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## Do IUD Knowledge and Attitudes Predict Interest in Using an IUD?

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## **Abstract**

*Background:* Increasing use of intrauterine devices (IUDs) is seen as a promising strategy to prevent unintended pregnancies, particularly among young women. In this study, we examined correlates of young women's interest in using an IUD, including sources of information about, knowledge of, and attitudes towards IUDs.

*Methods:* We conducted a national Web survey of young adults (ages 18-29) in 2012. Using a subset of data from 382 sexually experienced young women who had never used an IUD, we employed multinomial logit regression models to examine differences in IUD interest.

*Findings:* Twenty percent of women in the sample were interested in using an IUD in the future, while 32% were not and 48% were unsure. Women who thought IUDs were unattractive due to the devices being inside their bodies; the need for provider insertion and removal; or the potential for pain during insertion were less likely to be interested in ever using an IUD. Those who found IUDs attractive due to the ease of use; the ability to have sex without interruption or a barrier method; the option of a non-hormonal method; the potential length of use; the internal nature of the method; or the high level of effectiveness were more likely to be interested.

*Conclusions:* These data suggest that young women's attitudes toward IUDs are strongly linked to their interest – or lack thereof – in using an IUD. Health care providers attuned to women's contraceptive preferences are well poised to help their patients match to methods that best accommodate these preferences.

## **Introduction**

Young women (ages 18-24) continue to experience the highest rates of unintended pregnancy and birth in the U.S. (Finer & Zolna, 2011). In recent years long-acting reversible contraceptive methods, including IUDs, have been promoted as a means to reduce unintended pregnancy, particularly for young women, who increasingly spend the bulk of their reproductive years avoiding pregnancy (Finer & Philbin, 2014). Use is on the rise, with the proportion of U.S. contracepting women using IUDs increasing from 3.7% in 2007 to 8.5% in 2009 (Finer, Jerman, & Kavanaugh, 2012). Guidelines from the American College of Obstetricians and Gynecologists, American Academy of Pediatrics, and Centers for Disease Control and Prevention support the provision of IUDs to nulliparous, unmarried women and adolescents, representing a sea change in ideas about who is an appropriate candidate for an IUD (American College of Obstetricians and Gynecologists, 2012; Centers for Disease Control and Prevention, 2010; Ott, Sucato, & Committee on Adolescence, 2014). Moreover, implementation of the Affordable Care Act should increasingly make IUDs accessible, through coverage of contraception without co-pays and extended coverage for young adults (Collins, Nicholson, & Fund, 2010; Health Resources and Services Administration & U.S. Department of Health and Human Services).

While training providers and the amelioration of co-pay requirements should make IUDs accessible for many women, there are additional reasons why IUD uptake may remain low. National data indicate that young adults are uninformed about IUDs. For example, a study of unmarried young adults (ages 18-29) found that 75% had heard of the IUD, 30% thought it was extremely or quite likely that an IUD would cause an infection, half believed IUDs moved around inside women's bodies, and 40% thought surgery was required for IUD insertion (Kaye, Suellentrop, & Sloup, 2009). In addition, a host of other factors have been identified as reasons why young women choose not to use IUDs. In several studies, young women describe

discomfort with the invasiveness of IUDs (Gilliam, Davis, Neustadt, & Levey, 2009; Kavanaugh, Frohwirth, Jerman, Popkin, & Ethier, 2013; Weston, Martins, Neustadt, & Gilliam, 2012) and the lack of user control over the method (Asker, Stokes-Lampard, Wilson, & Beavan, 2006; Dempsey, Billingsley, Savage, & Korte, 2012; Foster, Karasek, Grossman, Darney, & Schwarz, 2012; Gomez, 2014; Kavanaugh et al., 2013). Other research has described women's desire for dual protection against pregnancy and sexually transmitted infections (Whitaker et al., 2008) and concerns about potential side effects (Kavanaugh et al., 2013; Spies, Askelson, Gelman, & Losch, 2010; Whitaker et al., 2008; Wright, Frost, & Turok, 2012). Some young women perceive IUDs as methods more appropriate for older women (Kavanaugh et al., 2013; Spies et al., 2010). Taken together, these studies reveal a complex constellation of influences that have an impact on young women's decision-making processes around IUDs.

