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How Patterns of Learning About Sexual Information Among Adolescents Are Related to Sexual Behaviors

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Abstract

CONTEXT—Parents, peers and media are informal sources of sexual information for adolescents. Although the content of sexual information communicated by these sources is known to vary, little is known about what adolescents report actually learning from each source.

METHODS—Data from 1,990 U.S.14–17-year-olds who participated in an online survey in 2015 were used to assess learning about four topics (sex, condoms, hormonal birth control and romantic relationships) from three informal sources (parents, peers, and television and movies). Gender and race differences in learning by source and topic were assessed using t tests. Following a factor analysis, learning about all topics was grouped by source, and regression analyses were conducted to examine associations between learning from each source and three outcomes: sexual activity, condom use and hormonal birth control use. Models included interactions between information sources and race and gender.

RESULTS—White adolescents reported learning more from parents and less from media than black adolescents. Compared with males, females learned more about hormonal birth control and less about condoms from their parents, and more about relationships from peers and media. Learning from parents and from peers were positively associated with adolescents' sexual activity (unstandardized coefficients, 0.26 and 0.52, respectively). Learning from parents was positively associated with condom use (odds ratio, 1.5).

CONCLUSION—Adolescents' learning about sex from informal sources varies by race and gender. Future research should examine whether sexual health interventions and message development can capitalize on these differences.

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Adolescence is when young people typically begin to explore their sexuality and become socialized with regard to romantic and sexual relationships. During this process, adolescents receive information about sex and sexuality from both formal sources, such as school-based sex education programs and health practitioners, and informal sources, such as parents and television. Informal sources in particular transmit and model norms, values and scripts pertaining to sex and gender roles.[1] Parents, peers and media are the most frequently relied upon informal sources for information about sex and sex-related topics, such as relationships and birth control,[1–4] and are often the focus of efforts to promote safer sexual behaviors (e.g., interventions to improve parent-adolescent communication about sex).[5,6]

Given the high rates of STDs, including HIV, among U.S. adolescents,[7] and that the frequency of formal sex education has declined across the United States,[8] it has become increasingly important to investigate how patterns of sexual learning from informal sources are linked to adolescents' sexual behaviors. In this study, we investigate the extent to which adolescents report learning about certain sexual topics from specific informal sources and whether learning from each source is associated with sexual behavior.

SOURCES OF SEXUAL LEARNING

Although adolescents prefer to receive sexual information from parents rather than from other formal or informal sources,[9] evidence on the relationships between parent-adolescent communication about sex and adolescents' sexual attitudes and behaviors is inconsistent, varying by outcome of interest. Most longitudinal investigations have found that such communication is associated with adolescents' lower sexual risk taking.[10,11] According to a meta-analysis of three decades of research, by Widman et al., parental communication is associated with a small increase in condom and contraceptive use.[12] A literature review by Rogers on the mechanism through which these associations operate suggests that parental communication is related to more positive attitudes and self-efficacy with regard to condom use, which in turn influence sexual intentions and behaviors such as delayed intercourse and consistent condom use.[13] However, other studies—most of which are cross-sectional—have found parental communication to be associated with increased sexual behavior among adolescents,[14,15] likely because parental communication often occurs after young people have begun to engage in sexual activity.[15]

Learning about sex from peers is associated with adolescents' positive beliefs about having sex[3] (i.e., that good things will happen if they have sex) and with their perceptions of high peer involvement in risk behaviors,[16] which in turn are associated with their engagement in those same behaviors.[17] Adolescents who frequently communicate with their friends about sex hold more positive expectancies about the social benefits (e.g., having sex will increase popularity) and pleasure associated with sex, and are less likely to have expectancies about social risk (e.g., sex may lead to social stigma or loss of self-respect).[18]

In addition to explicit discussions about sex with friends, adolescents learn about sex from their peers through the transmission of norms. Social cognitive theory describes this process as "observational learning" or "behavioral modeling."[19] Adolescents are more likely to

imitate the behavior of peers if they perceive that engaging in that behavior is associated with certain rewards (e.g., increased pleasure, greater social benefits).

