

# Parents' Beliefs About Condoms and Oral Contraceptives: Are They Medically Accurate?

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**CONTEXT:** Parents are encouraged to be the primary sex educators for their children; however, little is known about the accuracy of parents' views about condoms and oral contraceptives.

**METHODS:** Telephone surveys using validated measures provided data on beliefs about the effectiveness, safety and usability of condoms and the pill among 1,069 parents of 13–17-year-olds in Minnesota and Wisconsin in 2002. Pearson chi-square tests and multivariate logistic regression models were used to compare beliefs according to sex, age, race, religion, education, income and political orientation.

**RESULTS:** Substantial proportions of parents underestimated the effectiveness of condoms for preventing pregnancy and sexually transmitted diseases (STDs). Only 47% believed that condoms are very effective for STD prevention, and 40% for pregnancy prevention. Fifty-two percent thought that pill use prevents pregnancy almost all the time; 39% thought that the pill is very safe. Approximately one-quarter of parents thought that most teenagers are capable of using condoms correctly; almost four in 10 thought that most teenagers can use the pill correctly. Fathers tended to have more accurate views about condoms than mothers did; mothers' views of the pill were generally more accurate than fathers'. Whites were more likely than nonwhites to hold accurate beliefs about the pill's safety and effectiveness; conservatives were less likely than liberals to hold accurate views about the effectiveness of condoms.

**CONCLUSION:** Campaigns encouraging parents to talk with their teenagers about sexuality should provide parents with medically accurate information on the effectiveness, safety and usability of condoms and the pill.

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National and local debates persist about the appropriate content of school-based sex education. Meanwhile, a patchwork of federal, state and local laws mandate the teaching of certain topics and forbid the teaching of others. Amid this ongoing controversy, one area of agreement is the importance of parents in their children's sex education. Multiple national organizations have developed public education campaigns to encourage and facilitate parent-child communication about sexuality by using various community, business and media channels to promote this message.<sup>1</sup> These programs provide tips and pointers, guidebooks and additional resources that can be valuable tools for the many parents who feel ill equipped or unready to broach sex-related topics with their children.

The emphasis on parents as sex educators has the obvious advantage of providing opportunities for parents to transmit values, beliefs and norms consistent with their traditions and expectations. One shortcoming of this approach, however, is that the medical or scientific accuracy of information parents share with children cannot be assured. Although accurate information is a necessary component of any education, it is particularly critical in the arena of sexual health. The surgeon general has stated, "It...seems clear that adolescents need accurate information about contraceptive methods so that they can reduce...risks."<sup>2</sup>

Results of research on the impact of parent-child com-

munication about adolescent sexual behaviors have been inconclusive.<sup>3</sup> Several studies have indicated that such communication is associated with adolescents' later sexual debut, lower frequency of intercourse and number of sexual partners, more consistent use of condoms or birth control and negative attitudes toward teenage pregnancy.<sup>4</sup> Other research, however, shows mixed or null findings.<sup>5</sup> One study, for example, found that maternal-child communication variables were not significantly related to age at sexual debut, but several other variables regarding the mother-child relationship predicted timing of first intercourse.<sup>6</sup> Notably, the relationships between parent-child communication and teenage sexual behaviors are likely to be influenced by parents' values and communication style, the topics discussed and a range of other factors.<sup>7</sup> Yet, despite the lack of evidence of a causal relationship between parent-child communication and adolescent sexual behavior, both parents and teenagers want and value good communication about sexuality.<sup>8</sup>

Potential factors affecting parent-child communication on sexuality and sexual behaviors are parents' skill, comfort and openness in discussing sexuality.<sup>9</sup> Unfortunately, most surveyed parents report feeling uncomfortable talking about sex with their teenagers,<sup>10</sup> perhaps partly because they are unfamiliar with certain factual information.<sup>11</sup> Contraceptive technology, prevalent diseases, social norms and

personal attitudes toward sexuality have changed dramatically since today's parents were teenagers. Many parents of teenagers may not have current, medically accurate information on contraceptive efficacy. The extent of parents' familiarity with such information, and thus their ability to convey it to their children, is largely unknown.

We describe survey results on parents' beliefs about the effectiveness, safety and usability of condoms and the pill among teenagers, and we identify differences in these beliefs by demographic and personal characteristics. We then discuss our results in the context of current scientific evidence on the effectiveness and safety of these methods.