Informed by the transtheoretical model of behavior change, we examined interest in using IUDs among young women in the present study. The transtheoretical model posits that behavior change occurs in stages of shifts in attitudes, intentions and behaviors that result in the uptake of healthier behaviors (Horowitz, 2003). The stages – precontemplation, contemplation, preparation, action, and maintenance – represent a developmental sequence of behavior change, though the path to change is not necessarily linear. As relevant to IUD decision-making, much research has focused on action, particularly on IUD use and uptake (Romer & Teal, 2013; Secura, Allsworth, Madden, Mullersman, & Peipert, 2010; Simmons, Edelman, Li, Yanit, & Jensen, 2013). Examining IUD interest provides the opportunity to understand an alternative stage of the cognitive process in which contraceptive decisions are made. In this paper, we examined the relationship between young women's knowledge of and attitudes towards IUDs and interest in ever using this method.

## Methods

An exploratory Web survey was conducted between May and August 2012. Participants were recruited through social media websites, including Facebook and Twitter; e-mail listservs; and Craigslist. Participants were eligible if they identified as a heterosexual man or woman, were between the ages of 18 and 29, and resided in the U.S. Upon completion of the survey, participants could enter a raffle to win a \$20 Amazon.com gift card. Eligible participants completed an electronic informed consent form before entering the survey. In addition to detailed items regarding IUDs, participants answered questions about their current and past contraceptive use, knowledge of contraceptive methods, pregnancy history, and key demographic characteristics. The Institutional Review Board of San Francisco State University approved the study design and materials.

A total of 1,154 individuals completed an eligibility screening questionnaire. Of 898 eligible individuals, 730 completed the survey. This analysis focused on the subpopulation of sexually experienced young women who had never used an IUD, who were not pregnant, and who answered questions about IUD knowledge and interest and key demographic characteristics ( $n = 382$ ). Our outcome variable was IUD interest, constructed from responses to the question, "Do you think you would ever get an IUD?" The outcome includes three response categories: yes, no, or not sure. Primary independent variables of interest included IUD knowledge, sources of information and attitudes. Survey questions were drawn or adapted from previous research with young women (Fleming, Sokoloff, & Raine, 2010; Kaye et al., 2009; National Campaign to Prevent Teen and Unplanned Pregnancy, 2011a, 2011b; Whitaker et al., 2008). Participants' answers to a series of 15 true-false questions served as the basis for their IUD knowledge level (low, medium or high) ( $\alpha = 0.89$ ). IUD knowledge items were used verbatim or adapted from previous surveys (Fleming et al., 2010; Kaye et al., 2009; Whitaker et al., 2008). Additionally,

multivariate models adjusted for age, relationship status, race/ethnicity, educational attainment, insurance, employment status, current contraceptive method use (oral contraceptives, condoms, withdrawal and other), and whether the participant had sex in the last week or would be very upset if she found out she were pregnant today.

Using Stata statistical analysis software (version 11.2), multivariate, multinomial logit models were estimated to examine the correlates of the IUD interest, adjusting for sociodemographic and reproductive health characteristics. Multinomial logit models were employed due to the three categories included in the outcome variable of IUD interest. The models produced a set of coefficients comparing interest in ever using an IUD to not being interested, and a second set comparing uncertainty about ever using an IUD to not being interested. Relative risk ratios (RRRs) were generated by exponentiating the logit coefficients. Odds ratios are not presented because the exponentiated coefficients of multinomial logit regression models do not represent the ratio of the probability of one outcome divided by the probability of that outcome not occurring. Rather, RRRs represent the probability of belonging to one category (i.e., interested in or unsure about using an IUD) divided by the probability of the referent category of not interested in using an IUD (Gould, 2000).

