Published in final edited form as:

J Sex Res. 2018 ; 55(9): 1106–1115. doi:10.1080/00224499.2017.1419334.

Contraceptive Method Choice among Young Adults: Influence of Individual and Relationship Factors

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Abstract

Because decisions related to contraceptive behavior are often made by young adults in the context of specific relationships, the relational context likely influences use of contraceptives. Data presented here are from in-person structured interviews with 536 Black, Hispanic, and White young adults from East Los Angeles, California. We collected partner-specific relational and contraceptive data on all sexual partnerships for each individual, on four occasions, over one year. Using three-level multinomial logistic regression models we examined individual and relationship factors predictive of contraceptive use. Results indicated that both individual and relationship factors predicted contraceptive use but factors varied by method. Participants reporting greater perceived partner exclusivity and relationship commitment were more likely to use hormonal/long-acting methods only or a less effective/no method versus condoms only. Those with greater participation in sexual decision-making were more likely to use any method over a less effective/no method and were more likely to use condoms only or dual methods versus a hormonal/long-acting method only. Additionally, for women only, those who reported greater relationship commitment were more likely to use hormonal/long-acting methods or a less effective/no method versus a dual method. In summary, interactive relationship qualities and dynamics (commitment and sexual decision-making) significantly predicted contraceptive use.

Keywords

Youth/emergent adulthood; Relationship Characteristics; Contraceptive use

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INTRODUCTION

Almost half of all U.S. pregnancies in 2011 were unintended (Finer & Zolna, 2016). Unintended pregnancies have been found in some studies to impact women's health and family stability through unplanned shorter pregnancy intervals and negative effects on finances, educational attainment, and job stability (Frost & Lindberg, 2013; Gemmill & Lindberg, 2013; Kavanagh & Anderson, 2013; Sonfield, 2013). Young adults in the U.S. are at particular risk of unintended pregnancies and women aged 18–24 have the highest rates of unintended pregnancy of any age group (Finer & Kost, 2011).

Unprotected sex can lead to both unintended pregnancy and the transmission and acquisition of Human Immunodeficiency Virus (HIV) and other sexually transmitted infections (STIs). Similar to unintended pregnancy rates, young adults are also disproportionately affected by STIs. Rates of STIs have increased in recent years, with young adults under 25 years of age at greatest risk. Fifty-three percent of gonorrhea infections and 65% of chlamydia infections occur among 15–24 year olds (Centers for Disease Control and Prevention, 2015). Additionally, adolescents and young adults aged 13–24 account for an estimated 22% of new HIV diagnoses (Centers for Disease Control and Prevention, 2016). Thus, the burden of unintended pregnancy and STI transmission among young adults is substantial.

A number of highly effective pregnancy prevention options are available, including long-acting reversible contraceptives (LARC) such as intrauterine devices (IUDs), implants, and injectables. Moreover, the use of LARC methods has increased nearly five-fold over the last decade, from about 1.5% in 2002 to 7.2% by 2013 (Branum & Jones, 2015). Although these contraceptive methods provide substantial protection against unintended pregnancy, they offer no protection against the transmission of STIs. Despite the availability of a number of effective contraceptive methods, condoms remain the only widely available effective method for preventing both HIV and other STIs. Condom use alone, however, has been associated with higher rates of unintended pregnancy than with a LARC method (CDC, na).

Together, a combination of a hormonal or long-acting method with consistent condom use provides the best defense against unintended pregnancy and the transmission of STIs. For those actively trying to avoid pregnancy, dual use can provide an additional layer of protection from pregnancy as well as prevent disease transmission. Rates of dual method use in the U.S. have been found to vary substantially, ranging from 1–3% in adults, 3–7% for all women of reproductive age, and 7–29% among adolescents (Abma, Martinez, Mosher, Dawson, 2002; Anderson, Santelli, Gilbert, 2003; Eisenberg, Allsworth, Zhao, Peipert, 2012; Higgins & Cooper, 2012) and remain well below rates of other Western countries (Higgins & Cooper, 2012). Understanding what influences young adults to use a particular contraceptive method or methods can help health care providers target their conversations about risk and choice of methods.

A large body of research on contraceptive use, including dual use, among young adults has examined individual-level explanatory factors. Specifically, this work has focused on demographics (such as age, gender, race/ethnicity, and education), perceived vulnerability to STIs, perceived vulnerability to pregnancy, condom use self-efficacy, and the acceptability

of different contraceptive methods (Foster et al., 2004; Frost & Darroch, 2008; Frost, Singh, & Finer, 2007; Higgins & Cooper, 2012; Keller, 1979; Kusunoki & Upchurch, 2011; Raine, Minnis, & Padian, 2003; Shih, Vittinghoff, Steinauer, & Dehlendorf, 2011).