## BACKGROUND

The efficacy and safety of condoms and the pill have been studied extensively. Two documents from federal agencies summarize the scientific evidence on the efficacy of condoms for sexually transmitted disease (STD) prevention.<sup>12</sup> In a summary report of a National Institutes of Health (NIH) workshop, researchers concluded that latex condoms effectively prevent the spread of HIV, gonorrhea (in men) and possibly other STDs.<sup>13</sup> Literature published since the NIH workshop supports stronger and broader statements about condoms' effectiveness in preventing other STDs.<sup>14</sup> According to "prevention messages" developed by the Centers for Disease Control and Prevention (CDC), "the ability of latex condoms to prevent transmission of HIV has been scientifically established in 'real life' studies of sexually active couples as well as in laboratory studies."<sup>15</sup> The CDC report further states that "latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea, chlamydia, and trichomoniasis." It also indicates that when used consistently and correctly ("when the infected areas are covered or protected by the condom"), they can decrease the risk of genital herpes, syphilis, chancroid and human papillomavirus (HPV) infection. The report also notes that latex condom use is "associated with a reduced risk of HPV-associated diseases, such as cervical cancer."<sup>16</sup>

The effectiveness of condoms and the pill for pregnancy prevention is also well documented. When used consistently and correctly, condoms prevent pregnancy 97% of the time, and the pill does so 99.9% of the time.<sup>17</sup> In "typical use"—that is, when use is not consistent or always correct—the effectiveness rates for condoms and the pill are 86% and 95%, respectively.<sup>18</sup> Moreover, the pill is considered very safe for most women (with a few exceptions, such as women older than 35 and heavy smokers). Among U.S. women, oral contraceptive use is safer than childbirth.<sup>19</sup>

Relatively little research has examined whether teenagers use the pill or condoms correctly or consistently. In one review of adherence to oral contraceptive regimens, most adolescents performed specific pill-taking behaviors (e.g., taking pills daily and in order) about as well as older women did; the authors concluded that factors beside age might better predict adherence.<sup>20</sup> Several studies have investigated age-related rates of condom and pill failure, which generally results from incorrect use. A number of studies have found no

**TABLE 1. Percentage distribution of respondents to survey on parents' beliefs about condoms and oral contraceptives, by selected characteristics, Wisconsin and Minnesota, 2002**

| Characteristic               | %<br>(N=1,069) |
|------------------------------|----------------|
| <b>Sex</b>                   |                |
| Male                         | 32             |
| Female                       | 68             |
| <b>Age-group</b>             |                |
| ≤39                          | 18             |
| 40–49                        | 66             |
| ≥50                          | 16             |
| <b>Race/ethnicity</b>        |                |
| Black                        | 4              |
| Hispanic                     | 4              |
| White                        | 88             |
| Other                        | 3              |
| <b>Religion</b>              |                |
| Protestant                   | 47             |
| Catholic                     | 39             |
| Other                        | 3              |
| None                         | 10             |
| No response                  | 1              |
| <b>Highest education</b>     |                |
| ≤some H.S.                   | 2              |
| Technical/trade school       | 10             |
| H.S. graduate/equivalent     | 26             |
| Some college                 | 18             |
| Associate's degree           | 7              |
| Bachelor's degree            | 24             |
| Graduate/professional degree | 12             |
| <b>Household income</b>      |                |
| ≤\$30,000                    | 8              |
| \$31,000–40,000              | 10             |
| \$41,000–60,000              | 24             |
| \$61,000–80,000              | 23             |
| \$81,000–100,000             | 15             |
| ≥\$101,000                   | 13             |
| No response/don't know       | 6              |
| <b>Political orientation</b> |                |
| Very conservative            | 9              |
| Somewhat conservative        | 32             |
| Middle of the road           | 38             |
| Somewhat liberal             | 16             |
| Very liberal                 | 3              |
| No response/don't know       | 2              |
| <b>Total</b>                 | <b>100</b>     |

Notes: Percentages are weighted to reflect the racial distribution in the two states, according to census data. Percentages may not add to 100% because of rounding.

association between age younger than 18 or 20 and method failure.<sup>21</sup> Others, however, have found age differences in method failure rates, especially for oral contraceptive use.<sup>22</sup> However, such an association may be strongly modified by users' relationship status,<sup>23</sup> or may be confounded with their experience using the method. Therefore, although some gaps exist in the literature, research suggests that most teenagers who use condoms or the pill do so as effectively as older users.