## **Results**

A total of 382 young women comprising the study sample answered key questions regarding their sexual behavior, contraceptive knowledge and demographic characteristics. The majority of women in the sample identified as White, were insured privately and had attended some college or earned a bachelor's degree (Table 1). Respondents reported a variety of current relationship situations, with 39% in a serious relationship, 32% married or living with a partner, 15% uninvolved, and 14% casually dating. The majority (59%) of participant had had sex in the last

week. More than half (52%) of participants reported oral contraceptives as their primary family planning method used in the last six months, followed by condoms (19%) and withdrawal (8%) as the most frequently used methods.

All respondents were asked their sources of information about IUDs. Only a minority of respondents reported that they had never heard of the IUD (11%, figure 1). The most frequent sources of information about the IUD were friends (46%), the Internet (40%), television (39%), doctors (35%), and health/sex education classes (34%). On average, women selected three sources of information about IUDs (results not shown). Respondents also answered questions about their knowledge of and characteristics of the IUD (Table 2). Thirty percent of the sample had high knowledge about IUDs. The most frequently selected attractive characteristics were the effectiveness of the IUD in preventing pregnancy (73%) and the convenience of not having to do or think about anything before sex (72%). Three fifths of the sample (60%) disliked the need for a doctor or nurse to put in and remove the IUD, while 58% did not like the idea of having something in their body. Fifty seven percent (57%) thought that IUD insertion might hurt. To assess interest in using the IUD, respondents were asked, “Do you think you would ever get an IUD?” Twenty percent (20%) of women responded yes, 32% said no, and 48% were unsure.

Adjusting for demographic and reproductive health characteristics, multinomial logistic regression models examined the association between sources of IUD information, IUD knowledge, and IUD attitudes to the outcome variable of IUD interest (Table 3). Young women who learned about the IUD from one of several sources – including their mother, a doctor, a friend and the Internet – were more likely to be interested in ever using this method. For example, women who indicated the Internet was a source of information had elevated likelihood of being interested in using an IUD (RRR 3.07, 95% CI 1.60-5.90). There was also a statistically significant relationship between the number of sources of information about IUDs that women



indicated and their IUD interest, with a 32% increase in the relative risk of being interested in using an IUD for each source of information (RRR 1.32, 95% CI 1.15-1.51). There was not a relationship between IUD interest and learning about IUDs from TV, health/sex education classes, magazines, nurses, books, or partners (results not shown). A knowledge gradient existed; women with medium and high knowledge had a higher likelihood of wanting to ever use an IUD, with the largest effect seen for women with high knowledge (RRR 6.17, 95% CI 2.37-16.01). None of the sources of information or IUD knowledge was significantly associated with being unsure about ever using an IUD.

Women who considered each of the characteristics of IUDs attractive were more likely to be interested in using an IUD. Interest in using an IUD was elevated for women who thought that they were attractive because they can work for 5-10 years (RRR 19.69, 95% CI 7.54-51.37). Women who found IUD characteristics related to sexual experiences (user action not required before sex, barrier method not needed, or not getting in the way during sex) attractive had increased interest in ever using an IUD. A number of characteristics were also positively associated with being unsure about ever using an IUD in the future, compared to the referent group of not interested. Women who thought IUDs were attractive because they were easy to use were more likely to be unsure about using an IUD in the future, as opposed to not being interested (RRR 2.40, 1.45-3.98). At the same time, women who found none of the provided characteristics of IUDs attractive (RRR 0.07, 95% CI 0.01-0.55), or who thought that IUDs were unattractive due to the need for provider insertion and removal (RRR 0.43, 95% CI 0.23-0.81) had a lower likelihood of interest in ever using an IUD. Women who thought IUDs were not attractive because they disliked the idea of a device in their bodies also had a lower likelihood of being interested in ever using an IUD (RRR 0.08, 95% CI 0.04-0.17).

