Published in final edited form as:
Am J Health Behav. 2009 ; 33(1): 37–48.

How Sources of Sexual Information Relate to Adolescents' Beliefs about Sex

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Abstract

Objectives—To examine how sources of sexual information are associated with adolescents' behavioral, normative, and control beliefs about having sexual intercourse using the Integrative Model of Behavior Change.

Methods—Survey data from a quota sample of 459 youth.

Results—The most frequently reported sources were friends, teachers, mothers, and media. Regression analyses indicated that learning about sex from parents, grandparents, and religious leaders was associated with beliefs likely to delay sex; friends, cousins, and media were associated with beliefs that increase the likelihood of having sexual intercourse.

Conclusions—Different sexual information sources were associated with different underlying beliefs.

Keywords

adolescents; sexual information; media; Integrative Model

Introduction

Sexual socialization is the process by which adolescents acquire sexual knowledge and values.[1] Although parents and friends are identified by adolescents as the most common sources of sexual information, the mass media is also recognized as an important contributor to sexual knowledge.[2–4] Some sources may be more influential than others and may emphasize different aspects of sexuality. For example, parents (specifically mothers) might discuss STDs and HIV[5] and try to impart moral views[6] while adolescents may be learning sexual norms from their peers: if peers are believed to support condom use, teens' are more likely to use condoms themselves.[7–10] In short, different sources of information may disseminate different messages about sex and thus the sources adolescents turn to for sexual information may differentially influence their sexual beliefs as well as their sexual behavior.

The mass media plays a significant role in the lives of most children and adolescents. Youth ages 8–18 use media for approximately 6 hours daily[11] and sexual images, sexual talk, and sexual behavior are frequently depicted in the media: 83% of television programs popular among adolescents include sexual content.[12,13] In addition, educationally-oriented sexual material is available in magazines and the internet. Magazines targeted to adolescents often feature articles on teen pregnancy and contraceptive use, and there are sex education websites with accurate, accessible information as well as opportunities to obtain sexual

information via chat rooms and email.[2] Empirical research on sources of sexual information, however, has focused on parental communication of topics around sexuality and those that examine the relationship between media and various types sexual beliefs.[1],[14],[15] There is very little theoretically based research that has investigated the relationship between multiple sources of sexual information and beliefs about having sexual intercourse.

This study first identifies the sources of information from which adolescents report learning about sex. We then consider the extent to which these sources are related to various theoretical determinants of sexual behavior. Using the Integrative Model of Behavior Change,[16] we focus on how the media, in the context of other information sources (eg, family members, peers, teachers) influence behavioral, normative, and control beliefs about having sexual intercourse.

The Integrative Model of Behavior Change

The Integrative Model (IM) shown in Figure 1 brings together theoretical constructs used in several theories of behavior change, based largely on the Theories of Reasoned Action[17] and Planned Behavior,[18] the IM also incorporates constructs from the Health Belief Model[19] and Social Cognitive Theory.[20] According to the model, behavior is primarily determined by intentions, although one may not always be able to act on one's intentions because environmental factors and or a lack of skills and abilities may make performance difficult if not impossible. Intention to perform a specific behavior is a function of one's favorableness or unfavorableness towards performing the behavior (ie, attitudes), perceptions about what others think and do with regards to performing the behavior (ie, perceived norms), and beliefs about one's ability to perform the behavior in the presence of barriers to doing so (ie, self-efficacy).[16],[21] Each of these constructs is, in turn, determined by corresponding underlying beliefs.

For example, attitudes are determined by one's beliefs that performing the behavior will lead to certain positive or negative consequences (ie, outcome expectancies). Some behavioral beliefs about having sex might be that having sex will increase intimacy with a partner or that having sex will result in getting a sexually transmitted disease. The more one believes that the behavior will lead to positive (but not negative) outcomes, the more favorable should be the attitude toward the behavior. Normative beliefs include perceptions about what specific referents think one should or should not do (ie, injunctive norms) and perceptions about what similar others (eg, friends) are doing (ie, descriptive norms).[22] Parental or peer approval or disapproval of having sex is an injunctive normative belief while beliefs about whether friends or persons the same age are having sex are descriptive normative beliefs. The third type of belief underlies self-efficacy. These beliefs refer to one's ability to perform the behavior (eg, having vaginal sex) under a variety of circumstances, such as if there was no condom available.

Influence of Information Source on Underlying Beliefs: Research Questions and Hypotheses

The relationships of interest here are the paths in Figure 1 between the external variables and the behavioral, normative, and efficacy beliefs underlying one's intention to have sex. As external influences, the media and other sources of sexual information are expected to affect behavior only indirectly by operating through these underlying beliefs.[23],[24] *These underlying beliefs are viewed as determining the attitudes, norms, and perceptions of self efficacy that predict intentions to perform a behavior.* We focus on these beliefs as our dependent variables because if there is no association between the sources and adolescents'

sexual beliefs, where or from whom adolescents learn about sex will not be associated with intentions to have sex (although they might be related to other aspects of sexual behavior).