## METHODS

### Sample

Telephone surveys, conducted from March through June 2002, provided data from parents of 13–17-year-olds living in Minnesota and Wisconsin. Commercial telephone

**TABLE 2. Percentage distribution of respondents, by beliefs about condoms and the pill, according to survey item**

| Survey item                                    | High | Middle | Low | Total |
|--|------|--------|-----|-------|
| <b>Condoms</b>                                 |      |        |     |       |
| How effective for STD prevention?†             | 47   | 47     | 6   | 100   |
| How effective for pregnancy prevention?†       | 40   | 55     | 5   | 100   |
| How many teenagers can use correctly?‡         | 26   | 69     | 5   | 100   |
| <b>Pill</b>                                    |      |        |     |       |
| How often effective for pregnancy prevention?§ | 52   | 43     | 5   | 100   |
| How safe to use?††                             | 39   | 55     | 7   | 100   |
| How many teenagers can use correctly?‡         | 39   | 58     | 3   | 100   |

†High=very effective, middle=somewhat effective, low=not effective. ‡High=most, middle=some, low=none. §High=almost all the time, middle=most of the time, low=some of the time. ††High=very safe, middle=somewhat safe, low=not safe. Notes: Percentages are based only on respondents who answered the question (95–99% of all respondents). Percentages may not add to 100% because of rounding.

lists were purchased to maximize the proportion of attempted telephone calls reaching eligible parents and to adequately represent several groups from each state (e.g., urban and rural, whites and members of other races).

Of the 5,349 telephone calls made, 3,127 resulted in human contacts at residences; 2,524 of these contacts were eligible to participate. Parents were eligible if they had at least one child aged 13–17 living at home, they spoke English and they were physically able to complete the interview. Of the eligible contacts, 1,095 parents declined to participate, and an additional 360 were unavailable. Interviews were completed with 1,069 adults (500 in Minnesota, 569 in Wisconsin), or 42% of eligible participants. This response rate is similar to those of other large telephone surveys using purchased lists.<sup>24</sup> On average, the survey took about 16 minutes. Completion of the telephone interview implied consent to participate. The internal review boards of the University of Minnesota and the University of Wisconsin, Milwaukee, approved all study protocols.

**Measures**

An interdisciplinary team developed the survey through an iterative process by systematically reviewing measures from validated adolescent health surveys used in various state and national assessments of young people and parents. The psychometric properties of key survey measures are described elsewhere.<sup>25</sup> On the basis of pilot testing with 26 parents of adolescents in Wisconsin, minor changes were made to wording, question ordering and survey length.

Six dependent variables were derived from survey questions asking respondents' opinions about the effectiveness of condoms, when used consistently and correctly, in preventing STDs and pregnancy (response options for each question were very, somewhat and not effective); how often birth control pills, when used consistently and correctly, prevent pregnancy (almost all, most or some of the time); how safe birth control pills are (very, somewhat or not); and how many teenagers are capable of using each method

correctly (most, some or none). We considered the most favorable response choice to be “medically accurate.”

In addition, the survey included items assessing demographic and personal characteristics: respondents' sex, age-group, race or ethnicity (African American or black, American Indian or Native American, Asian American or Pacific Islander, Hispanic or Latino, white, other), religion (Protestant, Catholic, Jewish, Muslim, Hindu, other, none), educational attainment (some high school, technical or trade school, high school graduate or equivalent, some college, associate's degree, bachelor's degree, graduate or professional degree), household income level (seven categories from less than \$20,000 to \$101,000 or more) and political orientation (very conservative, somewhat conservative, middle of the road, somewhat liberal, very liberal).

**Analysis**

In the original Wisconsin sample, racial and ethnic minority groups were underrepresented, so we used sampling weights to adjust the proportions of participants from different racial backgrounds to reflect the racial mix of the state's population. No weighting was necessary for the Minnesota respondents.

We used Pearson chi-square tests to examine bivariate relationships between parents' beliefs and their demographic and personal characteristics. When small cell sizes threatened the validity of the chi-square test, adjacent response categories were collapsed.