Adolescents learn about sex from media—specifically, television and movies—similarly to the way that they learn from peers.[20] Through observational learning, adolescents may adopt sexual scripts and behaviors that they see in entertainment materials.[1] In some cases, young people choose media with sexual content to learn about sex-related topics of interest.[3,21] Sexual material in television shows and movies popular with adolescents is well documented.[22–24] Television content often depicts premarital sex as normative and portrays human sexuality as following gendered stereotypes.[25] It rarely features any messages about the physical consequences of sex; however, negative emotional and social consequences are evident in some types of teenage programming.[26] Exposure to sexual content in media tends to be associated with increased sexual activity, earlier sexual initiation and unplanned pregnancy.[27–32]

The different relationships between informal sources of information and adolescents' sexual behavior are often attributed to differences in how and what type of information is conveyed. Learning about sex from parents primarily occurs through the transmission of values and expectations, and parental communication of knowledge tends to focus on biological topics (e.g., menstruation, reproduction) and the negative consequences of sex (e.g., STDs).[33–35] In contrast, communication with peers about sex tends to focus on dating, relationships, partner attractiveness and more positive aspects of sex.[36] Peers and media content primarily convey social norms.[37] Media provide adolescents with scripts about how to talk about sex and how to behave; much of the sexual content on television has more sexual talk than depictions of behavior.[38–40] However, learning about sex from peers and especially media more likely occurs through observational learning and modeling that may not be captured by focusing exclusively on the kinds of discussions or communication that characterize adolescent-parent interactions. And although we know that the content of sexual information being communicated to adolescents varies by source, less is known about what adolescents report actually learning from each source.

Furthermore, research has identified heterogeneity in adolescents' receipt of sexual information by their gender, race and ethnicity.[34] Adolescent females are more likely than males to discuss most sexual health topics with their parents and friends[2,41] (the main exception being condom use);[8] males are more likely than females to use media as an information source.[2,23,24,41] Findings from the National Survey of Family Growth indicate that adolescent females' sexual discussions with their parents are most often about STDs, birth control and how to say no to sex, whereas adolescent males' discussions are most often about STDs and how to use condoms.[8] White males are less likely than their black and Hispanic counterparts to talk with parents about HIV and AIDS, and black males are more likely to discuss using a condom;[8] Hispanic and black females are more likely than white females to talk about using a condom. A more-nuanced understanding of how youth of different genders, races and ethnicities receive sexual information may help to understand the relationship between receipt of information and behaviors when other informal sources are taken into account.

CURRENT STUDY

We used survey data from a national sample of U.S. adolescents to examine patterns of learning about four sexual topics (sex, condoms, birth control and romantic relationships) from three informal sources (parents, peers, and television and movies). Our analysis aimed to determine whether adolescents learn from one source about all topics or they learn about some topics from one source and some from others. Finally, we investigated how learning from the different sources is associated with three behavioral outcomes: sexual activity, condom use and birth control use.

METHODOLOGY

Participants were recruited from opt-in, online panels conducted by the survey company GfK between November 13, 2015, and December 14, 2015. GfK screened panel members to identify white and black non-Hispanic U.S. 14–17-year-olds or parents of such adolescents, who then were invited by e-mail to participate in a survey. Parents were asked to consent to their adolescent's participation, and those who gave consent were asked to bring their adolescent to the computer to complete the survey. All participants were given assent information before beginning the survey. The study protocol was approved by institutional review board of the University of Pennsylvania.

A total of 1,990 youth were recruited. Blacks were oversampled so that there was roughly an equal number of black and white respondents (1,000 and 990, respectively).

Measures

- ***Sources of information.*** Respondents were asked how much they had "learned about the following topics" from their parents, from their peers, and from television and movies: sexual intercourse, condoms, hormonal birth control and romantic relationships. All items were measured on a four-point scale ranging from "nothing at all" to "a lot."
- ***Sexual activity.*** We created an ordered difficulty index[42] of sexual activity in the past six months[43] by summing the number of the following nine behaviors adolescents reported having engaged in, listed here in order of difficulty: kissing, touching or being touched over clothes, touching a partner's breasts or having one's breasts touched, touching a partner's private parts, seeing a partner naked, being naked with a partner, receiving oral sex, having vaginal sex and performing oral sex. We used the Loevinger's H coefficient[44] to assess the extent to which the behaviors were ordered; the closer the coefficient is to 1.00, the higher the likelihood that a respondent reporting any given behavior had also engaged in all of the less difficult behaviors. The Loevinger's H coefficient was 0.89. For the sum of the items, the KR-20, a measure of reliability for dichotomous measures that can range between zero and 1.00, was 0.94.
- ***Condom use.*** Respondents were asked whether they or their partner had used a condom the last time they had sexual intercourse; response options were "yes," "no" and "I have never had sexual intercourse."