Intention to perform a behavior is widely regarded as an important predictor of behavior change.[16–18] A review article by Buhi et al (2007) supports the importance of intentions in the prediction of adolescent sexual intercourse, other sexual behaviors besides intercourse, and being involved in more sexually risky situations.[25] A meta-analysis of experimental tests on the intention-behavior relation reviewed 47 studies which included a variety of behaviors such condom use, course enrollment, sunscreen use, smoking, exercise, and sexual behavior.[26] Webb and Sheeran (2007) concluded that "a medium-to-large sized change in intention" often causes a "small-to-medium change in behavior" (p 261). Thus in our examination of the beliefs that predict intention, we assume, based on a large body of theoretical reasoning and empirical evidence, that the intention-behavior relation is a primary explanatory factor in adolescent sexual behavior.

It is likely that beliefs about having sex are differentially influenced by different information sources. For example, some sources might influence normative beliefs and other sources might influence control beliefs. Our primary interest is in determining which beliefs are associated with using the media *in the context* of other social influences such as family members and teachers. Essentially we use multiple regression to control for other sources that adolescents use. And although our focus is on the media as a source of information, this method will also allow us to identify the effects of other sources on beliefs about having sex. Since use of, and exposure to, media varies widely by demographic group, we adjust for these factors in our analyses but have no hypotheses about whether age, race, and gender moderate the effect of media on sexual beliefs. We anticipate that the media will operate as a type of peer[27] and that, compared to adolescents who do not obtain sexual information from the media, adolescents using the media for information on sex will believe that more friends or similar others are engaging in sexual behaviors (ie, have higher descriptive normative beliefs). In addition, given that sexual media content often models various aspects of sexual behavior[20] but rarely (at least on television) depicts the risks and negative consequences of that behavior,[12,13] we also expect that media will be associated with increased self efficacy beliefs about having sex.

RQ 1: What sources of information do adolescents report learning about sex?

RQ 2: How are sources of sexual information other than the media associated with beliefs about having sexual intercourse?

RQ 3: Which types of media are associated with beliefs about having sexual intercourse?

H1: Adolescent who report using media as a source of sexual information, compared to adolescent who do not use media as a source, will believe that more of their friends or similar others are engaging in sexual intercourse.

H2: Adolescent who report using media as a source of sexual information, compared to adolescent who do not use media as a source, will have increased self-efficacy, or confidence, about their ability to have sexual intercourse in a variety of circumstances.

METHODS AND MEASURES

Study Design

The data presented come from the first wave of the Annenberg Sex and Media Study (ASAMS), a 3 wave longitudinal survey of youth 14–16 years of age at recruitment. The first wave of the web-based survey was conducted in the spring and summer of 2005.

Adolescents from the greater Philadelphia area were recruited through print and radio advertisements and word of mouth to complete the survey. Most of the adolescents responded to print advertisements in a local weekly newspaper. Parental consent and teen assent forms were mailed to all potential adolescents who responded to our advertisements and/or expressed interest in participating. Written parental consent and teen assent were then collected (via mail) for all participants.

Study protocols were approved by the University of Pennsylvania IRB. Eligibility criteria included age at the time of the survey (14, 15, or 16) and race/ethnicity (White, African-American, or Hispanic). The sample was limited to residents of the greater Philadelphia area. We employed a quota sampling design to enroll equal numbers of adolescents on each of the eligibility criteria as well as to enroll egqual numbers of males and females.

The online survey was launched in April 2005 following a pretest of the technology and measures in February of the same year. The web-based survey was accessible from any computer with internet access. Participants were given the option of taking the survey at the University or an off-site location (eg, home, school, or community library). The majority of the participants (84.9%) took the survey at home or another off-site location; 15.1% took the survey at the University. Enrolled adolescents were given an ID number and personal password to access the survey and to ensure confidentiality and privacy protection. On average adolescents took one hour to complete the survey and were given compensation of $25. Five hundred forty-seven adolescents successfully completed the survey. Because we were unable to recruit our quota of Hispanic adolescents, we restricted our analyses to Caucasian and African American participants. Thus our final study sample comprised of 459 youth, 59.5% of which were female and 50.9% African American. The mean participant age was 15 years (SD=0.81) and approximately 40% of respondents' mothers graduated from college.

Sources of Sexual Information

The question "How did you learn about sexual intercourse in your life?" preceded a list of possible sources: mother, father, sister(s), brother(s), cousin(s), grandmother, grandfather, friends, teachers, doctors, religious leaders (eg, ministers, priests, or rabbis), the media, and other. Respondents were asked to check all that applied. A "grandparent" category was created and used in the analysis if an adolescent checked either grandmother or grandfather. We also asked respondents specifically about what media they learned the most from "about sex." The response categories were television, movies, internet, magazines, videogames, and music.

The IM Belief Measures

The survey collected measures of the behavioral, normative, and self efficacy beliefs that are assumed to underlie attitudes, norms and self efficacy with respect to engaging in sexual intercourse (Figure 1). The initial list of belief items was identified through elicitation research using both open-ended and close-ended data to identify beliefs that were the most salient for sexual behavior. The behavioral beliefs were assessed on 7-point bipolar scales coded from −3 (extremely unlikely) to 3 (extremely likely) prefixed by the stem: "If I had sexual intercourse in the next 12 months, it would…" There were 13 items in total.