We created two multivariate logistic regression models for each of the six dependent variables, and included all demographic and personal characteristics simultaneously as covariates. One model contrasted parents whose response reflected the highest level of accuracy regarding efficacy, safety or usability with those who gave the medium-level response. We considered the lowest-level response option to be conceptually distinct from the middle option, and results of bivariate analysis suggested that they differed statistically in several cases. Therefore, the second model contrasted parents giving the medium-level response with those giving the lowest-level response. All categorical variables were dummy-coded for the logistic regression analyses, and relatively small demographic groups were combined (i.e., racial and ethnic groups other than whites, religion categories other than Protestant or Catholic, and the political orientation categories of somewhat liberal and very liberal). For political orientation, the models simultaneously compared each level with the adjacent level (i.e., liberal parents were compared with middle-of-the-road parents, middle-of-the-road with somewhat conservative, and somewhat conservative with very conservative).

**RESULTS**

**Descriptive Data**

The majority of respondents were female (68%), in their 40s (66%) and white (88%—Table 1, page 51). Forty-seven percent of parents identified themselves as Protestant, and an additional 39% as Catholic. For approximately one-quarter

**TABLE 3. Percentage distribution of respondents, by beliefs about condoms and the pill, according to sex, race, religion and political orientation**

| Belief                              | Sex         |      | Race         |          | Religion   |          |                | Political orientation |                          |                       |                           |
|-------------------------------------|-------------|------|--------------|----------|------------|----------|----------------|-----------------------|--------------------------|-----------------------|---------------------------|
|                                     | Female      | Male | White        | Nonwhite | Protestant | Catholic | Other/<br>none | Very<br>conservative  | Somewhat<br>conservative | Middle of<br>the road | Somewhat/<br>very liberal |
| <b>CONDOMS</b>                      |             |      |              |          |            |          |                |                       |                          |                       |                           |
| <b>Use for STD prevention</b>       |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Very effective                      | 46          | 50   | 47           | 46       | 47         | 48       | 45             | 27                    | 42                       | 49                    | 60                        |
| Somewhat effective                  | 48          | 46   | 48           | 44       | 47         | 49       | 46             | 53                    | 50                       | 49                    | 37                        |
| Not effective                       | 7           | 4    | 5            | 10       | 7          | 4        | 8              | 21                    | 7                        | 2                     | 3                         |
| $\chi^2$ (df)                       | 3.55 (2)    |      | 4.80 (2)     |          | 4.88 (4)   |          |                | 68.96 (6)***          |                          |                       |                           |
| <b>Use for pregnancy prevention</b> |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Very effective                      | 37          | 47   | 40           | 36       | 39         | 40       | 45             | 30                    | 34                       | 44                    | 46                        |
| Somewhat effective                  | 58          | 49   | 55           | 53       | 58         | 53       | 49             | 58                    | 59                       | 52                    | 51                        |
| Not effective                       | 6           | 4    | 5            | 11       | 3          | 8        | 6              | 12                    | 6                        | 4                     | 3                         |
| $\chi^2$ (df)                       | 10.27 (2)** |      | 8.15 (2)*    |          | 9.70 (4)*  |          |                | 21.98 (6)**           |                          |                       |                           |
| <b>Capable of correct use</b>       |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Most teenagers                      | 23          | 33   | 26           | 25       | 27         | 24       | 28             | 22                    | 22                       | 30                    | 28                        |
| Some teenagers                      | 72          | 62   | 69           | 64       | 69         | 71       | 64             | 68                    | 72                       | 67                    | 68                        |
| No teenagers                        | 5           | 6    | 4            | 11       | 4          | 5        | 8              | 10                    | 5                        | 3                     | 4                         |
| $\chi^2$ (df)                       | 10.49 (2)** |      | 10.35 (2)**  |          | 5.00 (4)   |          |                | 12.62 (6)*            |                          |                       |                           |
| <b>PILL</b>                         |             |      |              |          |            |          |                |                       |                          |                       |                           |
| <b>Prevents pregnancy</b>           |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Almost all the time                 | 55          | 44   | 54           | 33       | 54         | 52       | 43             | 47                    | 48                       | 54                    | 57                        |
| Most of the time                    | 40          | 49   | 42           | 52       | 42         | 42       | 47             | 44                    | 46                       | 42                    | 39                        |
| Some of the time                    | 4           | 7    | 4            | 14       | 4          | 6        | 9              | 10                    | 6                        | 4                     | 4                         |
| $\chi^2$ (df)                       | 12.44 (2)** |      | 30.25 (2)*** |          | 8.98 (4)   |          |                | 8.62 (6)              |                          |                       |                           |
| <b>Safety</b>                       |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Very safe                           | 42          | 32   | 40           | 30       | 42         | 39       | 29             | 35                    | 36                       | 40                    | 44                        |
| Somewhat safe                       | 51          | 62   | 54           | 57       | 53         | 55       | 60             | 51                    | 57                       | 56                    | 50                        |
| Not safe                            | 7           | 6    | 6            | 13       | 6          | 6        | 11             | 14                    | 7                        | 5                     | 6                         |
| $\chi^2$ (df)                       | 11.51 (2)** |      | 9.60 (2)**   |          | 9.71 (4)*  |          |                | 14.22 (6)*            |                          |                       |                           |
| <b>Capable of correct use</b>       |             |      |              |          |            |          |                |                       |                          |                       |                           |
| Most teenagers                      | 38          | 42   | 40           | 29       | 43         | 37       | 30             | 38                    | 35                       | 43                    | 38                        |
| Some teenagers                      | 60          | 55   | 58           | 63       | 55         | 60       | 65             | 55                    | 61                       | 55                    | 61                        |
| No teenagers                        | 3           | 3    | 2            | 8        | 2          | 3        | 5              | 7                     | 4                        | 2                     | 1                         |
| $\chi^2$ (df)                       | 2.11 (2)    |      | 15.02 (2)*** |          | 10.66 (4)* |          |                | 13.69 (6)*            |                          |                       |                           |
| Total                               | 100         | 100  | 100          | 100      | 100        | 100      | 100            | 100                   | 100                      | 100                   | 100                       |