- ***Birth control use.*** Respondents were asked whether they or their partner had used "hormonal birth control (e.g., the pill, patch, ring, shot, etc.)" the last time they had sexual intercourse; response options were "yes," "no" and "I have never had sexual intercourse."
- ***Covariates.*** Demographic characteristics included age, gender, race, current receipt of free or reduced-cost lunch at school and mother's level of education (dichotomized as less than college or at least college). In addition, we controlled for sensation seeking and impulsivity—two personality traits that are well-established risk factors for early and risky sexual activity.[45] We measured sensation seeking by the four items in the Brief Sensation Seeking Scale[46] (e.g., "I like new and exciting experiences, even if I have to break the rules"); responses were measured on a five-point scale ranging from "strongly disagree" to "strongly agree, and then averaged (Cronbach's alpha, 0.87). Impulsivity was measured by nine dichotomous items adapted from the Junior Eysenck Impulsivity scale[47] (e.g., "Do you usually do and say things without stopping to think?"); the scale was scored as the average of the items (KR-20, 0.80).

We also controlled for parental variables associated with sexual behavior outcomes: perceived parental monitoring and perceived parental involvement.[48,49] Parental monitoring was based on eight items. For example, adolescents were asked how often their parents know "what you are doing during your free time" and "when you have an exam or paper due at school." Responses were measured on a five-point scale ranging from "never" to "always," and were averaged (Cronbach's alpha, 0.92). Parental involvement was assessed using three items, in which respondents indicated how often their parents or caregivers spend time just talking with them or eat dinner with them, and how often their family does something fun together. Responses were measured on a four-point scale ranging from "never" to "almost everyday" and were averaged (polychoric alpha, 0.84).

Finally, we controlled for the daily amount of time respondents reported spending watching television or movies and being on the Internet, where they could access video content. Participants were asked the number of hours they spent watching television or movie content in the previous day during each of the follow periods: before noon, between noon and six P.M., and after six P.M. To have a maximum of 24 hours, responses greater than six hours for the period between noon and six were recoded as six hours, and responses greater than nine hours for the other two periods were recoded as nine; responses were then summed to create a measure of hours per day. The same process was repeated for daily Internet time.

Analysis

Descriptive statistics were calculated for all variables of interest, and we report frequencies for sources of learning by topic; t tests were used to test for mean differences by gender and race. To test whether adolescents tend to use the same source for all topics or specific sources for certain topics, we conducted an exploratory factor analysis using oblique rotation assuming correlated factors. We used an Eigenvalue of at least 1 to determine whether the 12 items on learning (four topics for each of the three sources) loaded onto a "source" factor (i.e., several topics are learned from the same source), a "topic" factor (i.e., specific topics

are learned from specific sources) or some combination. We report the proportion of variance in the measures that is explained by each. After creating scales for each factor, we used Pearson's r to determine how they were associated with one another.

We used regression analyses to estimate associations between sources of information and sexual behavior outcomes; adolescents who had not had sex were omitted from the regression analyses on condom and hormonal birth control use. Linear regression was used for the continuous sexual activity outcome, and logistic regression was used for the dichotomous condom use and hormonal birth control use outcomes; we report unstandardized coefficients and odds ratios, respectively. Moderation of the relationships between each information source and adolescent gender and race was estimated by separately entering each interaction term into the regression models to reduce multicollinearity issues that arise from including multiple interaction terms in a model. For improved interpretation, coefficients for all variables were estimated prior to inclusion of the interaction terms. We estimated the slopes of the variables in the interactions using Stata's *lincom* command. To display interaction results, we graph statistically significant interactions (which is the recommended method[50,51]) because the combined effect of nonlinear regression coefficients and their interactions are difficult to visualize from examination of the individual coefficients. The graphs show the linear prediction of the dependent variable (i.e., regression slope) by an information source (e.g., peers) for each group (e.g., males and females) being compared. All analyses were conducted using Stata 14.0.