For analysis we grouped the 13 belief items into 4 categories. The groups represent beliefs pertaining to outcomes having to do with one's *self*, beliefs pertaining to relationships with *partners,* to relationships with *others* (eg, friends), and beliefs pertaining to *physical* outcomes. These groups are consistent with Bandura's classification of outcome expectancies as described in Social Cognitive theory,[20] but unlike Bandura we divide the

beliefs pertaining to social outcomes into partners and others. The belief items pertaining to *self* included: give me pleasure, make me feel as though someone had taken advantage of me (−), and make me feel good about myself [M=0.637 SD=1.65]. The group of items pertaining to *partners* were: increase the quality of relationship with my partner, hurt my relationship with my boyfriend/girlfriend (−), please my partner, and increase feelings of intimacy between me and my partner [M=0.801 SD=1.44]. The items pertaining to *others* included: get my parents mad (−), make my friends think badly of me (−), and gain the respect of my friends [M=−0.331 SD=1.44]. Finally, the *physical* items were: get me or my partner pregnant (−), give me an STD (−), and give me HIV/AIDS (−) [M=1.26 SD=1.83]. The items with the negative outcome evaluations (−) were reversed so that the higher the score, the more one's beliefs support engaging in sexual intercourse in the next 12 months. Organizing the beliefs in this way allowed us to investigate the influence of the information sources on the beliefs at a micro-level without examining each item separately. Alphas are not reported since these items are treated as causal indicators, not effect indicators.[28] Behavioral belief items, as well as normative beliefs discussed below, need not be unidimensional because individual beliefs may or may not be related to one another.

Injunctive norms were also assessed on 7-point bipolar scales ranging from −3 to 3 where −3 represented the response "Should not have" and 3 the response "Should have" to the stem: Does your [referent] think you should not/should have sexual intercourse in the next 12 months? The referents were: mother/female guardian, father/male guardian, friends, best friend, boyfriend/girlfriend, grandmother(s), brother(s), and sister(s). The injunctive norms for family member referents (M = −1.80, SD = 1.25) and for peer referents (M = −0.058, SD = 1.86) were analyzed separately. The measures of *descriptive norms*, combined into one scale, were ordinal items coded from 1 to 5 representing the responses "None," "A few," "About half," "Most," and "All" to the stem: About how many of your [referent] have ever had sexual intercourse? The referents were: female friends, male friends, females your age, and males your age (M = 2.79, SD = 1.01).

The measures of self-efficacy were also obtained on 7-point scales scored from -3 (certain I could **not**) to 3 (certain I could). More specifically, respondents were asked to indicate "How certain are you that you could have sexual intercourse in the next 12 months" under each of 9 circumstances. Each item presented a potential barrier to performing the behavior: even if you don't have a regular partner, even if your regular partner didn't want to, even if you didn't have a place to be alone, even if you didn't have a condom or birth control available, even if your parents would be mad, if you had been drinking or using drugs, even if you were feeling lonely or depressed, even if it went against your religion. The items were averaged into a single scale with an alpha of .90 [M = −0.815, SD = 1.69].

Statistical Analyses

First, differences in source use by gender, race, and age were assessed. Chi-square tests were used for tests on the dichotomous measures of information source, t-tests were used to assess gender and race differences on the beliefs, and ANOVAs were conducted to test for age differences. Then we used seemingly unrelated regression (SUR) analyses to determine the association between the belief outcomes and (1) the sources of information and (2) particular types of media from which the adolescents said they learned the most from about sex. All sources of information were included in the regression models, which were also adjusted for age, race, and gender. Thus the coefficients for each information source represent the effect of that source on the outcome of interest while controlling for the effects of the other information sources and the demographic variables. SUR estimates the equations simultaneously and allows for correlation between the error terms across equations[29] which is justified when the dependent variables have common causes of variation. The Breusch-

Pagan test determines if seemingly unrelated regression estimation is necessary by using the chi-squared test to evaluate the null hypothesis that the correlations between the errors of each equation are zero. Failing to reject this hypothesis implies the necessity of the seemingly unrelated approach.[30]

RESULTS

Sources of Sexual Information

On average, respondents reported learning about sex from 4.19 sources (SD = 2.48, range from 0 to 11). The most frequent were friends (74.9%), teachers (62.2%), mothers (60.9%), the media (57.0%) and doctors (41.5%). Grandparents (13.5%) and religious leaders (12.0%) were the least utilized sources of information about sex. The differences in source use by gender, race, and age are reported in Table 1. There were significant differences on reporting media as a source of sexual information by age, race, and gender with females reporting using media as a source more than males, Whites more than African-Americans, and older adolescents more than younger youth.

Type of Media Used as a Sexual Information Source

Respondents who indicated that they used the media as a source of information about sex chose fromamong 6 media (television, movies, music, internet, magazines, and videogames) to identify the one from which they learned the most about sex. Forty-three percent of the sample did not use media as a source of information, but television and movies were reported as the most informative media by 24.1% and 18.4% of adolescents respectively; 7.5% selected the internet, 4.8% magazines, and 2% music.