\*p≤.05. \*\*p≤.01. \*\*\*p≤.001. Note: Percentages may not add to 100% because of rounding.

ter of parents, high school was their highest educational level completed; a similar proportion held a bachelor's degree. Nearly half had an annual household income of \$41,000–80,000. Thirty-two percent of parents considered themselves somewhat conservative politically, and an additional 38% middle of the road.

Forty-seven percent of parents thought condoms are very effective in preventing STDs, and an additional 47% thought they are somewhat effective (Table 2). A majority (55%) believed condoms are only somewhat effective for pregnancy prevention; 40%, very effective. Approximately one-quarter believed that most teenagers are capable of using condoms correctly, and more than two-thirds thought only some are capable. Some 5–6% gave the lowest-level response choice on all three condom-related items.

Fifty-two percent of parents thought that correct, consistent pill use prevents pregnancy almost all the time, and an additional 43% thought such use is effective most of the time. Most parents believed oral contraceptives are somewhat safe (55%) or very safe (39%) to use. Although 39% of parents believed that most teenagers can use oral contraceptives correctly, 58% believed that only some can do

so. Between 3% and 7% gave the lowest-level response on each pill question.

Beliefs on several items differed according to personal characteristics. Those characteristics that were associated in bivariate analysis with at least three of the six beliefs about contraceptives (sex, race, religion, political orientation) are discussed here. Differences by age and by educational and income level were found for only one or two survey items; thus, we found no clear patterns according to these characteristics. By restricting interpretation in this way, we have reduced the possibility of ascribing importance to chance associations resulting from multiple simultaneous analyses.

### Bivariate Analyses

Higher proportions of men than of women believed that condoms are very effective for pregnancy prevention (47% vs. 37%) and that most teenagers are capable of using condoms correctly (33% vs. 23%—Table 3). In contrast, women's views of the pill were generally more accurate than men's: Fifty-five percent of women believed the pill prevents pregnancy almost all the time, compared with 44% of men; similarly, a larger proportion of women than of men believed

**TABLE 4. Adjusted odds ratios (and 95% confidence intervals) from multivariate logistic regression analyses assessing the associations between respondents' characteristics and their beliefs about condoms and the pill**