RESULTS

Forty-nine percent of respondents were female, and adolescents' average age was 15.6 years (Table 1). Forty-seven percent received free or reduced-cost lunch, and 43% reported that their mother had at least a college education. The mean sexual activity score for the sample was 2.1, which means that, on average, adolescents in the sample had kissed and had touched a partner over his or her clothes. Seventy-three percent of respondents had never had sex. Of those who had, 70% had used a condom at last sex and 43% had used hormonal birth control at that time.

Adolescents frequently reported receiving sexual information from each of the three informal sources studied (Table 2). Sixty-one percent had learned some or a lot about sex in general from their parents, and 54% each had learned that much about sex from peers and from media. Fifty-nine percent had learned about condoms from their parents, and 57% had learned about hormonal contraceptives from them; 49% and 43% had learned from peers about condoms and hormonal methods, respectively, and 42% and 41% had learned from media about condoms and hormonal methods. Sixty-six percent of adolescents had learned about romantic relationships from their parents, 58% from peers, and 60% from media.

Source use differed by gender and race (Table 3). In comparison with males, females more often reported learning from parents about hormonal birth control, from peers about hormonal methods and romantic relationships, and from media about romantic relationships; in comparison with females, males more often reported learning from their parents about

condoms. For each topic, whites learned from parents more often than blacks did, whereas blacks learned from media more often than whites did; no racial differences were found for learning from peers.

Results of the factor analysis showed that the variables loaded on three factors: Forty-eight percent of the variance was explained by peers, 44% by television and movies, and 42% by parents. Thus, for our regression analyses, we averaged the topic items to create scales by source (polychoric alpha, 0.94 for parents, 0.93 for peers and 0.92 for media). Learning about sex from peers and from media were more highly correlated (r=0.55) than were learning from parents and from peers (r=0.32) or learning from parents and from media (r=0.26), which indicates adolescents who reported learning more from peers were also more likely to report learning more from media.

In regression analyses that controlled for all demographic characteristics and covariates (Table 4), adolescents' sexual activity was positively associated with learning from both parents and peers (coefficients, 0.26 and 0.52, respectively). Of the covariates, age, sensation seeking, impulsivity and daily television time were positively associated with the sexual activity (0.04–1.74), whereas being female and parental monitoring were negatively associated with this outcome (−0.65 and −0.45, respectively). In addition, learning from parents was associated with increased odds of condom use at last sex (odds ratio, 1.5); age and parental monitoring were also positively associated with this outcome (1.4 each). None of the information sources were associated with use of hormonal birth control at last sex; however, age was positively associated with hormonal method use (1.4), and receiving free or reduced-cost lunch was negatively associated with this outcome (0.7).

We suspected that any association between learning from media and sexual behavior in the regression models was carried by peers, given the similarity in the pathways through which peers and media transmit sexual knowledge, as well as the correlation of learning from the two sources (even though collinearity diagnostics of the independent variables were acceptable, with a mean variance inflation factor of 1.31). We therefore conducted post hoc regression analyses that omitted peers as an information source. In these analyses (not shown), learning from media was positively associated with sexual activity (coefficient, 0.17; standard error, 0.08; $p<.05$), but was not associated with condom or hormonal birth control use.

Finally, we examined whether the associations between information sources and outcomes varied by gender and race. In regression analyses, the female-peers and female-media interaction terms were negatively associated with sexual activity (coefficients, −0.27 and −0.41, respectively). As depicted in Figure 1, learning about sex from peers was positively associated with sexual activity among both females (coefficient, 0.38; standard error, 0.10; $p<.01$) and males (coefficient, 0.66; standard error, 0.10; $p<.01$). Learning about sex from media was associated with less sexual activity among females (coefficient, −0.28; standard error, 0.11; $p<.01$) and more among males, although the slope for males was not significant (coefficient, 0.11; standard error, 0.11; ns).

DISCUSSION

Healthy sexual development that results in positive social and health outcomes for youth is influenced by parents, peers and media.[52] Our results suggest that learning sexual information revolves around the source, rather than the topic, given that the adolescents in our sample reported learning about various sexual topics from each of the sources studied. And whereas adolescents reported learning from each source, there appeared to be some variation by race and gender. Furthermore, learning from parents, peers and media was related to sexual behavioral outcomes with some gender differences.