Influence of Information Sources on Underlying Beliefs

Table 2 provides the results of the regression analysis performed on the 4 types of behavioral beliefs: pertaining to self, to partners, to other individuals, and to physical outcomes. Regression diagnostics show that multicollinearity was not an issue: VIFs of the predictor variables ranged from 1.09 to 1.55 and the tolerances ranged from 0.65 to 0.92. There was no single source that significantly influenced all 4 types of behavioral beliefs. In fact, only 4 of the 11 sources appeared to have some influence on the adolescents' outcome expectancies after controlling for demographic variables. More specifically, the relationships between using a given information source and behavioral beliefs were only significant for mothers, cousins, religious leaders, and friends. Using cousins or friends as a source of information was associated with beliefs that having sex in the next 12 months would result in positive outcomes for one's self (eg, make me feel good about myself) and one's partner (eg, increase the quality of my relationship with my partner). Getting information from cousins was also associated with an increase in beliefs that having sex would not result in getting an STD or HIV. (Note: Again, these negative beliefs were recoded so that a positive coefficient represents beliefs that having sex in the 12 months would not result in getting an STD or HIV, etc.). In contrast, getting information from mothers was associated with an decrease in beliefs that having sex would not result in negative physical outcomes (ie, more likely to think one might get an STD/HIV). Finally, adolescents who used religious leaders as a source of information about sex were significantly less likely to believe that having sex would result in positive social outcomes with persons other than their partners.

Turning to normative beliefs, Table 3 shows that cousins and friends were again important sources. Getting information from these referents led to a higher perception that their peers were having sex and using friends as a source was associated with the injunctive normative belief that one's peers would approve of the respondent having sex in the next 12 months. Fathers as informational sources, however, were associated with a decrease in beliefs that

one's peer would approve. Table 3 also shows that the media, friends, and grandparents influenced self-efficacy beliefs. Using the media and friends as sources of sexual information was associated with adolescents' increased efficacy beliefs that they could overcome barriers in order to have sex. Grandparents as a source were associated with a decrease in self-efficacy beliefs.

Influence of Media Type on Underlying Beliefs

Table 4 presents the results from the regression analysis of how specific media (ie, television, movies, music, internet, magazines, and videogames) were associated with adolescents' underlying beliefs about sex. Those adolescents who did not report using media as a source of information about sex were used as the reference group. No respondent selected videogames as their primary source of information about sex so it was dropped from the analysis. As shown in Table 4, compared to not using media as a source of sexual information, learning about sex from movies and the internet was associated with an increase in beliefs that engaging in sex would lead to positive outcomes pertaining to self (eg, having sex will give me pleasure, make me feel good about myself) and with an increase in self efficacy about having sex. Learning from magazines was also associated with increased self efficacy. No other media were significantly associated with the remaining types of behavioral beliefs, nor with any of the normative beliefs.

DISCUSSION

Consistent with previous research, adolescents in this sample rely heavily on friends, parents, teachers, and the media for sexual information.[2–4] There were several differences in source use by race/ethnicity and gender, but the only difference by age group was with regards to media. The older the adolescents, the more they relied on media as a source of information. Among those who cited the media as an information source, television was the medium from which adolescents reported learning the most about sex, which is not surprising in light of research showing that 70% of television programs in 2005 contained some form of sexual content.[13]

With regards to information sources other than media, fully 62% of adolescents reported teachers as a source of information. Although teachers as a source were not associated with any change in the adolescents' beliefs about sex, clearly these youth rely on their teachers for information about sex. This finding is particularly salient as a national debate over the best approach to sex education in schools ensues. Sex education in schools is an opportunity for teachers to disseminate medically accurate information about sex and to teach skills needed to engage in safe sex practices.

Adolescents also tended to rely much more heavily on their mothers than their fathers for sexual information, although this varied by gender. This disparity, however, raises questions as to the respective roles of parents in the sexual education of their children, and who youth may feel most comfortable when having discussions about sex. There is considerable potential for programs that encourage and train fathers to impart sexual information to their children.

More important, however, are the findings that different sources of information were associated with different types of underlying beliefs about having sex. Of the wide array of sources available to and utilized by youth, only 7 sources were significantly associated with at least one type of behavioral, normative, or self-efficacy belief about sex: mothers, fathers, grandparents, cousins, friends, religious leaders, and the media. Note that 4 of these sources are family members, although cousins appear to behave more like friends or peers than presumably older and more authoritative family members.

The finding that mothers, fathers, grandparents, and religious leaders were associated with more negative beliefs about having sex is not surprising, but each authority figure was associated with a different type of belief. That is, for mothers and religious leaders, the beliefs were behavioral (pertaining to physical consequences of sex and social outcomes with persons other than their partner, respectively). The beliefs related to fathers were normative in that adolescents learning about sex from their fathers were less likely to think their peers would approve of the adolescent having sex; grandparents as sources of information appeared to decrease self-efficacy beliefs about having sex. Friends and cousins seemed to have the opposite influence of parental or authoritative figures on adolescents' beliefs about having sex-- they were associated with beliefs that sex has positive consequences with regards to self and relationships with partners and others and that having sex is an accepted norm. Friends and cousins were both associated with beliefs in the behavioral, normative, and self efficacy (for friends only) domains.