Contraceptive decisions are often made, however, in the context of a relationship and researchers have posited that partners and relational factors likely influence the use of contraceptives and the use of specific methods (Manlove, Welte, Wildsmith, & Barry, 2014). In their Framework for Incorporating Dyads in Models of HIV Prevention, Karney et al. (2010) described the relationship context as “aspects of relationships that might affect the ability of one or both partners to coordinate their behaviors to achieve shared goals,” (p. 193) including such factors as commitment, trust, satisfaction, power, and communication. Earlier, in 1997, Thomson, Bachrach, Kaye, and Ventura conceptualized sexual relationships as having both demographic (e.g., legal status, co-residence, and duration) and interactive (e.g., commitment, communication, intimacy, and power) dimensions. Relationship status can be seen as a person’s current situation with regard to sexual partnerships (e.g., marital status, cohabitation, duration, in a steady relationship). In contrast, the term relationship qualities can describe the subjective/interactive elements with a specific sexual partner (e.g., commitment, trust, satisfaction, power, communication, intimacy).

A growing body of research has investigated the influence of demographic measures of relationships, such as duration, cohabitation, partner type, and coital frequency on contraceptive use, including dual use (Fortenberry, Tu, Harezlak, Katz, & Orr, 2002; Higgins & Cooper, 2012; Manlove, Welte, Barry, Peterson, Schelar, & Wildsmith, 2011). Fewer studies have, however, focused on the interactive, more subjective, dimensions of relationships, such as perceived relationship quality and dynamics on contraceptive use (e.g., Katz, Fortenberry, Zimet, Blythe, & Orr, 2000; Kusunoki & Upchurch, 2011; Manlove et al., 2011; Manlove et al., 2014; Manning, Giordano, Longmore, & Flanagan, 2012; Sayegh, Fortenberry, Shew, & Orr, 2006).

Despite this work, a number of gaps in the literature remain. Most studies, with a few notable exceptions (e.g., Fortenberry, Orr, Katz, Brizendine, & Blythe, 1997; Woods, Shew, Tu, Ofner, Ott, & Fortenberry, 2006), that have examined contraceptive use are cross-sectional or retrospective (Kusunoki & Upchurch, 2011) and, therefore, do not account for the dynamic nature of relationships over time. Although some more recent studies have included men as well as adults (Goldstein, Upadhyay, & Raine, 2013; Higgins et al., 2014; Walsh, Fielder, Carey, & Carey, 2014), the majority of studies of contraceptive use and dual use have focused solely on adolescents and women. Although it is possible that women and men’s perceptions of relationship qualities and dynamics influence use of contraceptives differently, to our knowledge, no studies to date have examined if and how gender moderates this association. In addition, most studies have limited the data collection of relationship characteristics to a single partnership or between two specific relationship types (main partner vs. casual; primary partner vs. other), creating potential problems for participants with more than two partners or those without a primary/main relationship (Katz et al., 2000). Many studies also have used broad, generalized questions rather than partner-specific questions (Shih et al., 2011). For example, condom use self-efficacy has often been measured with generalized questions when, in fact, an individual’s perceived self-efficacy

may vary depending on a specific partnership (Harvey, Washburn, Oakley, Warren, & Sanchez, 2016). Finally, many studies have investigated only demographic relationship characteristics (e.g., relationship duration, partner type) and have not explored the underlying dynamics or qualities of a relationship that could potentially affect contraceptive use (Frost et al., 2007).

The current study addressed the gaps identified above by analyzing longitudinal data with four measurement occasions allowing us to follow partnerships over time. Partner-specific measures were assessed for all sexual partnerships for each individual over the course of one year and were not confined to a primary partner. These measures go beyond only demographic information about relationships and include relationship qualities and dynamics. The overall goal of our study was to examine predictors of contraceptive use within the context of one or more sexual partnership(s) over time among a racially diverse sample of young adult women and men. Using data from the Project on Partner Dynamics (POPD), we investigated which partner-specific individual and relationship factors predict contraceptive use over time. The specific aims of this study were to: (1) describe contraceptive use (male condom, hormonal or long-acting, dual method use, or less effective/no method) among a sample of racially diverse at-risk young adults; (2) investigate which partner-specific individual factors and relationship qualities and dynamics predict contraceptive use over time; and (3) examine how gender moderates the association between relationship qualities and dynamics and contraceptive method use.

METHOD

Participants

Data were from the Project on Partner Dynamics (POPD), a longitudinal study that examined relationship dynamics among women and men aged 18 through 30, who were at increased risk for HIV infection. Participants were directly recruited at community locations in the Los Angeles area and indirectly recruited through print and online advertisements. Interested individuals were screened for eligibility in private locations (e.g., offices, meeting rooms). Eligible participants had to be 18 to 30 years old and have had heterosexual sex without a condom at least once in the previous 3 months. In addition, participants or their current sexual partner had to have at least one of the following risk behaviors: (1) more than one sex partner in the previous year; (2) have had an STI in the previous two years; (3) sex with a partner who had an STI in the previous year or who was HIV+; or (4) ever used injection drugs. Pregnant women, those who were HIV+, and those who expected to move away from the Los Angeles area in the following year were excluded.