Adolescents do not appear to learn exclusively about certain topics from specific sources, although research indicates that specific content may be emphasized through some sources more than others.[33–35] Furthermore, learning from some sources may be more strongly correlated than learning from others: For instance, learning from media and learning from peers were more highly correlated with each other than either was with learning from parents. Adolescents may perceive peers and media sources as similar with regard to the information they receive, and perhaps reinforcing—a possibility supported by previous research showing that adolescents often considered the media a “super peer” in regard to sexual learning.[53] Although not measured here, the credibility and trust associated with each source may play a role.[10] Adolescents may consider parents to be more credible than peers and media, which adolescents attribute similarly lower credibility. In addition, adolescents may be more aware of their learning from parents than of their learning from peers or media, because it more often occurs through a formal process rather than through observation or behavioral modeling; this may explain our finding of higher reports of learning from parents than from peers or media.

Patterns of sexual learning varied by gender and race. According to our bivariate results, gender differences were limited to specific topics. For example, from parents, males reported learning more about condoms, and females more about hormonal birth control. This pattern may reflect parents’ notions that information on birth control may be more relevant for females because all hormonal methods are currently for females. However, given that learning about hormonal birth control from peers was also more commonly reported by females than by males, it could be that young women are driving the search for information on this particular topic.

By contrast, racial differences were based on the source of learning. Across all sexual topics, whites were more likely than blacks to report learning from parents, and blacks were more likely than whites to report learning from media. The latter finding is consistent with some studies,[54] but not with ones that found evidence that blacks receive more information from parents than do youth of other races and ethnicities.[55] However, black adolescents spend twice as much time per day as whites watching television and movies,[56] so it is not surprising that they report learning more from media than do whites. Another possible explanation is that black adolescents report more parental communication about sexual topics,[8] but do not necessarily perceive learning as much from parents as from media.

We found adolescents' sexual activity to be positively associated with learning sexual information from parents. Previous research suggests that parents often initiate discussions with their adolescents about sex if they perceive them to be having sex.[10] The relationship may also reflect sexually active adolescents' seeking information from their parents, but the cross-sectional nature of our data prohibits us from making inferences about direction.

Learning from parents was also associated with higher odds of condom use at last sex, which is consistent with findings linking parent-adolescent sexual communication with safer sex,[12] more favorable views about and attitudes toward using condoms, and increased condom self-efficacy.[13] Furthermore, although interactions between race and gender and learning from parents were not significantly associated with condom use, perceived parental monitoring was positively associated with the outcome.

No source of learning was associated with hormonal birth control use, but receiving reduced-cost or free lunch—a measure of socioeconomic status—was negatively associated with this outcome. This finding suggests that issues of availability and access may be particularly important considerations in the use of hormonal birth control.

Only one association was found between learning from media and the behavioral outcomes: Learning from television or movies was associated with less sexual activity among females than among males. In the descriptive analyses, young women reported learning more about romantic relationships from media than young men did. This finding may be related to how relationships are depicted in the media content young adolescent women watch, which may be contextually different from the content popular with males. For example, adolescent women tend to watch television shows featuring more female characters,[57] which may present more positive depictions of females and less stereotypical sexual norms for males and females. Findings from our post hoc analysis—in which we removed peer sources from the regression models—suggest that learning from peers and media may be interchangeable in regard to the association with sexual activity and support research demonstrating that media may be a "substitute sexual peer."[53,58]

Some associations between behavioral outcomes and sources of sexual information were conditional on gender. Learning from peers was positively associated with sexual activity for both males and females, but the association was stronger for males. Peer influence on adolescent sexual behavior is well documented,[59] but attitudes and perceptions about sex and sex-related topics of males' peers may be more positive than those of females' peers.