| Variable                    | Female                 | White                  | Protestant           | Catholic             | More liberal           |
|-----------------------------|------------------------|------------------------|----------------------|----------------------|------------------------|
| <b>CONDOMS</b>              |                        |                        |                      |                      |                        |
| <b>STD prevention</b>       |                        |                        |                      |                      |                        |
| High vs. medium             | 0.89<br>(0.67–1.17)    | 0.98<br>(0.64–1.52)    | 1.14<br>(0.75–1.72)  | 1.10<br>(0.72–1.67)  | 1.30***<br>(1.13–1.50) |
| Medium vs. low              | 0.62<br>(0.31–1.26)    | 2.36*<br>(1.07–5.18)   | 1.72<br>(0.76–3.91)  | 2.69*<br>(1.09–6.65) | 2.45***<br>(1.71–3.53) |
| <b>Pregnancy prevention</b> |                        |                        |                      |                      |                        |
| High vs. medium             | 0.65**<br>(0.49–0.86)  | 1.23<br>(0.79–1.93)    | 0.76<br>(0.50–1.15)  | 0.84<br>(0.55–1.28)  | 1.21**<br>(1.05–1.39)  |
| Medium vs. low              | 0.87<br>(0.45–1.69)    | 2.52*<br>(1.20–5.27)   | 2.25<br>(0.87–5.84)  | 0.81<br>(0.34–1.94)  | 1.44*<br>(1.05–1.98)   |
| <b>Usability</b>            |                        |                        |                      |                      |                        |
| High vs. medium             | 0.60**<br>(0.44–0.81)  | 1.00<br>(0.61–1.63)    | 0.92<br>(0.48–1.45)  | 0.79<br>(0.49–1.26)  | 1.13<br>(0.96–1.32)    |
| Medium vs. low              | 1.36<br>(0.72–2.57)    | 2.66**<br>(1.27–5.56)  | 2.12<br>(0.91–4.92)  | 1.71<br>(0.75–3.91)  | 1.14<br>(0.84–1.55)    |
| <b>PILL</b>                 |                        |                        |                      |                      |                        |
| <b>Pregnancy prevention</b> |                        |                        |                      |                      |                        |
| High vs. medium             | 1.63***<br>(1.22–2.17) | 2.13***<br>(1.36–3.34) | 1.39<br>(0.91–2.12)  | 1.36<br>(0.89–2.09)  | 1.07<br>(0.93–1.23)    |
| Medium vs. low              | 1.45<br>(0.77–2.71)    | 2.29*<br>(1.13–4.64)   | 2.37*<br>(1.02–5.52) | 1.58<br>(0.69–3.61)  | 1.26<br>(0.94–1.69)    |
| <b>Safety</b>               |                        |                        |                      |                      |                        |
| High vs. medium             | 1.68***<br>(1.25–2.26) | 1.39<br>(0.88–2.20)    | 1.71*<br>(1.10–2.65) | 1.48<br>(0.95–2.32)  | 1.02<br>(0.94–1.12)    |
| Medium vs. low              | 0.80<br>(0.45–1.42)    | 1.90<br>(0.97–3.74)    | 1.87<br>(0.91–3.86)  | 1.57<br>(0.75–3.21)  | 1.42*<br>(1.06–1.90)   |
| <b>Usability</b>            |                        |                        |                      |                      |                        |
| High vs. medium             | 0.87<br>(0.66–1.16)    | 1.39<br>(0.88–2.18)    | 1.68*<br>(1.09–2.58) | 1.32<br>(0.85–2.05)  | 1.04<br>(0.90–1.19)    |
| Medium vs. low              | 1.53<br>(0.68–3.47)    | 3.17*<br>(1.31–7.66)   | 2.45<br>(0.84–7.15)  | 1.58<br>(0.56–4.44)  | 1.47<br>(0.98–2.20)    |

\*p≤.05. \*\*p≤.01. \*\*\*p≤.001. Notes: Females were compared with males, whites with nonwhites, Protestants with non-Protestants (after adjustment for Catholic) and Catholics with non-Catholics (after adjustment for Protestant). Political orientation was analyzed as an ordinal variable; each level was compared with the adjacent level. All analyses were adjusted for sex, age, race/ethnicity, religion, educational level, household income and political orientation. For definitions of high-, medium- and low-level response options, see Table 2, page 52.

that the pill is very safe (42% vs. 32%).

Nonwhite parents gave significantly less accurate responses than white parents on almost all condom and pill questions. The proportion of nonwhites believing that condoms are ineffective for pregnancy prevention was twice that of whites (11% vs. 5%). A higher proportion of nonwhites than of whites also believed that no teenagers are capable of correct condom use (11% vs. 4%). Moreover, a smaller proportion of nonwhites than of whites believed that the pill prevents pregnancy almost all the time (33% vs. 54%), that the pill is very safe (30% vs. 40%) and that most teenagers are capable of using the pill correctly (29% vs. 40%).

The proportion of parents believing that condoms are very effective for pregnancy prevention was higher among non-Christians (45%) than among Protestants or Catholics (39% and 40%, respectively). However, the proportions of non-Christians believing that the pill is very safe (29%) and that most teenagers can use the pill correctly (30%) were smaller than those among Protestants (42% and 43%, respectively) or among Catholics (39% and 37%).