A total of 3,051 observations were collected over four time points from 538 participants. For these analyses, 60 observations were excluded for people who did not report a sexual partner in the last four months. People who broke up with a partner in the last four months were not asked relationship-specific questions and this resulted in the exclusion of 1,359 observations. Because of the estimation restrictions of the analytic methods used in this study, an additional 54 observations were excluded for people who had missing responses on at least one independent variable. Finally, 324 observations were excluded for people who only used sterilization (62), sponge (1), spermicide (16), a female condom (164), a diaphragm (7),

abstinence (11), or an unspecified other birth control (128). Many of these exclusions overlapped and the final total included in the analysis was 1,280 observations from 470 people.

As described above, of the original 538 participants, only 68 did not contribute data to the analyses at any wave. We compared the 470 who did to the 68 who did not on age, education, gender, and race to determine if there were meaningful differences between the groups. We found no significant difference between those who did not contribute data and those who did on age ($p = .289$), education ($p = .838$), or gender ($p = .07$). We did, however, find racial differences between the two groups ($p = .03$). A greater percentage of those who did not contribute data were Black (38% vs. 27%) and White (31% vs. 27%), while a smaller percentage of those who did not contribute data were Hispanic (13% vs. 30%).

Data Collection

Eligible participants were interviewed every four months over the course of one year in private locations (e.g., offices, meeting rooms) at participating community agencies. Participants were matched with interviewers by gender and, in most cases, by race or ethnicity. Questionnaire Development System (QDS) software was used to conduct computer-assisted structured interviews where interviewers entered participants' responses directly into a data file using laptop computers. For sensitive questions, participants were given the option of entering their answers directly into the computer. Participants were also given the option to have the interview conducted in Spanish, but all participants chose English interviews.

At baseline, 536 eligible participants were enrolled. At Time 2, Time 3 and Time 4, a total of 436, 377, and 330 individuals were interviewed, respectively, for a retention rate from Time 1 of 81%, 70%, and 62%. Participants were compensated \$30, \$35, \$40, and \$45 for each interview, respectively. Transportation and childcare costs were reimbursed up to \$20 for each interview. The Institutional Review Boards of all associated institutions approved the study protocol and materials.

During each structured interview, participants provided data regarding each sexual partnership, identified by initials or nicknames, they had in the preceding four months. Nicknames or initials were used to link data about partners across interviews; this procedure allowed us to track changes in an individual's partnerships over time.

Measures

Contraceptive Use.—At each data collection occasion, participants were asked what, if anything, they did to not get pregnant with each of the sexual partners reported at that time point. Participants could report multiple methods. Information about contraceptive method use in each relationship was utilized to create the following four mutually exclusive categories: male condom use only, use of hormonal or long-acting methods only (i.e., oral pills, patch, ring, Depo-Provera shot, IUDs, Implant), dual method use (condoms plus a hormonal or long-acting method) and less effective/no method (i.e., withdrawal, rhythm, or nothing). Condom and hormonal or long-acting methods were prioritized if multiple

methods were reported (e.g., condom category included those who reported condoms plus a less effective/no method; hormonal category included those who reported a hormonal method plus a less effective/no method). Because of small numbers, those reporting only sterilization, female condom, diaphragm, spermicides, sponge, abstinence, or other were excluded.

Partner-Specific Relationship Factors.—To assess the impact of relationship factors on contraceptive use in the context of each specific partnership, we created partner-specific measures.

Demographic Relationship Variables. We measured **duration of sexual relationship** as the number of days between first and most recent sex (vaginal or anal) and **coital frequency** as the number of times the participant had vaginal or anal sex in the past four months. For this analysis, we divided coital frequency by 10 to provide a more meaningful assessment of the effect of a unit increase in coital frequency on contraceptive use. We assessed **perceived partner exclusivity** with an item developed for the study. For each reported partner, participants were asked, “Which of the following best describes your relationship with [Partner Name]?” The five response options included: (1) “I am certain s/he has had sex with other people while involved with me;” (2) “I believe s/he probably has had sex with other people while involved with me;” (3) “I am not sure s/he has had sex with other people while involved with me;” (4) “I believe s/he probably has not had sex with other people while involved with me;” and (5) “I am certain s/he has not had sex with other people while involved with me.” Responses were treated as continuous, with higher scores indicating greater perceived sexual exclusivity.

Relationship Qualities and Dynamic Variables. Qualities and dynamics of the relationships (interactive dimensions) were assessed using measures of relationship commitment, decision-making, and power. We used the validated **Commitment sub-scale** from the Investment Model Scale (Rusbult, Martz, & Agnew, 1998), adapted to be partner-specific. We asked participants how much they agreed with each of seven statements with respect to their relationship with each partner. Examples include “I want our relationship to last a very long time,” and “I feel very strongly linked to my partner.” All items were measured on a nine-point response scale (0 = *do not agree at all* to 8 = *agree completely*). Negatively worded items were reverse coded and a mean score was generated, with higher scores indicating greater commitment ($\alpha = 0.94$).