Limitations

This study had several limitations that should be mentioned. The direction of the relationships discussed here are unknown because the data used are cross-sectional. For example, adolescents' sexual activity and condom use may have preceded their learning from reported sources, and their behavior may have caused them to seek out information from various sources or to pay more attention to particular information. In addition, our focus was on specific informal sources of sexual information, and we did not include other important sources—such as doctors, teachers or school, and the Internet (including social media)—that may interact with them in ways that affect learning. We also did not include

variables that could affect how information is received from sources (e.g., parent-child closeness, source trustworthiness). In-depth, qualitative studies would provide contextually rich data about the conditions under which learning occurs. Although our topic-based approach allowed us to examine a range of sexual issues, it left us without in-depth information on what was learned within each topic area, as well as the context in which learning occurs. In addition, learning about specific topics from each source may have been associated with the behavioral outcomes in some instances when the overall source of information was not. Furthermore, question wording with regard to "learning about sex" may have biased estimates toward certain sources—specifically, parents, with whom adolescents are most likely to have explicit conversations about sex. Finally, many participants were recruited through their parents; although this is a typical strategy by which online surveys recruit adolescents, it is impossible to know whether parents actually engaged their adolescents or completed the survey themselves.

Conclusion

This study furthers the understanding of the role of informal sources in adolescents' sexual learning and how such learning relates to their sexual behaviors. Future research should examine the processes involved in learning sexual information, and whether interventions and message development can capitalize on differences in how males and females learn about sex. Researchers may also want to investigate whether what adolescents report learning differs from what they are being taught, and how this fits into our understanding of how best to positively influence sexual development. Although risk avoidance receives a lot of attention, it is not the only consideration in the sexual socialization of adolescents. Parents, peers and media represent potential intervention points through which health-promoting and socially relevant sexual information can be conveyed. Longitudinal analyses that track youths' learning about sex from various sources over time and link it to behavioral outcomes are a next step in finding ways to improve adolescents' sexual health.

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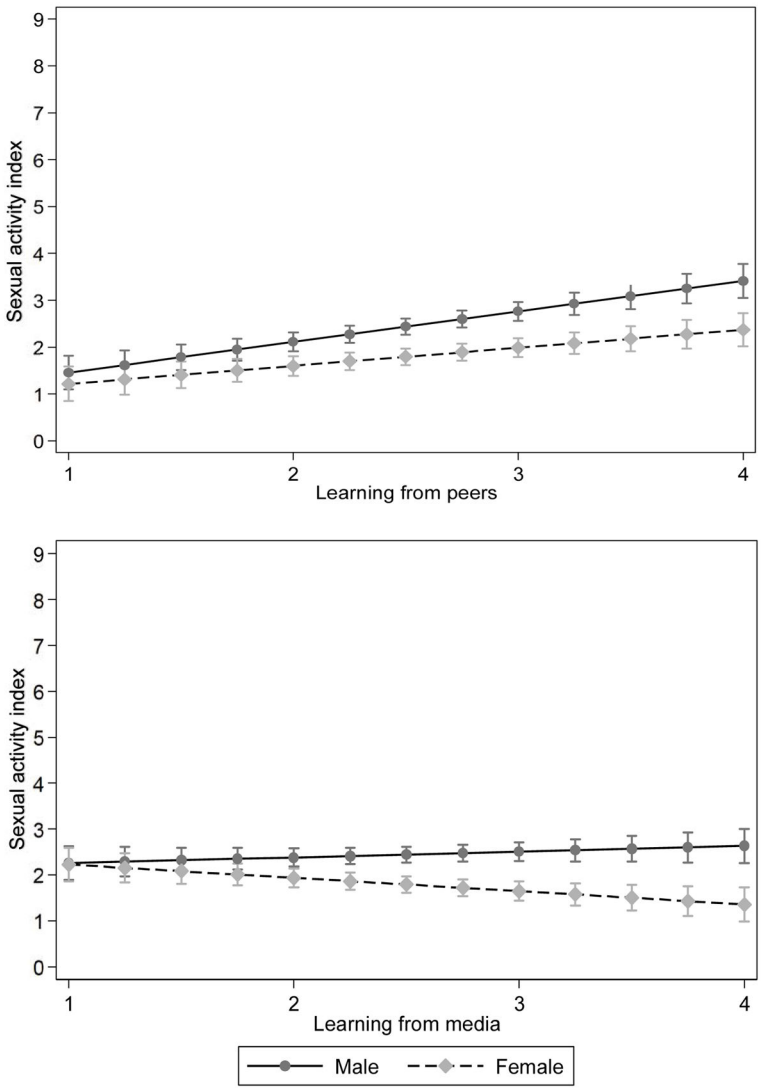

FIGURE 1. Linear prediction of sexual activity, by information source, according to gender

Notes: Interactions shown are those that were significant in regression analyses (Table 4). Learning is measured on a scale ranging from 1="nothing at all" to 4="a lot." Sexual activity is measured on an ordered difficulty index ranging from 1="kissing" to 9="performing oral sex."