Using the media as a source was more common among females and older adolescents, and was preceded only by friends, teachers, and mothers as the most frequently reported source of information about sex. The influence of media on beliefs about sex was limited to self efficacy. Media as a source of sexual information was related to adolescents believing they could overcome barriers to have sex. This relationship was similar to that found between self efficacy beliefs and friends as a source, which supports the idea that the media often behaves as a peer in its relationship to sexual behavior.[27] The similarities between media and peers seem to exist for self efficacy, but not necessarily norms.

Of those youth who report the media as a source of sexual information, 89% also report friends as a source, suggesting that youth do not seem to treat them as interchangeable sources of information. Knowing that a majority of adolescents use these sources in concert with one another suggests maybe the information they receive from friends and the media is either related to different types of beliefs (eg, self efficacy versus normative beliefs), or that the 2 sources might be reinforcing the messages of one another (i.e, self efficacy beliefs).

Results on the association of specific media (ie, magazines, movies, and internet) with underlying behavioral and self efficacy beliefs are consistent with prior research that demonstrated a significant relationship between exposure to sexual content in magazines and the movies and higher intentions to have sex and engage in heavy sexual activity.[31] It is interesting to note, however, that adolescents reported learning the most about sex from television. Perhaps the positive association between learning about sex from magazines and from the internet and self efficacy makes it plausible to consider that adolescents rely on the media for more instructional information about sex.

It should be noted that due to our sampling approach the generalizabilty of our findings is limited to the adolescents that participated in the survey, but our data on information sources used are consistent with other nationally representative studies.[2–4] Also, the data are cross-sectional and causal inferences on the effect of the information sources on beliefs can not empirically supported. According to the Integrative Model, the choice of information sources precedes formation of underlying beliefs,[16] however it is also possible that adolescents' particular beliefs about having sex cause them to seek out information from certain sources. It may also be the case that our self-report measure of how adolescents learn about sex in their lives may underestimate the relationship between media and various underlying beliefs. Adolescents may not always be aware of how they are affected by media (or other sources) because "learning from media" is incidental and passive, not intentional and active as it may be with conversations with parents and friends.

The implications of this research are of consequence to parents, sex educators, public health professionals, media executives, and social marketing experts. Adolescents rely on multiple sources of information about sex, and no one source influences all types of beliefs associated with having sex. While parents, grandparents, and religious leaders seem to be associated with beliefs that delay or prevent sexual intercourse, learning about sex from friends, cousins, and the media were associated with beliefs that increase the likelihood of having sexual intercourse. Thus it is necessary for parents and authoritative community members, like religious leaders, to communicate about sex to adolescents. It is equally important for public education in schools and communities, either through school-based curricula, mass media campaigns, or interventions, to partake in responsibly informing and educating youth about sex. Such communication and education must go beyond simply the physical and emotional consequences of having sexual intercourse to include a conscious effort to promote healthy attitudes, norms, and values about sexuality during this critical time in adolescents' lives.

Acknowledgments

This publication was made possible by Grant Number 5R01HD044136 from the National Institute of Child Health and Human Development (NICHD). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the NICHD.

References

1. Ward L. Understanding the role of entertainment media in the sexual socialization of American youth: a review of empirical research. Dev Rev. 2003; 23:347–388.
2. Brown JD, Keller SN. Can the mass media be healthy sex educators? Fam Plann Perspect. Sep-Oct; 2000 32(5):255–256. [PubMed: 11030264]
3. Hoff, T.; Greene, L.; Davis, J. National survey of adolescents and young adults: sexual health knowledge, attitudes, and experiences. Menlo Park, CA: Kaiser Family Foundation; 2003.
4. Sutton MJ, Brown JD, Wilson KM, et al. Shaking the tree of knowledge for forbidden fruit: Where adolescents learn about sexuality and contraception. Brown.
5. Steele, JDJR.; Walsh-Childers, K., editors. Sexual teens, sexual media: Investigating media's influence on adolescent sexuality. Mahwah, NJ: Lawrence Erlbaum Associates; 2002. p. 25-57.
6. Miller KS, Kotchick BA, Dorsey S, et al. Family communication about sex: what are parents saying and are their adolescents listening? Fam Plann Perspect. Sep-Oct;1998 30(5):218–222. 235. [PubMed: 9782044]
7. Nolin MJ, Peterson KK. Gender difference in parent-child communication about sexuality: an exploratory study. J of Adolesc Res. 1992; 7(1):59–79.
8. Berenson AB, Wu ZH, Breitkopf CR, et al. The relationship between source of sexual information and sexual behavior among female adolescents. Contraception. Mar; 2006 73(3):274–278. [PubMed: 16472570]
9. DiClemente R. Predictors of HIV-preventive sexual behavior in a high-risk adolescent population: the influence of perceived peer norms and sexual communication on incarcerated adolescents' consistent use of condoms. J Adolesc Health. 1991; 12(5):385–390. [PubMed: 1751507]
10. Kirby, D. Risk and protective factors affecting teen pregnancy and the effectiveness of programs designed to address them. In: Romer, D., editor. Reducing Adolescent Risk: Toward an Integrated Approach. Thousand Oaks: Sage; 2003. p. 265-283.
11. Kirby, D.; Lepore, G.; Ryan, J. National Campaign to Prevent Teen Pregnancy. ETR Associates; 2005. Sexual and risk protective factors: factors affecting teen sexual behavior, pregnancy, childbearing and sexually transmitted disease: Which are important? Which can you change?.
12. Roberts, DF.; Foehr, UG.; Rideout, V. Generation M: Media in the lives of 8–18 year olds. Menlo Park, CA: Kaiser Family Foundation; 2005.
13. Kunkel D, Cope K, Biely E. Sexual messages on television: comparison findings from three studies. J Sex Res. Aug; 1999 36(3):230–236.

