)

Multivariate analyses were conducted to examine relationships between contraceptive consistency and socio-demographic factors, frequency of sexual activity, and seriousness of relationship. *Always consistent* was the reference group for all analyses. We found no associations between contraceptive consistency and the following: age, race/ethnicity, the importance of religion to the respondent, being raised by two biological parents, having a biological mother who was <20 years old at first birth, or receiving public assistance. Women who had a lower GPA (≤ 3.0) were more likely to be *never consistent* (OR 2.5, 95% CI 1.2–5.3). Not being employed was associated with increased odds of being *sometimes consistent* (OR 1.5, 95% CI 1.1–2.2) and *never consistent* (OR 1.9, 95% CI 1.1–3.4). Being parous and in a serious relationship(s) more than half of the year were associated with approximately two-fold higher odds of being *sometimes consistent*, but not *never consistent*. The only factor associated with increased odds of *sometimes consistent* and *never consistent* use was a history of multiple sexual partners (OR 2.0, 95% CI 1.3–3.1 and OR 2.3, 95% CI 1.1–4.8, respectively).

Dominant contraceptive method, by contraceptive pattern (Table 3)

For each contraceptive consistency group (*always consistent*, *sometimes consistent*, *never consistent*), we reported the distribution of contraceptive methods. Among *always consistent* users, the most commonly used method was the pill (54%), followed by the male condom (35%); only a small percentage of *always consistent* users relied upon LARC (4%) – reflecting the overall low rate of LARC use among the entire cohort. The predominant methods used by *sometimes consistent* users were the male condom (38%) and the pill (36%). *Never consistent* users relied most heavily upon withdrawal (68%).

Discussion

In this population-based study representative of a single county in southeast Michigan, we focused on 18–19 year old heterosexually active women who did not strongly desire pregnancy, and characterized their patterns of contraceptive consistency over 12 months. Using longitudinal measures of sexual-, contraceptive- and relationship-related behavior, we described a spectrum of contraceptive consistency as *always consistent*, *sometimes consistent*, and *never consistent*. Sixty percent of women were at risk of unintended pregnancy because of inconsistent contraceptive use (*sometimes consistent* and *never consistent* women combined). Among the 40% of women who were *always consistent*, the majority relied upon user-dependent, short-acting methods associated with low to moderate effectiveness, and very few used the most effective LARC methods.

Nearly one out of two women (46%) reported at their baseline interview that religion was highly important to them. However, being religious did not predict contraceptive consistency over the subsequent year. Our findings are consistent with prior studies showing that among young adolescents, strong parental religiosity is associated with delaying sexual initiation,

but not improved contraceptive use once sexual activity begins (J. S. Manlove, Terry-Humen, Ikramullah, & Moore, 2006). The clinical implication of our finding is that regardless of self-reported religiosity, young adult women should be routinely asked about changes in sexual and contraceptive behavior over time.

In contrast to prior studies with samples that pooled young adult women with women >20 years old (Frost et al., 2007a; Wu et al., 2008) or examined younger adolescents only (Manlove, Ryan, & Franzetta, 2003), we did not find an association between contraceptive consistency and race/ethnicity. Furthermore, other measures of family structure and socioeconomic advantage, included being raised by two biological parents, being born to an adolescent mother, or receiving public assistance were not significant in our multivariate models. These null findings may reflect unmeasured factors that represent closer antecedents to contraceptive behavior, such as contraceptive knowledge and attitudes (Craig et al., 2014; M. W. Jones J, Daniels K, 2012), satisfaction with current and past contraceptive method(s) (Frost et al., 2007a) or male partner influence (Higgins et al., 2014; Kerns, Westhoff, Morroni, & Murphy, 2003)

The only measure of socioeconomic status that had a significant and robust association with contraceptive consistency was high school GPA, such that those who had a low GPA (<3.0) had 2.5 increased odds of never using their contraceptive method(s) consistently, net other factors. Alternatively, young women with better school performance (GPA ≥ 3.0) are more consistent users, which could reflect motivations to postpone motherhood in order to pursue career aspirations. Furthermore, women with better school performance may have developed skills (e.g. executive planning) that are transferrable to improved contraceptive use.