TABLE 1

Selected characteristics of a sample of U.S. adolescent respondents to an online survey assessing learning about sexual information, 2015

Characteristic	% or mean(N=1,990)
DEMOGRAPHIC	
Gender	
Male	51
Female	49
Age	
14	21.3
15	25.7
16	26.0
17	27.0
Mean	15.6 (1.1)
Race	
Black	50.3
White	49.7
Receives free/reduced-cost school lunch	
Yes	46.8
No	53.2
Mother's education	
≥college	43.2
<college	56.8
BEHAVIORAL OUTCOMES	
Mean sexual activity score[‡] (range, 0–9)	2.1 (3.0)
Ever had sex	
Yes	26.8
No	73.2
Condom use at last sex[†]	
Yes	70.1
No	29.9
Hormonal birth control use at last sex[†]	
Yes	43.2
No	56.8
COVARIATES	
Mean sensation seeking (range, 1–5)	3.3 (1.0)
Mean impulsivity (range, 0–1)	0.5 (0.3)
Mean perceived parental monitoring (range, 1–5)	3.8 (0.9)
Mean perceived parental involvement (range, 1–4)	3.0 (0.8)
Mean daily television time (range, 0–24 hours)	5.5 (4.6)
Mean daily Internet time (range, 0–24 hours)	6.5 (5.2)

[†]Among 529 who reported having ever had sex.

‡Respondent's level of sexual activity in past six months as measured on an ordered difficulty index ranging from kissing to performing oral sex.

Notes: Unless otherwise noted, data are percentages. Figures in parentheses are standard deviations.

TABLE 2

Percentage distribution of adolescents, by amount of sexual information received, according to source and topic

Source and topic	Nothing at all	A little	Some	A lot	Total
Parents					
Sex	18.1	20.5	26.7	34.7	100.0
Condoms	23.4	18.1	23.9	34.6	100.0
Hormonal birth control	23.8	19.0	23.2	34.0	100.0
Romantic relationships	15.0	19.2	30.8	35.0	100.0
Peers					
Sex	21.7	23.9	27.6	26.8	100.0
Condoms	25.2	26.1	27.3	21.4	100.0
Hormonal birth control	29.7	27.1	24.7	18.5	100.0
Romantic relationships	17.9	24.0	33.6	24.5	100.0
Media					
Sex	20.4	25.7	29.5	24.4	100.0
Condoms	28.0	29.6	24.6	17.8	100.0
Hormonal birth control	28.9	30.5	24.7	15.9	100.0
Romantic relationships	14.9	25.3	33.7	26.1	100.0

TABLE 3

Mean scale scores (and standard deviations) indicating how often adolescents reported learning sexual information, by source and topic, according to gender and race