Sexual decision-making was measured with six items adapted from the PARTNERS Project (Harvey et al., 2009). Participants were asked, “In your relationship with [Partner Name] how much have you taken part in deciding: 1) whether or not to get pregnant; 2) whether or not to use something to keep from getting pregnant; 3) whether or not to use a condom; 4) whether or not you protect yourselves from HIV and other sexually transmitted diseases (STDs); 5) whether or not to have sex; and 6) what kinds of things you do when you have sex.” Items were rated on a five-point scale (1 = *not at all* to 5 = *a great deal*). A mean score was computed, with higher scores indicating greater participation in sexual decision-making ($\alpha = 0.80$).

To measure **relationship power**, we used an eight-item version of the Sexual Relationship Power Scale (Pulerwitz, Gortmaker, & DeJong, 2000). Participants were asked to rate the extent to which they agreed with each item, using a four-point response scale (1 = *strongly disagree* to 4 = *strongly agree*). An example includes: “Most of the time, we do what my partner wants to do.” Negative items were reverse coded and a mean score was generated, with higher scores indicating greater relationship power ($\alpha = 0.82$).

Demographic and Individual Characteristics.—We assessed demographic variables at baseline, including the participant’s gender, age, education, and race/ethnicity. Age and education were measured in years. Participants were asked to choose a category to describe their race/ethnicity. A majority of participants (83%) chose one of three categories (Hispanic, Non-Hispanic White, and Non-Hispanic Black). Those who chose multiple race/ethnicity categories and categories with very small numbers were combined in the *other* category. We also asked participants if they had ever had an STD and how many sexual partners they had in their lifetime.

We assessed individual level factors that have been previously been associated with contraceptive use, using partner-specific measures. Individual variables were collected for each partnership using measures of perceived vulnerability to STIs, perceived vulnerability to pregnancy, and condom use self-efficacy. For each reported partnership, we measured **perceived vulnerability to STIs** with six items that assessed perceptions of risk for acquiring HIV and other STIs by having sex without using a condom (Reisen & Poppen, 1999). Examples include “How likely is it that [Partner Name] has ever done something that could have increased your chances for getting a sexually transmitted disease other than HIV” and “How likely is it that [Partner Name] ever had a sex partner who could have increased their chances for getting HIV?” Items were rated on a five-point response scale (1 = *not at all likely* to 5 = *extremely likely*). We averaged scores, with higher mean scores indicating greater perceived vulnerability to HIV/STIs ($\alpha = 0.93$). We measured **perceived vulnerability to pregnancy** with one item, “How likely or unlikely is it that you would get pregnant with [Partner Name] in the next year if you did not use a birth control method?” with a five-point response scale (1 = *not at all likely* to 5 = *extremely likely*).

Condom use self-efficacy was collected for each reported partner and was measured using a six-item scale adapted from the condom use self-efficacy scale developed by Brafford and Beck (1991). Instead of measuring overall condom use self-efficacy, this scale assesses the confidence in using condoms with each specific partner. For example, participants were asked “how confident do you feel in your ability to discuss using condoms with [Partner Name]; in your ability to suggest using condoms with [Partner Name]; and your ability to put a condom on correctly when you are having sex with [Partner Name]?” Participants rated each item on a five-point scale (1 = *not at all confident* to 5 = *extremely confident*). A mean score on the entire scale was computed for each partnership, with higher scores indicating greater confidence ($\alpha = 0.90$).

Analytic plan

The data represent a three-level data structure with observations nested in partnerships, that are nested in an individual, that are nested in time. The outcome, reported type of contraceptive method used, is a four-level categorical variable. To appropriately control for the clustering and the categorical nature of the outcome, we used a three-level multinomial logistic regression model. To test all of the categories against each other, the model was run three different times, varying the reference category. Throughout the analyses, Black was the reference group for race and time was treated as a categorical variable (e.g., time 1, time 2, etc.). Time was included as a control for the nested models. To test for differential effects by gender, we also ran a series of models that included gender by commitment, gender by power, and gender by decision-making interactions. All analyses were run using Stata 14.2.

RESULTS

The final sample for the present analyses included a total of 470 participants reporting 760 unique partnerships with 1,280 observations across time. Participants had an average age of 23.18 years, an average number of 15.42 lifetime sexual partners, and reported a mean of 2.2 sexual partnerships at each interview (Table 1). Across all partnerships over the course of the study, nearly one fourth of participants (24.47%) reported using only a hormonal method, 41.28% reported using only condoms, 13.40% reported using both a hormonal method and condoms (dual protection), and 20.85% reported using a less effective/no method to keep from getting pregnant.