Another factor that was positively associated with contraceptive consistency was having a job, which can provide employer-based insurance and access to family planning services and contraceptive supplies. Similar to young women who achieve high GPAs, working women may be more accustomed to regular schedules. The importance of established routines is particularly important for adherence to the oral contraceptive pill (Dardano & Burkman, 2000; Rosenberg, Waugh, & Burnhill, 1998), which was the most commonly used method among *always consistent* users in this study.

Similar to findings from an analysis of data from the National Survey of Family Growth 2002 for women aged 15–44 (Wu et al., 2008), parous women in this cohort had a two-times higher odds of *sometimes consistent* use, but not *never consistent* use. While parous women may be motivated to use contraception in order to avoid a rapid repeat pregnancy, their ability to maintain *continuous* adherence to short-acting methods is challenged by the demands of motherhood (Dush, 2011). It is also possible that parous women are exhibiting a sustained pattern of inconsistent contraceptive use that put them at risk for pregnancy in the first place.

Women who were in a serious relationship(s) for most of the year were more likely to be *sometimes consistent* but not *never consistent*. This phenomenon may be related to the unique features of the male condom, which was the most commonly used method among *sometimes consistent* women. While women who rely on the condom may be motivated to

use it in the beginning of a relationship because it can provide dual protection against sexually transmitted infections and pregnancy, condom use declines rapidly as relationship duration and seriousness increase, (Ku, Sonenstein, & Pleck, 1994b; Soler et al., 2000) presumably as a result of increasing trust between partners.

By far, the most common method used by those who were *never consistent* was withdrawal (68%) – this finding may reflect the difficulty of ensuring consistent use of a method that is entirely male controlled. While male condoms also require partner cooperation to be fully effective, women can participate and monitor the process to some extent (e.g., purchasing condoms, visually confirming condom placement). In contrast, withdrawal is a completely male-dependent behavior that is not initiated until right “up to the moment”. A potential unmeasured confounder that could further increase the risk of being *never consistent* among those who rely solely on withdrawal is the presence of intimate partner violence - that is, women who are under coercion may have difficulty obtaining more effective, female controlled methods or lack control over the timing of intercourse (Moore, Frohworth, & Miller, 2010).

There are several strengths of this study. Contraceptive-, sexual- and relationship-specific data were collected longitudinally via online journals and phone calls. This approach addresses several limitations of prior cross-sectional studies using nationally representative databases (e.g., NSFG) (Abma, Martinez, & Copen, 2010; M. W. Jones J, Daniels K, 2012), including concerns about recall bias and reporter error associated with retrospectively reporting behavior that occurred months or years ago (Harris et al., 2009; M. W. Jones J, Daniels K., 2012). NSFG data only include details about the most current relationship, but not about relationships occurring at the time of contraceptive use (Abma et al., 2010; Gleit, 1999; M. W. Jones J, Daniels K, 2012), thus limiting our understanding of relationship-specific contraceptive patterns.

There were limitations to this study. Our sample was representative of a single county in Michigan and consisted predominantly of black and white women; ethnic minorities were underrepresented. The women in this sample were more sexually experienced than the general population of 18–19 year old women, limiting the generalizability of our findings to a national sample. For example, 91% of women in this study had already had heterosexual intercourse by age 18 (compared to 63% nationally) and among these women, 68% had first intercourse by age 16 (compared to 26% nationally) (Martinez, Copen, & Abma, 2011). However, our study findings are relevant to similar populations of young women with a high proportion of those who initiated intercourse early. Women who experience early intercourse are at greater risk for subsequent high-risk sexual behavior (Haydon, Herring, & Halpern, 2012) and represent an important group for targeted interventions. Minority women and women of lower SES contributed fewer journals and experienced longer gaps between journals; our findings may have underestimated weekly changes in sexual and/or contraceptive behavior among these women. We did not specifically ask about the use of exclusive breastfeeding as a contraceptive method. However, there were no significant differences noted in our multivariate analysis when we re-analyzed data after excluding all postpartum journals (conservatively defined as all weeks after the end of a pregnancy was reported).¹ While we did ask women to report whether they used contraception for each act

of intercourse during a given week, we did not collect daily-level or coital-level data that would allow us to more specifically estimate compliance with non-LARC methods. Under the assumption that participants will be inclined to report socially desirable behavior, our measures may be over-estimates of contraceptive consistency. We analyzed behavior over 12 months when response rates were highest, which limits our ability to understand the impact of variations in GPA, religious importance, and employment on contraceptive consistency over a longer period of time.