14. Kunkel, D.; Eyal, K.; Finnerty, K., et al. Sex on TV 2005: a Kaiser Family Foundation Report. 2005.
15. Ward L, Rivadeneyra R. Contributions of entertainment television to adolescents' sexual attitudes and expectations: The role of viewing amount versus viewer involvement. J Sex Res. Aug; 1999 36(3):237–249.
16. Escobar-Chaves S, Tortolero S, Markham C, et al. Impact of media on sexual attitudes and behaviors. Pediatrics. Jul; 2005 116(1):303–326. [PubMed: 16001458]
17. Fishbein M. The role of theory in HIV prevention. AIDS Care. 2000; 12(3):273–278. [PubMed: 10928203]
18. Fishbein, M.; Ajzen, I. Belief, attitude, intention and behavior: An introduction to theory and research. Reading, MA: Addison Wesley; 1975.
19. Ajzen I. The theory of planned behavior. Organ Behav Hum Decis Process. 1991; 50:179–211.
20. Rosenstock IM. Why people use health services. Milbank Mem Fund Q. 1966; 44:94–127. [PubMed: 5967464]
21. Bandura, A. Social Learning Theory. Englewood Cliffs, NJ: Prentice Hall; 1977. Fishbein, M.; Triandis, H.; Kanfer, F., et al. Factors influencing behavior and behavior change. In: Baum, A.; Reveson, T.; Singer, J., editors. Handbook of health psychology. Mahwah, NJ: Lawrence Erlbaum Associates; 2001. p. 3-17.
22. Cialdini R, Reno R, Kallgren LC. A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. J Pers Soc Psychol. 1990; 58:1015–1026.
23. Holbert R, Stephenson M. The importance of indirect effects in media research: Tesing for mediation in structural equation modeling. Journal of Broadcasting and Electronic Media. 2003; 47:556–572.
24. Martino S, Collins R, Kanhouse D, et al. Social cognitive processes mediating the relationship between exposure to television's sexual content and adolescent's sexual behavior. J Pers Soc Psychol. 2005; 89:914–924. [PubMed: 16393024]
25. Buhi E, Goodson P. Predictors of adolescent sexual behavior and intention: a theory-guided systematic review. J Adolesc Health. 2007; 40:4–21. [PubMed: 17185201]
26. Webb TL, Sheeran P. Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. Psychol Bull. 2006; 132(2):249–268. [PubMed: 16536643]
27. Brown JD, Halpern CT, L'Engle KL. Mass media as a sexual super peer for early maturing girls. J Adolesc Health. 2005; 36(5):420–427. [PubMed: 15837346]
28. Bollen K, Lennox R. Conventional wisdom on measurement: a structural equation perspective. Psychol Bull. 1991; 110:305–314.
29. Kennedy, P. A Guide to Econometrics. 5. Cambridge, MA: MIT Press; 2003.
30. Bruesch T, Pagan A. The Lagrange multiplier test and its applications to model specification in econometrics. Rev Econc Stud. 1980; 47:239–254.
31. Pardun C, L'Engle K, Brown J. Linking exposures to outcomes: early adolescents' consumption of sexual content in six media. Mass Communication & Society. 2005; 8(2):75–91.