The sample was evenly split between men and women (235 of each). However, women contributed slightly fewer observations to the total sample (612 observations, 47.8%) versus men (668 observations, 52.2%). At each interview, men reported an average of 2.6 sexual partners and women reported an average of 1.7 sexual partnerships in the last three months. Women and men reported similar average ages, STD history, and vulnerability to contracting an STD. However, women had significantly more education ($p < 0.01$), felt a greater vulnerability to pregnancy ($p < 0.01$), and reported more commitment ($p < 0.001$) than men. Men reported a significantly greater number of lifetime partners ($p < 0.001$), greater condom use self-efficacy ($p < 0.001$), and more relationship power ($p < 0.001$) than women.

Use of Hormonal or Long-acting Methods

Participants who reported using a hormonal or long-acting contraceptive method were more likely to identify as White ($OR = 5.74$, $CI = 2.16, 15.18$) or an Other race ($OR = 3.19$, $CI = 1.09, 9.30$), versus Black, than condom users and less likely to identify as White ($OR = 0.32$, $CI = 0.12, 0.83$) or an Other race ($OR = 0.34$, $CI = 0.12, 0.98$), versus Black, than dual users (see Table 2). Hormonal users were older ($OR = 1.14$, $CI = 1.01, 1.27$) than dual users and reported fewer number of lifetime sexual partners ($OR = 0.97$, $CI = 0.95, 0.99$) than those who used a less effective/no method. Participants using a hormonal method were more likely to report high perceived vulnerability to pregnancy than condom ($OR = 1.38$, $CI = 1.13, 1.70$), dual ($OR = 1.34$, $CI = 1.07, 1.68$), and a less effective/no method ($OR = 1.68$, $CI = 1.31, 2.16$) users but were less likely to report perceived vulnerability to STIs compared to dual method users ($OR = 0.82$, $CI = 0.70, 0.96$). Hormonal users were also less likely to

report higher condom use self-efficacy compared to both condom ($OR = 0.28$, $CI = 0.16$, 0.47) and dual ($OR = 0.33$, $CI = 0.19$, 0.58) users.

Participants who used a hormonal or long-acting method were more likely to report greater coital frequency ($OR = 1.13$, $CI = 1.04$, 1.22), higher perceived partner exclusivity ($OR = 1.61$, $CI = 1.28$, 2.01), and greater relationship commitment ($OR = 1.24$, $CI = 1.06$, 1.43) than condom users. Additionally, those who used a hormonal or long-acting method reported greater participation in sexual decision-making regarding how to protect against unintended pregnancy and disease transmission compared to those who did not use a method ($OR = 4.10$, $CI = 2.51$, 6.69), but less participation in sexual decision-making compared to condom users ($OR = 0.63$, $CI = 0.42$, 0.93) or dual method users ($OR = 0.59$, $CI = 0.49$, 0.95). Finally, when exploring the effect of commitment by gender, we found that women who reported greater commitment were significantly more likely to use a hormonal/long acting method than a dual method ($OR = 1.41$, $CI = 1.07$, 1.85). No significant effect was found for men who reported greater commitment on hormonal/long-acting method use compared to dual use ($OR = 0.97$, $CI = 0.79$, 1.19).

Dual Use of Condoms and a Hormonal or Long-acting Method

Dual users were more likely than condom users to identify as White ($OR = 11.61$, $CI = 4.18$, 32.14) or Other ($OR = 6.88$, $CI = 2.27$, 20.70), versus Black, and were more likely to report greater perceived partner exclusivity compared to condom users ($OR = 1.39$, $CI = 1.09$, 1.77).

Use of Less Effective/No Method

Participants who reported using a less effective/no method were more likely to identify as White ($OR = 4.35$, $CI = 1.60$, 11.94) or an Other race ($OR = 6.75$, $CI = 2.34$, 19.49), versus Black, than condom users but were less likely to identify as White ($OR = 0.21$, $CI = 0.08$, 0.57) compared to dual method users. Participants who did not use a method were more likely than dual users to be older ($OR = 1.14$, $CI = 1.02$, 1.28). They also had a greater number of lifetime sexual partners ($OR = 1.02$, $CI = 1.00$, 1.04) and had lower condom use self-efficacy ($OR = 0.53$, $CI = 0.31$, 0.90) compared to condom users.

Participants who did not use a method were more likely than condom and dual users to have greater coital frequency ($OR = 1.15$, $CI = 1.06$, 1.25 and $OR = 1.12$, $CI = 1.01$, 1.25 , respectively). They were also more likely than condom users to have greater perceived partner exclusivity ($OR = 1.43$, $CI = 1.14$, 1.79) and greater commitment to their partnerships ($OR = 1.21$, $CI = 1.04$, 1.40). Additionally, those that chose to use a less effective/no method were less likely to report participation in sexual decision-making compared to condom users ($OR = 0.30$, $CI = 0.20$, 0.44) and dual users ($OR = 0.28$, $CI = 0.18$, 0.46). Finally, when exploring the effect of commitment by gender, we found that women who reported greater commitment were significantly more likely to use a less effective or no method than a dual method ($OR = 1.52$, $CI = 1.15$, 2.01). No significant effect was found for men who reported greater commitment on less effective method use compared to dual use ($OR = 0.92$, $CI = 0.75$, 1.12).