Respondents who identified themselves as very conservative generally held views that are less accurate than the views of those who considered themselves somewhat conservative, middle of the road, or somewhat or very liberal. Greater proportions of very conservative parents than of liberal parents believed that condoms are not at all effective in preventing STDs (21% vs. 3%) and pregnancy (12% vs. 3%), and that no teenagers are capable of correct condom use (10% vs. 4%). Likewise, the proportions of parents believing that the pill is not safe and that no teenagers can use the pill correctly were higher among very conservative respondents (14% and 7%, respectively) than among liberal respondents (6% and 1%).

**Multivariate Analyses**

Findings of the multivariate analyses (Table 4) largely confirmed those of the bivariate analyses. Women were significantly less likely than men to have medically accurate beliefs about the effectiveness of condoms for pregnancy prevention (odds ratio, 0.7) and teenagers' ability to use condoms correctly (0.6). However, they were more likely to hold correct views about the effectiveness of the pill for pregnancy prevention (1.6) and the safety of the pill (1.7).

Significant differences in beliefs by race were maintained for most items. White parents were more likely than non-white parents to give the most accurate response rather than the midlevel response option to the question of the pill's effectiveness for pregnancy prevention (odds ratio, 2.1). White parents also were more likely to give the midlevel response choice rather than the lowest-level option to the questions of condom effectiveness for STD prevention (2.4) and for pregnancy prevention (2.5), teenagers' ability to use condoms (2.7), the pill's effectiveness for pregnancy prevention (2.3) and teenagers' ability to use the pill correctly (3.2).

Political orientation remained significantly associated with three of the five variables from the bivariate analysis. In both models, parents with more liberal political orientation were more likely to have accurate beliefs about the effectiveness of condoms for STD prevention (odds ratios, 1.3 and 2.5) and for pregnancy prevention (1.2 and 1.4). They also had elevated odds of giving the midlevel response, rather than lowest-level response, regarding the safety of oral contraceptives (1.4).

Some beliefs differed significantly between Catholics, Protestants and others; however, we observed no consistent pattern.

**DISCUSSION**

A substantial proportion of parents of teenagers may underestimate the effectiveness of condoms for STD and pregnancy prevention. The CDC has concluded that condoms prevent HIV transmission in 98–100% of high-risk sexual encounters,<sup>26</sup> and other research suggests latex condoms are effective in preventing other STDs.<sup>27</sup> The pregnancy prevention rate with perfect use of condoms is estimated to be 97%.<sup>28</sup> Nonetheless, fewer than half of parents in our

sample thought that correct, consistent use of condoms is highly effective for STD or pregnancy prevention.

Similarly, many parents underestimated the effectiveness and safety of oral contraceptives. Fewer than one in 1,000 women experience unintended pregnancies during a year of consistent, correct pill use,<sup>29</sup> and only 6–8 women in 100 experience unintended pregnancies in their first year of use.<sup>30</sup> In addition, pill use is considered very safe, especially for women younger than 35; for all U.S. women, it is considered safer than pregnancy and childbirth. Yet only half of parents surveyed thought the pill is highly effective under conditions of perfect use, and approximately half believed this method is only somewhat safe.

A majority of parents believed that most teenagers cannot use condoms or the pill correctly, although research suggests that after adjustment for other factors (i.e., experience and relationship status), adolescents' rate of adherence to oral contraceptive regimens and rates for pill and condom failure are similar to those for other age-groups.<sup>31</sup> Two additional arguments suggest that most parents in this study underestimated adolescents' ability to use condoms and the pill correctly. First, comparisons of sexual activity and pregnancy rates among adolescents in different countries indicate that teenagers can be highly effective condom and pill users. U.S. adolescents have an age at sexual debut similar to that of teenagers in other developed countries, and a similar proportion are sexually active; yet rates of pregnancy and STDs among 15–19-year-olds are considerably higher in the United States than elsewhere in the developed world.<sup>32</sup> These facts suggest that condom and birth control pill use may be more consistent and correct among adolescents elsewhere than among U.S. adolescents. Differences in use are probably explained by dissimilarities in social norms, societies' expectations of adolescents, peer pressures, availability of and access to methods and health care, and other socially driven factors, rather than by innate differences in teenagers' abilities to use these methods properly.<sup>33</sup>

Second, U.S. adolescents are expected to—and do—perform various complex tasks correctly to avoid negative consequences. For example, young people routinely drive cars, in-line skate, cook and babysit, all of which involve multiple steps and could cause harm if done incorrectly. After formal or informal training, most adolescents are entrusted with these and other complex tasks. It is reasonable to expect that with requisite skill development and appropriate supports, most sexually active U.S. teenagers could correctly and consistently use condoms and the pill.