Implications for practice or policy

Healthcare policy makers and clinicians should explore strategies to deliver family planning services in a timely and anticipatory manner to young adult women in the context of their current life circumstances. In particular, clinicians should focus on identifying life changes that may portend subsequent shifts in sexual and contraceptive behavior, such as current employment, relationship status (e.g., progressing from “casual” to “serious”) and academic performance. Any significant shifts in these factors could alert health care providers that more intensive contraceptive counseling and outreach may be necessary. In contrast, targeted counseling that only occurs during the “annual exam” and is based solely on race/ethnicity or SES alone may be less productive. When desired and appropriate, women should be encouraged to adopt more effective contraceptive methods, particularly those relying exclusively upon withdrawal. Our finding regarding the low prevalence of LARC use highlights the importance of ongoing efforts to increase LARC use among young adult women.

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¹Of the 689 women in the analytic sample, 56 of them contributed 852 postpartum weeks (852/18,404=4.6%). The median number of postpartum journals was 14 (range1–49) over a median of 4 months (range <1–11 months).

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Figure 1.
Patterns of Contraceptive Consistency N=688

Figure 2.
Dominant method (most frequently used) over 12 month period n=665 contraceptive users

Table 1

Total N=688	n(%)
Socio-demographic Characteristics	
Age	
18 years	290 (42.2)
19 years	340 (49.4)
20 years ^a	58 (8.4)
Race/ethnicity	
Non-Hispanic white	397 (57.7)
Non-Hispanic black	217 (31.5)
Hispanic	58 (8.4)
Other	16 (2.3)
Religion highly important	
Yes	316 (45.9)
No	372 (54.1)
Raised by two biological parents	
Yes	302 (43.9)
No	386 (56.1)
Biological mother <20 years at first birth	
Yes	267 (38.8)
No	421 (61.2)
Public assistance recipient	
Yes	191 (27.8)
No	497 (72.2)
Grade Point Average (GPA) reported for the last semester	
<3.0	247 (35.9)
3.0 to <3.5	230 (33.4)
3.5	211 (30.6)
Employment status	
Employed	353 (51.3)
Not employed	335 (48.7)
Prior history of sex and pregnancy	
Virgin at baseline (never had heterosexual intercourse) N=688	
Yes ^b	60 (8.7)
No	628 (91.3)
First heterosexual intercourse at 16 years n=628^c	
Yes	427 (68.0)
No	201 (32.0)
History of more than one lifetime sexual partner n=628^c	

Total N=688	n(%)
Yes	494 (78.7)
No	134 (21.3)
Parity N=688	
0	579 (84.2)
1	109 (15.8)
Sexual activity and relationships during the study period	
% of weeks during which sexual activity occurred	
Quartile 1 → 25%	187 (27.2)
Quartile 2 → >25% to 50%	158 (23.0)
Quartile 3 → >50% < to 83%	171 (24.9)
Quartile 4 → 83% to 100%	172 (25.0)
Serious relationship more than half the year	
Yes	482 (70.1)
No	206 (29.9)

^aWhile women had to be 18 or 19 years upon enrollment, some turned 20 years old by the time of the first baseline interview.

^bAll women who were virgins at the baseline interviews did engage in heterosexual intercourse during the study period based upon our selection criteria.

^cDenominator includes only those women who had been sexually active at baseline interview.

^dAll demographics reflect baseline characteristics at the beginning of the study, except for the time-dependent variables “% of weeks during which sexual activity occurred” and “serious relationship more than half the year.”