DISCUSSION

This study adds to the literature and advances our understanding of the association between relationship context and contraceptive method use. Although demographic and individual factors play a role in contraceptive method use, we found that several relationship qualities and dynamics (interactive variables) contributed to use above and beyond individual and demographic factors.

Not surprisingly and consistent with previous research, individual factors such as perceived vulnerability to pregnancy, perceived vulnerability to STI, and condom use self-efficacy influenced contraceptive method use. Behavioral models, such as the Health Belief Model (Becker, 1974), suggest that the greater a person's perceived susceptibility, the more threatened they will feel, and the more likely they will be to perform a precautionary or protective activity (such as contraceptive use). Using partner-specific measures, our work supports this theory; those who perceived themselves to be highly vulnerable to pregnancy were more likely to use an effective contraceptive method (e.g., a hormonal or long-acting method) compared to anything else. However, those who perceived themselves at risk for acquiring HIV and other STIs were less likely to use a hormonal or long-acting method compared to a dual method use only. It is noteworthy that participants in this study reported a higher mean perceived vulnerability to pregnancy than to STIs. Additionally, those with high perceived vulnerability to pregnancy were more likely to use a hormonal method alone compared to dual protection with a hormonal method and a condom, further suggesting, as others have found, that pregnancy vulnerability may be a stronger motivator for this young-adult sample than perceived risk for STIs (Abel & Brunton, 2005; Williamson, Buston, & Sweeting, 2009).

Social Cognitive Theory (Bandura, 1989) hypothesizes that when individuals feel confident in their ability to successfully perform a behavior, they are more likely to perform that behavior. A growing body of literature has documented that high levels of condom use self-efficacy are positively associated with condom use (e.g., Baele, Dusseldorp, & Maes, 2001; Brafford & Beck, 1991; Wulfert & Wan, 1993). Consistent with this literature and Social Cognitive Theory, we found that participants with higher condom use self-efficacy were more likely to report a condom-associated method (the use of condoms only or dual methods) compared to a hormonal only method or a less effective/no method.

An important contribution of this study is its focus on relationship qualities and dynamics and their central role in contraceptive method use. For example, those who reported greater participation in making decisions on how to protect against unintended pregnancy and disease transmission were much more likely to use a contraceptive compared to not protecting themselves from unintended pregnancy. Moreover, these individuals were also more likely to use a condom-associated method compared to a hormonal method alone, thereby engaging in dual protection to avoid pregnancy as well as disease acquisition/transition.

In contrast, those who reported greater relationship commitment were more likely to use a hormonal method or a less effective/no method than condoms only. Additionally, among

women only, those with greater commitment were also more likely to use a hormonal/long-acting or less effective/no method than a dual method. Consistent with other studies, our findings suggest that as relationships become more trusting and committed, participants are less likely to protect themselves from disease transmission and condom use declines (Bauman & Berman, 2005; VanderDrift, Lehmler, & Kelly, 2012). Higher levels of commitment have been found to be associated with lower levels of perceived vulnerability to STIs from one's partner which in turn leads to decreased condom use (Agnew, Harvey, VanderDrift, & Warren, 2017). Our findings also suggest that women with greater relationship commitment are more likely to remove the secondary level of pregnancy protection that dual use provides over a hormonal or long-acting method alone. As commitment develops between sexual partners, trust in one's partner may become a substitute for safer sex behavior for both disease and pregnancy prevention (Agnew & Dove, 2011).

The role of commitment in sexual risk taking can, however, be a double-edged sword, with both positive (e.g., less sexual risk taking, lower likelihood of engaging in concurrent partnerships; Katz et al., 2000; Manning et al., 2012; Warren, Harvey, & Agnew, 2012) and negative (e.g., reduced protection from disease, reduced condom use; Manlove et al., 2011; Manning et al., 2012) influences on sexual behavior. These findings suggest the need for interventions to increase HIV/STI testing and improve couple communication and awareness about sexual risk before individuals prematurely drop their defenses and discontinue condom use.

Many studies that investigate sexual risk taking or contraceptive use ask participants to categorize their relationships into one of several relationship types (e.g., casual, exclusive, engaged, etc.; Ford, Sohn, & Lepkowski, 2001; Katz et al., 2000; Kusunoki & Upchurch, 2011). Although these types may reflect partnership agreements, they do not necessarily accurately reflect behaviors and/or perceptions of exclusivity, or the meaning ascribed to various non-marital relationship experiences (Kusunoki & Upchurch, 2011). Additionally, researchers have identified varying levels of intimacy and commitment within both "casual" and "serious" relationship types, suggesting that these classifications may not best reflect relationship quality (Hadden, Harvey, Settersten, & Agnew, in press; Kusunoki & Upchurch, 2011; Manlove et al., 2014). In this study, we asked participants directly to report their perceptions of sexual exclusivity with their partner(s), regardless of relationship type. We found that those with greater perceived partner exclusivity were more likely to use a hormonal method than a condom-associated method, which likely reflects trust with a partner and the assumption that they do not need protection from disease transmission.