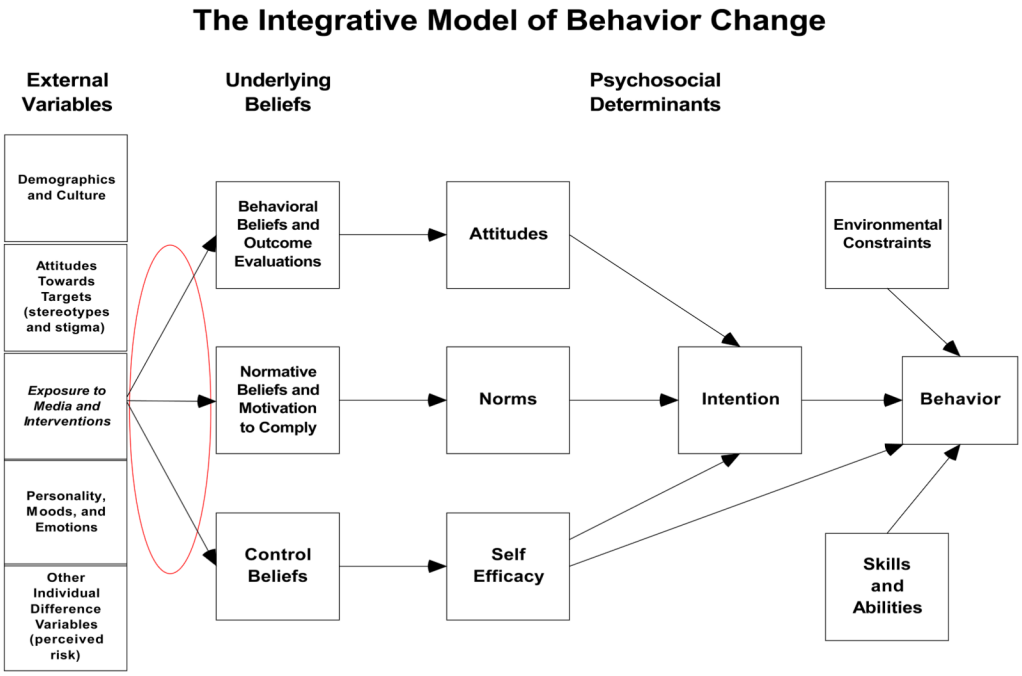

Figure 1.
The Integrative Model of Behavior Change

Table 1

Reported Sources of Information about Sex by Gender and Race

Sources of Information	Total	Gender		Race		Age		
	(n=458)	Males (n=186)	Females (n=272)	White (n=225)	African-American (n=232)	Age 14 (n=151)	Age 15 (n=158)	Age 16 (n=150)
Friends	74.9%	65.1%**	81.6%	78.7%	71.6%	75.3%	72.8%	76.7%
Teachers	62.2%	48.4%**	71.7%	70.2%**	54.7%	58.0%	639.%	64.67%
Mother	60.9%	51.6%**	67.3%	57.3%	64.7%	59.3%	61.4%	62.0%
Media	57.0%	50.5%*	61.4%	64.0%**	50.4%	49.3%*	55.7%	66.0%
Doctors	41.5%	36.5%	44.9%	31.6%**	51.3%	34.7%	43.0%	46.7%
Father	32.8%	41.9%**	26.5%	29.8%	35.8%	36.0%	35.4%	26.7%
Cousin(s)	29.3%	25.8%	31.6%	22.2%**	36.2%	27.3%	34.8%	25.3%
Brother(s)	18.1%	22.6%*	15.1%	12.9%**	23.3%	14.0%	23.4%	16.7%
Sister(s)	17.7%	14.0%	20.2%	14.7%	20.7%	13.3%	19.6%	20.0%
Grandparent	13.5%	11.3%	15.1%	22.4%**	4.4%	10.0%	15.8%	14.7%
Religious leaders	12.0%	11.8%	12.1%	12.4%	11.6%	14.0%	10.1%	12.0%

Notes: Chi-square was used to test for differences in source use for gender and for race; ANOVA was used to test for differences by age.

* P<.05,

** P<.01.

Table 2

Seemingly Unrelated Regression Results for Sources of Sexual Information on Behavioral Beliefs (N = 442)

	Behavioral Beliefs			
Sources of Information	**Self b (SE)**	**Social, partner b (SE)**	**Social, others b (SE)**	**Physical b (SE)**
Mother	−0.008 (0.16)	−0.179 (0.16)	−0.065 (0.14)	−0.534 (0.21)**
Father	−0.259 (0.17)	−0.028 (0.17)	0.025 (0.15)	−0.080 (0.22)
Sister	−0.240 (0.18)	−0.251 (0.18)	−0.086 (0.16)	−0.117 (0.23)
Brother	−0.086 (0.19)	−0.100 (0.18)	−0.086 (0.16)	−0.161 (0.23)
Cousin	0.367 (0.17)*	0.336 (0.16)*	0.130 (0.14)	0.466 (0.21)*
Grandparent	−0.306 (0.21)	−0.017 (0.20)	0.015 (0.18)	0.065 (0.26)
Friends	0.468 (0.18)**	0.568 (0.18)**	0.176 (0.16)	0.276 (0.23)
Teachers	0.126 (0.16)	0.155 (0.16)	−0.101 (0.14)	−0.082 (0.20)
Doctors	0.270 (0.16)	0.017 (0.15)	−0.005 (0.13)	0.174 (0.20)
Religious	−0.145 (0.21)	0.155 (0.20)	−0.360 (0.18)*	−0.312 (0.26)
Media	0.264 (0.15)	−0.123 (0.15)	0.146 (0.13)	−0.190 (0.19)
White	−0.523 (0.15)**	−0.366 (0.14)**	−0.854 (0.13)**	−0.253 (0.18)
Female	−1.65 (0.15)**	−0.693 (0.14)**	−1.25 (0.13)**	−0.637 (0.19)**
Age 15	0.207 (0.16)	0.443 (0.16)**	0.260 (0.14)	0.518 (0.21)*
Age 16	0.526 (0.17)**	0.536 (0.16)**	0.360 (0.14)*	0.368 (0.21)
R squared	0.28	0.12	0.30	0.09

Breusch-Pagan test of independence for belief outcomes: $\chi^2(6)=388.555$, P<.00;

*P<=.05,

**P<=.01

Table 3

Seemingly Unrelated Regression Results for Sources of Sexual Information on Normative (N = 443) and Self Efficacy Beliefs (N = 437)