## **Discussion**

The present study is one of the first to examine the correlates of young women's interest in using an IUD. Many of the study findings have potentially important implications for efforts to promote IUD use among young women, particularly in the context of firstline or directive counseling that emphasizes method effectiveness over other contraceptive features (Gomez, Fuentes, & Allina, 2014; Higgins, 2014). Though these results should be interpreted with caution given the sample was primarily White, educated and insured, it is notable that even women who are not considered the most vulnerable to unintended pregnancy had low levels of interest in using an IUD in the future. As expected, the analysis indicates that women who had more knowledge of IUDs had higher levels of interest in the method. However, even among those with high knowledge, the majority was unsure or uninterested in using an IUD in the future. While promoting accurate knowledge about all contraceptive methods is imperative for helping women choose the method that best fits their bodies, relationships and circumstances, lack of knowledge is only one of many individual-level factors that influence decision-making around IUDs. For example, women who found certain contraceptive characteristics attractive, such as longevity and ease of use, were more likely to be interested in using an IUD or unsure about using an IUD, as opposed to not interested. These findings indicate the need to connect women's contraceptive preferences to methods that accommodate these preferences, as noted by previous research (Gomez & Clark, 2014; Lessard et al., 2012). A 2014 study of women and providers found that while the two groups' information priorities overlapped considerably, important differences existed. For example, women desired information about safety and side effects, while providers prioritized mode of use and frequency of method administration (Donnelly, Foster, & Thompson, 2014). For women who find characteristics of the IUD attractive but are uncertain about using this method in the future, engaged and interactive contraceptive counseling that addresses

women's concerns and contextual factors, such as relationship status or pregnancy ambivalence, provides an opportunity to provide patient-centered family planning care (Dehlendorf, Kimport, Levy, & Steinauer, 2014).

We found that women who heard about the IUD from one of several sources had higher levels of interest in using an IUD in the future. This finding suggests that increasing the ubiquity of IUD information may facilitate women's familiarity and comfort with this method, both of which may help translate knowledge to interest and, potentially, use. While there was not a relationship between learning about IUDs in a sex or health education class and IUD interest, the finding that only a small proportion of women gained information about IUDs in this setting highlights the need for sex education curricula in the U.S. to address the full range of contraceptive options. Thirteen states currently mandate HIV education but do not require broader sex education, and addressing contraception is not compulsory in many states' sex education programs (Guttmacher Institute, 2015). Additionally, some women's dislike of the idea of a device inside their bodies may stem from a lack of familiarity with IUD insertion procedures and female anatomy due to inadequate sex education and a broader cultural context that ignores or stigmatizes women's bodies (Beausang & Razor, 2000; Braun & Wilkinson, 2001; Fahs, 2014; Johnston-Robledo & Chrisler, 2013; Kaye et al., 2009). Given that there was a relationship between the number of sources of IUD information and IUD interest, promoting knowledge of IUDs through truly comprehensive sex education earlier in women's lives may be an important strategy to increase awareness and acceptability of IUDs in the U.S. Young women who heard about IUDs from friends were more likely to be interested in using IUDs in the future, in line with previous research that has highlighted social networks as influential sources of information about contraception (Anderson, Steinauer, Valente, Koblentz, & Dehlendorf, 2014).

Public education efforts to increase accurate knowledge have the potential to increase women's comfort with IUDs and foster the diffusion of information, altering norms via social networks.

Our findings highlight the importance of sexuality to contraceptive decision-making. Young women who found IUDs attractive due to characteristics related to sexual experience – not having to use a barrier method, not getting in the way of sex, and not having to think about or do anything before sex – were more likely to be interested in ever using an IUD. Researchers have speculated that the high level of satisfaction experienced by IUD users may be related to increased sexual pleasure (Higgins & Davis, 2014). Sexual pleasure has been an important determinant of use of withdrawal (Higgins & Wang, In Press) and non-use of condoms (Fennell, 2014). Given the majority of women found IUDs attractive due these characteristics, it is important to consider the ways that discussions of sexuality – including intimacy and pleasure – may be incorporated into contraceptive counseling and sex education. At the same time, if sexual pleasure is an important determinant of IUD uptake and continuation, users may be less likely to additionally use condoms for protection against STIs.