It is noteworthy that after adjusting for relationship qualities and dynamics, the more descriptive measure, relationship duration, was no longer predictive of contraceptive use. Duration has frequently been used as a proxy for more subjective relationship measures such as relationship stability and commitment, where longer relationships are assumed to be more committed and associated with decreased condom use and increased use of hormonal contraceptives (Le & Agnew, 2003; Manlove et al., 2014; Noar, Zimmerman, & Atwood, 2004; Ott, Adler, Millstein, Tschann, & Ellen, 2002; Wilson & Koo, 2008). Manlove et al. (2014) found, however, significant variability in condom use among long-term relationships,

suggesting that “classifying short-term relationships as ‘casual’ and long-term relationships as ‘serious’ may ignore heterogeneity” (p. 48) within sexual partnerships and, therefore, may not be appropriate proxies of relationship quality. It is possible that commitment serves as a more robust measure of relationship stability (Le & Agnew, 2003) compared to relationship duration and, therefore, is a better measure of the influence of relationship quality on contraceptive behavior. Future research on contraceptive behavior may benefit from using measures of relationship stability, like commitment, instead of relationship duration or relationship type.

Several limitations should be considered when interpreting the current data. Because we did not use probability sampling and recruited from the greater Los Angeles area, our results are not generalizable to any specific population. In addition, because our data are self-reported, the findings may be inaccurate due to memory failure or recall bias. However, the relatively short recall period of 4 months was intended to reduce the extent of these problems.

Strengths of the current study lie in the use of a novel prospective methodological approach for measuring and modeling the qualities of sexual partnerships over time. We collected data to assess the relational context for all sexual partnerships, for each individual, using measures that were partner-specific, on four occasions over the course of one year. This study also used measures to directly assess relationship qualities and dynamics rather than relying on demographic or relationship status variables to approximate relationship quality.

Our findings suggest that the measurement and use of partner-specific qualities and dynamics could be important for researchers, health care providers, and other public health practitioners who provide counseling, interventions, or other services related to family planning or risky sexual health behaviors. Further work could involve the development of theoretical models that incorporate individual characteristics within the relational context. Our findings also suggest that health care providers might benefit by including relationship qualities, such as commitment and decision-making power, in their conversations with young adults about their choice and use of methods in addition to conversations about number of sexual partners, perceived vulnerability, and condom use self-efficacy. In addition, family planning and sexual risk interventions should consider the use of relationship-specific tailored programs and the focus on relationship qualities and dynamics in changing behaviors to increase access and use of effective contraceptive methods among young adults.

ACKNOWLEDGEMENTS:

The Project on Partner Dynamics is funded by a Eunice Kennedy Shriver National Institute for Child Health and Human Development (NICHD) grant (R01 HD047151), PI: S. Marie Harvey. This analysis was funded through an additional NICHD grant (R03 HD07789), PI: S. Marie Harvey.

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Table 1.

Demographic and relationship characteristics of participants, Mean (SD)

Characteristics	Total n = 470	Women n = 235	Men n = 235
Demographic & Individual Factors			
Race [†]			
Hispanic	29.79%	32.77%	26.81%
Black	26.81%	24.68%	28.94%
White	27.45%	30.21%	24.68%
Other	15.96%	12.34%	19.57%
Age	23.18 (3.75)	23.29 (3.68)	23.07 (3.83)
Education ^{**}	14.19 (2.42)	14.54 (2.70)	13.83 (2.04)
Lifetime Sex Partners ^{***}	15.42 (18.23)	12.35 (15.74)	18.48 (19.99)
Ever had STD [†]	30.43%	34.47%	26.38%
Vulnerability to Pregnancy ^{**}	3.76 (1.38)	3.93 (1.25)	3.59 (1.48)
Vulnerability to STI	2.95 (2.03)	3.02 (1.97)	2.87 (2.09)
Condom Self-Efficacy ^{***}	2.92 (0.68)	2.81 (0.71)	3.04 (0.63)
Relationship Factors			
<i>Demographic</i>			
Duration	527.72 (781.13)	570.54 (852.80)	484.90 (701.42)
Coital Frequency [‡]	29.93 (35.36)	31.77 (33.29)	28.08 (37.29)
Perceived Partner Exclusivity	2.57 (1.41)	2.63 (1.37)	2.51 (1.46)
<i>Qualities & Dynamics</i>			
Commitment ^{***}	4.90 (2.36)	5.45 (2.22)	4.35 (2.38)
Decision-making	4.07 (0.82)	4.14 (0.79)	4.01 (0.84)
Power ^{***}	1.86 (0.43)	1.78 (0.46)	1.95 (0.38)
Dependent Variables[†]			
Hormone/Long-Acting Only	24.47%	28.51%	20.43%
Condom Only	41.28%	36.60%	45.96%
Dual Protection	13.40%	14.89%	11.91%
Less Effective/No Method	20.85%	20.00%	21.70%

*
p<0.05**
p<0.01***
p<0.001[†] Percent given instead of Mean (SD)[‡] Coital Frequency is presented here as total number of events. This number was divided by 10 for use in multivariate models.