After adjustment for demographic factors, several characteristics were associated with differences in parents' beliefs. In general, men held more accurate views of condoms, while women held more accurate views of the pill. These differences are not surprising, given that condoms are typically under men's control, whereas the pill is under women's. Experience with using a method leads to greater familiarity with its effectiveness, safety and usability, which may positively affect the accuracy of views about the method.

Differences by race were also apparent: Nonwhite parents were significantly more likely than white parents to give the lowest-level response on several questions. This disparity may in part reflect some minority groups' general mistrust of the medical community, or suspicions that STDs are being used as genocidal agents.<sup>34</sup> Historical experience, particularly for black Americans, may contribute to inaccurate views of condoms and the pill. Also, many nonwhite respondents may have been immigrants who had never learned about these methods. Because the survey did not ask about country of origin and length of time living in the United States, the extent of this potential influence is unknown.

Finally, the more politically conservative a parent was, the less medically accurate his or her views typically were. Given the politicization of sex education and adolescent sexual behavior in the United States, the observed differences in attitude across the political spectrum are not surprising. Favorable or unfavorable information about condoms and oral contraceptives may enter into debates about issues such as appropriate educational materials, program funding and access to condoms and the pill. Findings from our analysis suggest that these messages may translate to inaccurate views among politically conservative parents.

#### Limitations and Strengths

Findings from this study must be viewed in light of certain limitations. First, more than half of the eligible sample declined to participate. Although the resulting response rate is not unusual for modern telephone surveys, given the proliferation of call screening and blocking devices, nonparticipants may differ systematically from participants on characteristics related to the research questions and key variables. In particular, an overrepresentation of Catholics in the survey sample (39%, compared with statewide estimates of 25% in Minnesota and 28% in Wisconsin)<sup>35</sup> may have affected the findings. In addition, parents without telephone service and those with unlisted telephone numbers were excluded, whereas families with multiple telephone lines may have had an increased likelihood of being selected. Because the number of working telephone lines at a residence may be related to socioeconomic status, low-income families may be underrepresented in this data set, which would limit the generalizability of our results. The finding that income was not systematically related to parents' views about condoms and the pill minimizes concern about selection bias related to this form of nonparticipation. Finally, small numbers of some ethnic and religious groups in the sample necessitated our combining categories; the extent to which this may have affected our findings is unknown.

Our study also has several strengths. To our knowledge, this was one of the first studies to survey a large sample of parents of teenagers on these issues. Its findings help clarify the need for unbiased, accurate information to be widely available and easily accessible to parents as they educate their children about sexuality. Second, our study used a population sampling frame and included appropriate proportions of racial and ethnic minorities to reflect their rep-

**...the more politically conservative a parent was, the less medically accurate his or her views typically were.**

resentation in the populations of Minnesota and Wisconsin. This improves the generalizability of our findings to parents of teenagers throughout the two states. The study also used a large enough sample to permit between-group comparisons. Finally, the survey items were based on previously validated measures, which increases the reliability and validity of the data and the findings.

## CONCLUSIONS

Most parents feel uncomfortable talking about sex with their teenagers.<sup>36</sup> Sexuality is a sensitive and difficult subject, and many parents lack adequate role models for educating and socializing their children about sex. Parents' discomfort with discussing sex may stem partly from a lack of relevant information. Because our society encourages parents to be the primary sex educators of their children, society is obligated to provide parents with medically accurate information. In addition to providing guidance, resources and skills training to overcome embarrassment about sensitive topics, national campaigns such as Let's Talk<sup>37</sup> and Families Are Talking<sup>38</sup> should strive to educate parents by providing medically accurate information on the effectiveness, safety and usability of condoms and the pill.

Our findings also suggest a need to tailor information and educational strategies to certain populations of parents. For example, accurate information about condoms may be appropriately targeted to mothers, and fathers may require additional information on the pill. Establishing trust in health and public health services may be particularly important for communicating accurate information about condoms and the pill to parents from racial or ethnic minority groups. Finally, medically inaccurate information appears to be tied to political rhetoric, as evidenced by the significantly higher proportion of very conservative parents who hold very negative—and medically inaccurate—views about condoms and oral contraceptives. Disentangling this information from political messages may be an important step toward educating parents across the political spectrum.

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