Because the current study was specifically designed to collect in-depth information on knowledge of, attitudes towards, and interest in IUDs, our measures captured these concepts in greater depth than previous research. Though we are unable to determine whether interest in IUDs translates to use with these cross-sectional data, this outcome does provide insights into reasons women may or may not be inclined to use IUDs and can support more tailored efforts to support women in contraceptive decision-making. While women from all 50 states are represented in the current analysis, the data were exploratory and not nationally representative, and results may not be generalizable. An important limitation is the sample composition. Compared to the general population, our sample included higher proportions of White, employed and educated young women. The small sample size of non-White women in this study limited

the examination of contraceptive preferences and decision-making by race and ethnicity. Due to time constraints, women were asked to select features of the IUD that they considered attractive or unattractive, rather than evaluate each feature individually. Further, we were unable to delineate between characteristics that would prevent a woman from choosing an IUD versus characteristics that she might find unattractive but not to the extent that it would deter her from using this method. Finally, while our models adjusted for whether a woman would be upset if she found out she were pregnant today, our survey did not include a more detailed measure of current pregnancy intentions. Our own qualitative research indicates that young women may be hesitant to use an IUD if they desire pregnancy “soon,” even if they define soon as being several years away (Gomez, 2014). Contextualizing IUD interest within the context of women’s fertility goals and timeline is critically important for delivering patient-centered family planning care.

### **Implications for Practice and/or Policy**

The fact that IUD use is low in the U.S. is only partially attributed to imperfect knowledge of this contraceptive method. Beyond critical structural and clinical barriers to IUD use in the U.S. (Beeson et al., 2014; Tyler et al., 2012), many other factors influence young women’s contraceptive decision-making. These factors remain salient even when knowledge of IUDs is accurate, providers are willing and able to insert IUDs, and IUDs are affordable and accessible. The implementation of policies promoting more comprehensive sex education could create an additional entry point for young women to hear about and consider contraceptive options, as well as increase knowledge of female anatomy that may support informed decision-making around IUDs. Furthermore, providers could elicit conversations with women about contraceptive preferences, thus creating a fuller understanding of young women’s interest and disinterest in IUDs. Considering young women’s views on IUDs is crucial for the development of effective,

patient-centered and non-coercive approaches to improve contraceptive use, satisfaction and continuation.