	Beliefs			
Sources of Information	**Injunctive norms, family b (SE)**	**Injunctive norms, peers b (SE)**	**Descriptive norms b (SE)**	**Self efficacy b (SE)**
Mother	−0.203 (0.13)	−0.206 (0.19)	0.091 (0.09)	0.258 (0.19)
Father	−0.002 (0.14)	−0.406 (0.20)*	−0.138 (0.10)	−0.339 (0.20)
Sister	−010 (0.15)	−0.331 (0.21)	−0.072 (0.11)	−0.326 (0.21)
Brother	0.130 (0.15)	−0.002 (0.22)	−0.060 (0.11)	0.118 (0.21)
Cousin	0.031 (0.14)	0.274 (0.19)	0.22 (0.10)*	0.356 (0.19)
Grandparent	0.210 (0.17)	0.023 (0.25)	−0.102 (0.13)	−0.644 (0.24)**
Friends	0.186 (0.15)	0.508 (0.21)*	0.496 (0.11)**	0.491 (0.21)*
Teachers	−0.121 (0.13)	0.127 (0.19)	0.073 (0.09)	−0.049 (0.18)
Doctors	−0.001 (0.13)	0.200 (0.18)	−0.008 (0.09)	−0.076 (0.18)
Religious	−0.320 (0.17)	−0.058 (0.25)	0.047 (0.12)	−0.234 (0.24)
Media	0.025 (0.12)	0.016 (0.17)	−0.075 (0.09)	0.363 (0.17)*
White	−0.212 (0.12)	−0.931 (0.171)**	−0.862 (0.09)**	−0.269 (0.17)
Female	−0.849 (0.12)**	−1.59 (0.17)**	0.198 (0.09)*	−1.01 (0.17)**
Age 15	0.401 (0.13)**	0.408 (0.191)*	0.459 (0.10)**	0.242 (0.19)
Age 16	0.467 (0.14)**	0.470 (0.19)*	0.754 (0.10)**	0.420 (0.19)*
R squared	0.17	0.25	0.34	0.14

Breusch-Pagan test of independence for normative outcomes: χ^2 (3) =115.114, P<.00;

*P<=.05,

**P<=.01

Table 4

Seemingly Unrelated Regression Results for Type of Media Learned about Sex on Behavioral Beliefs, Normative, and Self Efficacy Beliefs

	Behavioral Beliefs (n=439)			
Media	**Self b (SE)**	**Social, partner b (SE)**	**Social, others b (SE)**	**Physical b (SE)**
Television	0.123 (0.17)	0.038 (0.17)	−0.281 (0.15)	−0.259 (0.22)
Movies	0.701 (0.19) **	0.130 (0.18)	−0.073 (0.16)	−0.119 (0.24)
Music	0.502 (0.49)	0.318 (0.48)	−0.373 (0.415)	0.111 (0.61)
Internet	1.01 (0.27) **	0.382 (0.26)	0.153 (0.23)	0.123 (0.34)
Magazines	0.606 (0.32)	−0.056 (0.315)	−0.071 (0.27)	0.201 (0.41)
White	−0.530 (0.14) **	−0.350 (0.135) **	−0.878 (0.12) **	−0.312 (0.17)
Female	−1.48 (0.14) **	−0.571 (0.14) **	−1.21 (0.18) **	−0.631 (0.18) **
Age 15	0.185 (0.16)	0.377 (0.16) *	0.251 (0.14)	0.534 (0.21) **
Age 16	0.532 (0.17) **	0.481 (0.16) **	0.362 (0.14) *	0.352 (0.21)
R squared	0.27	0.07	0.29	0.06

	Normative Beliefs (n=441) and Self Efficacy Beliefs (n=435)			
Media	**Injunctive norms, family b (SE)**	**Injunctive norms, peers b (SE)**	**Descriptive norms b (SE)**	**Self efficacy b (SE)**
Television	0.54 (0.14)	0.098 (0.20)	0.050 (0.11)	0.236 (0.20)
Movies	0.073 (0.15)	0.202 (0.22)	0.134 (0.11)	0.632 (0.21) **
Music	−0.685 (0.40)	−0.297 (0.57)	0.181 (0.29)	0.849 (0.56)
Internet	0.040 (0.22)	0.369 (0.32)	0.154 (0.16)	0.619 (0.31) *
Magazines	0.068 (0.26)	0.699 (0.38)	0.173 (0.19)	1.25 (0.38) **
White	−0.270 (0.11) *	−0.938 (0.16) **	−0.827 (0.08) **	−0.161 (0.15)
Female	−0.860 (0.11) **	−1.44 (0.16) **	0.334 (0.08) **	−0.939 (0.16) **
Age 15	0.452 (0.13) **	0.416 (0.19) *	0.423 (0.10) **	0.205 (0.19)
Age 16	0.482 (0.14) **	0.495 (0.19) *	0.719 (0.10) **	0.352 (0.193)
R squared	0.15	0.21	0.28	0.11

Breusch-Pagan test of independence for belief outcomes: χ^2 (6) =274.815, P<.00 and for normative outcomes: χ^2 (3) =72.266, P<.00;

* P<.05,

** P<.01