Table 2.

Odds Ratio Results from Multivariate Models: Contraceptive Method Use

Characteristics	Hormone vs. Condom	Hormone vs. Dual	Hormone vs. Less Effective/None	Dual vs. Condom	Less Effective/None vs. Condom	Less Effective/None vs. Dual
Demographic & Individual Factors						
Female	1.69 (0.82, 3.46)	0.76 (0.37, 1.57)	1.02 (0.42, 2.46)	2.06 (0.97, 4.39)	1.63 (0.79, 3.39)	0.71 (0.34, 1.49)
Race ^a						
Hispanic	1.44 (0.61, 3.39)	0.96 (0.38, 2.46)	0.42 (0.14, 1.28)	1.59 (0.63, 4.06)	2.07 (0.86, 4.95)	1.28 (0.49, 3.35)
White	5.74 (2.16, 15.18)***	0.32 (0.12, 0.83)*	1.30 (0.40, 4.22)	11.61 (4.18, 32.14)***	4.35 (1.60, 11.94)**	0.21 (0.08, 0.57)**
Other	3.19 (1.09, 9.30)*	0.34 (0.12, 0.98)*	0.29 (0.08, 1.05)	6.88 (2.27, 20.70)**	6.75 (2.34, 19.49)***	0.64 (0.22, 1.86)
Age	1.07 (0.96, 1.19)	1.14 (1.01, 1.27)*	0.93 (0.81, 1.06)	0.98 (0.88, 1.11)	1.09 (0.97, 1.21)	1.14 (1.02, 1.28)*
Education	1.11 (0.95, 1.30)	0.94 (0.80, 1.12)	1.13 (0.94, 1.36)	1.11 (0.94, 1.30)	1.02 (0.88, 1.20)	0.87 (0.73, 1.03)
Lifetime Sex Partners	1.01 (0.99, 1.03)	1.00 (0.98, 1.02)	0.97 (0.95, 0.99)**	1.01 (0.99, 1.03)	1.02 (1.00, 1.04)***	1.02 (1.00, 1.04)
Ever had STD	1.44 (0.90, 2.27)	1.02 (0.64, 1.60)	0.77 (0.45, 1.31)	1.35 (0.84, 2.16)	1.54 (0.98, 2.41)	1.11 (0.71, 1.73)
Vulnerability to Pregnancy	1.38 (1.13, 1.70)**	1.34 (1.07, 1.68)**	1.68 (1.31, 2.16)***	1.10 (0.89, 1.36)	0.89 (0.73, 1.08)	0.85 (0.68, 1.05)
Vulnerability to STI	0.95 (0.82, 1.11)	0.82 (0.70, 0.96)*	0.93 (0.78, 1.12)	1.10 (0.94, 1.28)	1.01 (0.87, 1.17)	0.89 (0.76, 1.04)
Condom Self-Efficacy	0.28 (0.16, 0.47)***	0.33 (0.19, 0.58)***	0.59 (0.32, 1.07)	0.66 (0.37, 1.16)	0.53 (0.31, 0.90)*	0.64 (0.36, 1.14)
Relationship Factors						
<i>Demographic</i>						
Duration	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)	1.00 (1.00, 1.00)
Coital Frequency [‡]	1.13 (1.04, 1.22)**	1.10 (0.99, 1.22)	0.98 (0.91, 1.07)	1.02 (0.92, 1.13)	1.15 (1.06, 1.25)**	1.12 (1.01, 1.25)*
Perceived Partner Exclusivity	1.61 (1.28, 2.01)***	1.07 (0.83, 1.38)	1.06 (0.80, 1.39)	1.39 (1.09, 1.77)**	1.43 (1.14, 1.79)**	0.96 (0.75, 1.23)
<i>Qualities and Dynamics</i>						
Commitment	1.24 (1.06, 1.43)**	1.15 (0.98, 1.34)	1.02 (0.86, 1.21)	1.13 (0.97, 1.32)	1.21 (1.04, 1.40)*	1.10 (0.94, 1.30)
Decision Making	0.63 (0.42, 0.93)*	0.59 (0.36, 0.95)*	4.10 (2.51, 6.69)***	0.95 (0.60, 1.49)	0.30 (0.20, 0.44)***	0.28 (0.18, 0.46)***
Power	0.91 (0.40, 2.08)	1.19 (0.49, 2.92)	0.57 (0.21, 1.52)	0.92 (0.38, 2.23)	1.37 (0.60, 3.13)	1.79 (0.71, 4.48)

* p<0.05

** p<0.01

Note: Model also accounted for time (not shown here) which was not significant in any model

p<0.001

^aBlack as the comparison group

[#]Coital Frequency measured as the total number of events divided by 10 for use in these multivariate models

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