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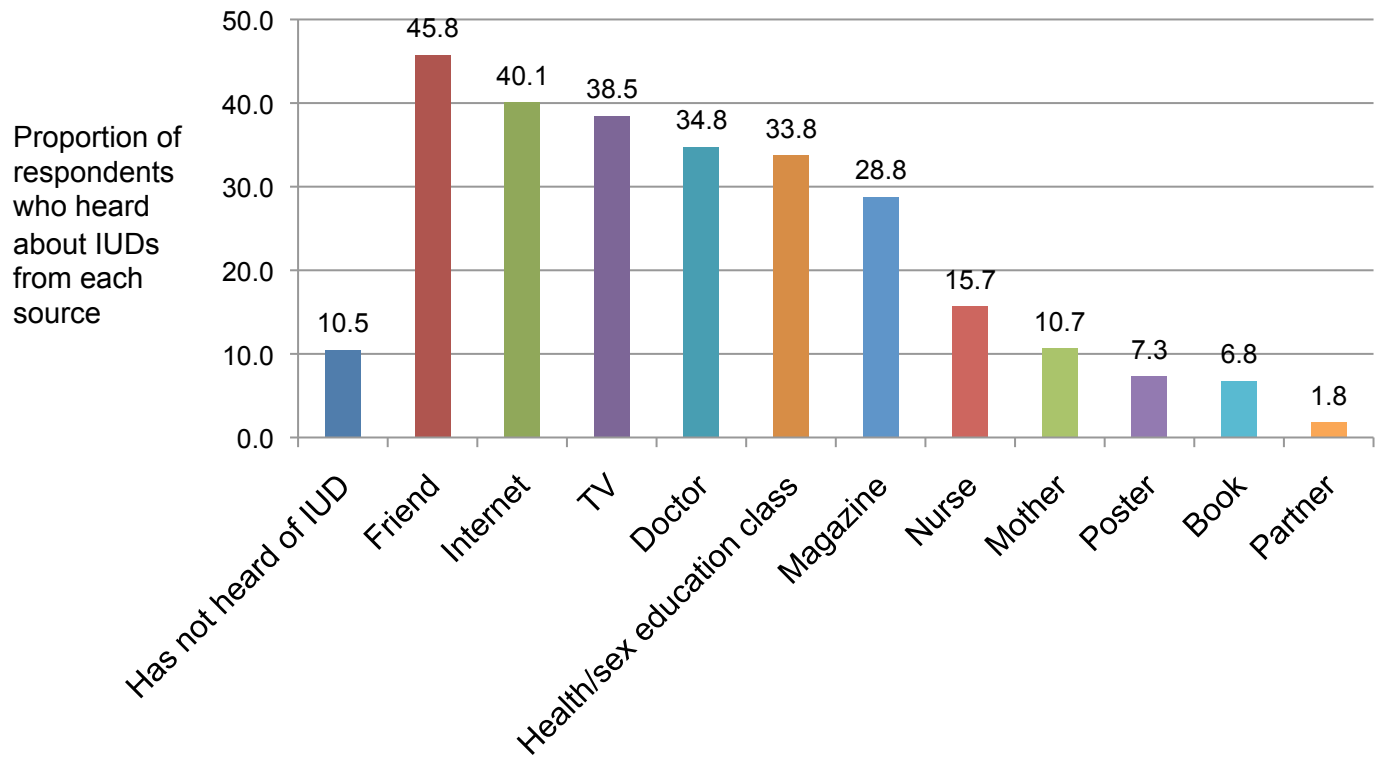
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**Table 1. Demographic and reproductive health characteristics**

	n	%
<i>Age</i>		
18-24	247	64.7
25-29	135	35.3
<i>Race/ethnicity</i>		
White	294	77.0
Non-white (1)	88	23.0
<i>Educational attainment</i>		
High school/GED or less	34	8.9
Some college/associate degree/vocational	141	36.9
Bachelor degree	143	37.4
Graduate degree	64	16.8
<i>Uninsured</i>	58	15.2
<i>Unemployed</i>	69	18.1
<i>Relationship status</i>		
Not currently involved	57	14.9
Casually dating	55	14.4
In a serious relationship	147	38.5
Cohabiting or married	123	32.2
<i>Had sex in the last week</i>	227	59.4
<i>Primary method of contraception in last 6 months (2)</i>		
Oral contraceptives	197	51.6
Condoms	76	19.9
Withdrawal	31	8.1
Ring	21	5.5
Injectable contraception	9	2.4
Other	12	3.1
Had sex but no method used in last 6 months	9	2.4
No sex in the last 6 months	25	6.5
<i>Would be upset if she found out she were pregnant today</i>	228	59.6
<p>Note: N=382. (1) Non-white women include women who identified as: Black (6.8%), Native American (0.3%), Asian/Pacific Islander (6.8%), Latina (6.5%) and mixed race (2.6%). (2) Two women did not answer this question.</p>		