Table 2

Multivariate analyses, by contraceptive pattern

N=688	Always Consistent n=273 (40%)	Sometimes consistent n=339 (49%)	Never consistent n=76 (11%)
Age (Ref:18 years old)	Reference	OR (95% CI)	OR (95% CI)
19 years	1.0	1.3 (0.9 – 1.8)	1.3 (0.8 – 2.4)
20 years	1.0	0.6 (0.3 – 1.2)	1.1 (0.4 – 2.8)
Race/ethnicity (Ref: non-Hispanic White)			
Non-Hispanic Black	1.0	1.0 (0.6 – 1.5)	0.9 (0.4 – 1.7)
Hispanic	1.0	1.0 (0.5 – 1.8)	0.9 (0.3 – 2.4)
Other	1.0	1.2 (0.4 – 4.2)	3.1 (0.7 – 13.5)
Religion highly important (Ref: no)			
Yes	1.0	1.4 (0.9 – 2.0)	1.5 (0.8 – 2.6)
Raised by two biological parents (Ref: yes)			
No	1.0	1.2 (0.9 – 1.8)	1.4 (0.8 – 2.6)
Biological mother <20 years at first birth (Ref: no)			
Yes	1.0	0.9 (0.7 – 1.4)	1.2 (0.7 – 2.1)
Public assistance recipient (Ref: no)			
Yes	1.0	0.7 (0.4 – 1.1)	1.3 (0.6 – 2.5)
High school GPA (Ref: 3.5)			
3.0 to <3.5	1.0	1.0 (0.7 – 1.5)	1.9 (0.9 – 3.9)
3.0	1.0	1.4 (0.9 – 2.1)	2.5 (1.2 – 5.3)*
Employment Status (Ref: Employed)			
Not employed	1.0	1.5 (1.1–2.2)*	1.9 (1.1–3.4)*
First heterosexual intercourse occurred at 16 years (Ref: no)			
Yes	1.0	1.2 (0.8 – 1.8)	0.7 (0.3 – 1.3)
History of more than one sexual partner (Ref: no)			
Yes	1.0	2.0 (1.3 – 3.1)**	2.3 (1.1 – 4.8)*
Parity (Ref: 0)			

N=688	Always Consistent n=273 (40%)	Sometimes consistent n=339 (49%)*	Never consistent n=76 (11%)
1	1.0	2.0 (1.1 – 3.7)*	2.1 (0.9 – 4.9)
Serious relationship more than half the year (Ref: no)			
Yes	1.0	1.7 (1.1 – 2.5)*	0.9 (0.5 – 1.6)
% of weeks sexually active (Ref: Quartile 1 25% of all weeks)			
Quartile 2 → >25% to 50%	1.0	1.3 (0.7 – 2.3)	1.0 (0.4 – 2.3)
Quartile 3 → 50% < to 83%	1.0	2.3 (1.4 – 3.9)**	1.0 (0.4 – 2.6)
Quartile 4 → 83% to 100%	1.0	1.1 (0.7 – 1.8)	1.1 (0.5 – 2.4)

Notes: Percentage of weeks sexually active reported as quartiles and calculated by dividing the number of sexually active weeks by the total number of journal weeks.

* p<0.05,

** p<0.01,

Ref= reference, OR=odds ratio, CI=confidence interval.

Table 3

Dominant contraceptive method, by contraceptive pattern

N=665 contraceptive users	Always Consistent (41%)	Sometimes consistent (51%)	Never consistent (8%)
IUD/Implant	4%	2%	0%
DMPA	5%	8%	4%
*OCP/Ring/Patch	54%	36%	9%
Male condom	35 %	38%	19%
Withdrawal	3%	16%	68%
Total	100%	100%	100%

Notes: The 665 contraceptive users in this table reflect the total sample (N=688) minus non-users (n=19 women who did not use any method the entire 12 months) minus women for whom there were not enough data to determine the dominant method (n=4). Dominant methods were the most frequently used method over the 12 month period. IUD=intrauterine device, DMPA=depo-medroxyprogesterone acetate injection, OCP=oral contraceptive pill

* These combined hormonal methods were grouped together because the bivariate associations between the independent variables and method type were similar when OCPs, ring, and patch were analyzed separately. The majority of women in this category used the oral contraceptive pill (93%)