Source and topic	All	Gender		Race	
		Male	Female	Black	White
Parents	**2.8 (1.0)**	**2.7 (1.0)**	**2.8 (1.0)**	**2.7 (1.1)**	**2.8 (0.9)*****
Sex	2.8 (1.1)	2.8 (1.1)	2.8 (1.1)	2.7 (1.2)	2.8 (1.0)*
Condoms	2.7 (1.2)	2.8 (1.1)	2.6 (1.2)**	2.6 (1.2)	2.8 (1.1)*
Hormonal birth control	2.7 (1.2)	2.6 (1.2)	2.8 (1.2)**	2.6 (1.2)	2.8 (1.1)***
Romantic relationships	2.9 (1.1)	2.8 (1.1)	2.9 (1.1)	2.8 (1.1)	3.0 (1.0)***
Peers	**2.5 (1.0)**	**2.5 (1.0)**	**2.5 (1.0)**	**2.5 (1.0)**	**2.5 (0.9)**
Sex	2.6 (1.1)	2.6 (1.1)	2.6 (1.1)	2.6 (1.1)	2.6 (1.1)
Condoms	2.5 (1.1)	2.5 (1.1)	2.4 (1.1)	2.5 (1.1)	2.4 (1.0)
Hormonal birth control	2.3 (1.1)	2.3 (1.1)	2.4 (1.1)**	2.3 (1.1)	2.3 (1.0)
Romantic relationships	2.7 (1.0)	2.6 (1.1)	2.7 (1.0)**	2.7 (1.1)	2.6 (1.0)
Media	**2.5 (0.9)**	**2.5 (0.9)**	**2.5 (0.9)**	**2.6 (1.0)**	**2.4 (0.8)*****
Sex	2.6 (1.1)	2.6 (1.1)	2.6 (1.1)	2.7 (1.1)	2.5 (1.0)*
Condoms	2.3 (1.1)	2.3 (1.1)	2.3 (1.1)	2.5 (1.1)	2.2 (1.0)*
Hormonal birth control	2.3 (1.1)	2.3 (1.1)	2.3 (1.1)	2.4 (1.1)	2.2 (1.0)*
Romantic relationships	2.7 (1.0)	2.6 (1.0)	2.8 (1.0)***	2.8 (1.1)	2.6 (0.9)*

* p<.05.

** p<.01.

*** p<.001.

Note: Scale ranges, 1–4.

TABLE 4

Results of regression analyses assessing associations between selected characteristics and sexual outcomes

Characteristic	Sexual activity (N=1,975)	Condom use (N=522)	Hormonal birth control use (N=525)
Source of sexual information			
Parents	0.26 (0.08)***	1.52 (1.17–1.98)**	1.10 (0.86–1.40)
Peers	0.52 (0.08)***	1.01 (0.76–1.33)	0.82 (0.64–1.06)
Media	−0.09 (0.08)	1.10 (0.83–1.45)	1.25 (0.96–1.62)
Female	−0.65 (0.13)***	0.73 (0.48–1.12)	0.83 (0.57–1.21)
Age	0.44 (0.06)**	1.44 (1.18–1.76)***	1.39 (1.15–1.68)**
White	0.05 (0.14)	1.05 (0.67–1.66)	1.37 (0.91–2.05)
Receives free/reduced-cost school lunch	−0.08 (.014)	0.96 (0.63–1.48)	0.66 (0.45–0.97)*
Mother has ≥college education	−0.08 (0.13)	0.95 (0.62–1.45)	1.09 (0.74–1.60)
Sensation seeking	0.30 (0.06)***	1.11 (0.89–1.38)	1.19 (0.97–1.46)
Impulsivity	1.74 (0.22)***	0.64 (0.31–1.33)	0.81 (0.42–1.56)
Parental monitoring	−0.45 (0.09)**	1.40 (1.02–1.92)*	1.16 (0.87–1.56)
Parental involvement	0.03 (0.11)	0.78 (0.55–1.11)	1.16 (0.84–1.60)
Daily television time	0.04 (0.02)**	1.00 (0.95–1.05)	1.03 (0.99–1.08)
Daily Internet time	0.01 (0.01)	1.01 (0.96–1.05)	0.98 (0.95–1.03)
Interactions			
Female × parents	−0.15 (0.13)	0.82 (0.53–1.27)	1.10 (0.73–1.66)
White × parents	0.04 (0.13)	0.83 (0.53–1.30)	1.03 (0.68–1.54)
Female × peers	−0.27 (0.13)*	0.76 (0.48–1.21)	0.72 (0.47–1.11)
White × peers	0.11 (0.14)	0.83 (0.52–1.33)	1.32 (0.86–2.01)
Female × media	−0.41 (0.14)**	0.77 (0.48–1.21)	0.73 (0.47–1.12)
White × media	0.25 (0.15)	0.63 (0.39–1.02)	1.31 (0.84–2.04)

* p<.05.

** p<.01.

*** p<.001.

Notes: For sexual activity, data are unstandardized coefficients from linear regression analysis; for condom and hormonal birth control use, data are odds ratios from logistic regression analyses. For improved interpretation, coefficients for all variables were estimated prior to inclusion of the interaction terms. Interaction terms were entered and run individually, and thus, coefficients for the interaction terms are each from different models.