**Figure 1. Sources of Information about IUDs**



**Table 2. IUD knowledge, attitudes and interest**

	n	%
<i>IUD Knowledge</i>		
Low	121	31.7
Medium	148	38.7
High	113	29.6
<i>Attractive Characteristics of IUDs</i>		
It is highly effective in pregnancy.	281	73.4
I would not have to use a barrier method.	223	58.3
No one else would have to know about the IUD.	136	35.6
Some IUDS do not have hormones.	140	36.6
It would not get in the way of sex.	208	54.5
It lasts for a long time (5-10 years).	228	59.7
I would not having to think about or do anything before sex.	274	71.7
It is easy to use.	230	60.2
None of these characteristics are attractive.	36	9.4
<i>Unattractive Characteristics of IUDs</i>		
A doctor or nurse has to put it in and remove it.	230	60.2
I don't like the idea of having something in my body.	223	58.3
It does not protect you from STIs.	140	36.7
It might hurt to get it inserted.	217	56.8
IUDs are too expensive.	161	42.2
<i>Interest in ever using an IUD</i>		
Interested	78	20.4
Not interested	121	31.7
Maybe/unsure	183	47.9
Note: N=382.		

**Table 3. Multinomial logistic regression results for IUD interest and IUD-related factors**

	Interested in ever using an IUD		Unsure about ever using an IUD	
	RRR	95% CI	RRR	95% CI
<b>Source of IUD information</b>				
Friend	2.33	(1.25-4.36)**	1.25	(0.76-2.06)
Internet	3.07	(1.60-5.90)***	1.29	(0.76-2.20)
Doctor	2.57	(1.36-4.89)**	1.16	(0.68-1.96)
Mother	3.05	(1.10-8.44)*	2.08	(0.83-5.21)
Poster	3.50	(1.15-10.70)*	1.41	(0.49-4.07)
<b>Number of sources of IUD information</b>				
	1.32	(1.15-1.51)***	1.06	(0.95-1.19)
<b>IUD Knowledge Grade</b>				
Low	1.00	Reference	1.00	Reference
Medium	3.27	(1.30-8.23)*	0.89	(0.51-1.57)
High	6.17	(2.37-16.01)***	0.86	(0.45-1.65)
<b>Attractive Characteristics of IUDs</b>				
It is very effective in preventing pregnancy.	3.53	(1.62-7.72)**	2.17	(1.26-3.72)**
I would not have to use a barrier method.	1.93	(1.03-3.61)*	1.78	(1.08-2.92)*
No one else would have to know about the IUD.	1.50	(0.78-2.87)	1.71	(1.02-2.86)*
Some IUDs do not have hormones.	3.02	(1.56-5.84)***	1.39	(0.81-2.38)
It would not get in the way of sex.	2.20	(1.16-4.17)*	1.20	(0.74-1.96)
It lasts for a long time (5-10 years).	19.69	(7.54-51.37)***	2.25	(1.34-3.76)**
I would not having to think about or do anything before sex.	8.15	(3.19-20.80)***	2.33	(1.38-3.92)***
It is easy to use.	5.26	(2.60-10.64)***	2.40	(1.45-3.98)***
None of these characteristics are attractive.	0.07	(0.01-0.55)*	0.18	(0.08-0.46)***
<b>Unattractive Characteristics of IUDs</b>				
A doctor or nurse has to put it in.	0.43	(0.23-0.81)**	0.67	(0.40-1.13)
I don't like the idea of having something in my body.	0.08	(0.04-0.17)***	0.43	(0.25-0.74)**
It does not protect you from STIs.	0.74	(0.37-1.48)	0.81	(0.47-1.40)
It might hurt to get it inserted.	0.53	(0.28-0.99)*	0.57	(0.34-0.93)*
IUDs are too expensive.	1.81	(0.97-3.38)	1.29	(0.78-2.13)
<p><i>Note:</i> n=380. All models adjusted for age, educational attainment, relationship status, primary contraceptive method used over last six months (pill, condom, withdrawal), and whether the participant was non-White, was uninsured, was unemployed, had sex in the last week, and would be upset if she found out she were pregnant today. Two women were missing data on current contraceptive use.</p>				