SEX EDUCATION ATTITUDES AND OUTCOMES AMONG NORTH AMERICAN WOMEN

Monnica T. Williams and Laura Bonner

ABSTRACT

Attitudes and outcomes of sex education received by North American women are examined via an Internet survey (N = 1,400). Mean age was 19.5, with 24% reporting one or more unplanned pregnancies. Women were more satisfied with sex education from informal sources than from parents, schools, and physicians. Those receiving sex education from parents or schools reported fewer pregnancies and abortions. In school, women receiving a combination of contraceptive and abstinence education and those receiving primarily abstinence education were least likely to experience unplanned pregnancy. Religious identification was significantly related to unplanned pregnancy and type of sex education received from parents. These factors seem to play a significant role in reducing unplanned pregnancy and abortion.

BACKGROUND

Unplanned pregnancy commands attention as a serious problem in the social, economic, political, and individual realms. Numerous attempts have been made to reduce the incidence of unplanned pregnancy, and birth control education has been investigated repeatedly as a key component of such efforts (Dull & Blythe, 1998; Lagana & Hayes, 1993). Programs designed to prevent unplanned pregnancy re-

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Laura Bonner, Department of Psychology, Alliant University, Fresno, CA.

Reprint requests should be sent to Monnica Terwillinger Williams, University of Virginia, Department of Psychology, P.O. Box 400400, Charlottesville, VA 22904-4400. E-mail to mt4h@virginia.edu

ceive substantial public funding (Illinois Caucus for Adolescent Health, 1997, as cited in Coley and Chase-Lansdale, 1998). However, the preferred sources (Kyman, 1998) and content (Coley & Chase-Lansdale, 1998) of birth control education remain controversial.

A better understanding of the variables associated with unplanned pregnancy can help psychologists, educators, and others design and implement more effective methods for reducing the number of unplanned pregnancies. In the words of Coley and Chase-Lansdale, "A greater commitment is needed to funding scientifically rigorous evaluations" of sex education programs (1998, p. 161). Attempts to evaluate the effectiveness of specific sex education have yielded inconsistent, even contradictory, results. Some studies (Schinke, Blythe, & Gilchrist, 1981; Frost & Forest, 1995) have shown that such programs increase compliance with lower-risk behaviors. Other have found that though knowledge about contraceptive behaviors increased, the actual behaviors were not significantly affected (Haignere, Gold, & McDanel, 1999; Kirby, Korpi, Adivi, & Weissman, 1997; Viser & van Bilsen, 1994; Mitchell-DiCenso et al., 1997). Contraceptive information alone does not address the needs of individuals who prefer to significantly delay the onset of sexual activity or whose personal or moral beliefs preclude the use of artificial contraception. Nor does it address the problem of the small but significant failure rates of contraceptive techniques (Haignere, Gold, & McDanel, 1999). Our earlier work (Bonner, Terwilliger, & Kuba, 1999) indicated that respondents who had reported receiving abstinence education experienced fewer unplanned pregnancies than those who had received other forms of sex education. Opponents of abstinence-only education argue that such programs may increase reluctance to use contraception (Lagana & Hayes, 1993, p. 355), which could lead to increased pregnancies among those who do choose to become sexually active.

The appropriate source or sources of birth control education have also been debated. Possible sources for formal presentation include parents, schools, clinics, and doctors, while many also seek out information from other sources, including peers, books, and more recently, the Internet (Pistella & Bonati, 1998; Roffman, Shannon, & Dwyer, 1997). King and Lorusso (1997) found that adolescents may not be satisfied with the information provided by parents, even though the parents perceived their efforts at home-based education as satisfactory. Given the potential for inadequate efforts from a single source, it seems that education from multiple sources is preferable.

This study was intended to further examine the findings of our earlier work, that sex education comprised in large part of abstinence

information would be more effective than education without such information. The hypotheses that receiving sex education from school and from parents would be effective in reducing unplanned pregnancy were also tested.

METHOD

Participants

Participants were 1,400 North American women, with an average age of 19.5 (SD = 5.87). The majority of respondents (approximately 900) were under age 20. Approximately 70% indicated having a Christian affiliation. The average number of unplanned pregnancies was 0.498. The majority of participants had never experienced an unplanned pregnancy (N = 1041, 74.4%), and about a quarter had experienced one or more (N = 346, 24.7%). Approximately 13% reported one or more abortions. Eighty-two percent reported receiving some type of birth control education in school, 66.5% from parents, 47.7% from a doctor, and 40.2% from a clinic/agency, while 77.7% sought out information from friends, 43.3% from books, 36.8% from the Internet, and 19.2% from other sources. Less than 3% of the sample had not received sex education from any source.

Measures

Gathering data from young adolescents requires great sensitivity, especially when the subject matter is of a personal nature. These issues are of inherent interest to members of this age group, and it is important to obtain information about their experiences. Because these data were gathered via the Internet, it was not possible to obtain parental consent to adolescents' participation. We note that societal precedent supports the ability of adolescents to obtain information about sexuality and reproductive issues without parental involvement.

Information was gathered using an on-line multiple-choice questionnaire, which was presented when individuals found the survey listed in one of several popular Internet search engines. One concern was that participants' responses could be biased based on their method of access to the questionnaire. For example, if any respondents had been able to access this survey through links from a contraceptive site, a religious site, or other specialized site, they might have felt pressure to answer in conformity with the opinions expressed in the original site. Therefore, this survey was not linked from any site.

Participants were asked basic demographic questions, number of prior pregnancies with pregnancy outcomes, and questions specific to the type of education received. For the modalities of school, parents, doctors, and clinics, participants were asked if birth control information was Primarily Contraceptive (e.g., condom, pills), Primarily Abstinence (e.g., waiting until marriage, chastity), Contraception and Abstinence were Emphasized Equally, or Neither Were Discussed. For the modalities of friends, Internet, books, and other sources, participants were simply asked if they sought this information. For all modalities, participants were asked when they obtained the information with respect to the timing of their unplanned pregnancies, and to rate the usefulness of the information on a Likert-type scale from 1-7. Participants were able to leave questions blank and were given room to make their own free-response comments. Total time to complete the questionnaire is estimated at about 10 minutes. All protocols and procedures were approved by the Institutional Review Board at the second author's institution.

Procedures

Participants were invited to complete a survey asking about their experiences of sex education and unplanned pregnancies. They were not required to give their names or any other identifying information. Data were stored off-line so that security of the information was preserved; risk to participants must therefore be considered minimal. Although reactive effects were not specifically addressed, participants were able to request a personalized response if they required further information. The introduction to the on-line survey included a statement that data provided would be used for scientific research and statistical analyses, and subjects could cease participation at any time. Once completed, respondents were offered links to birth control information. Erroneous and duplicate responses were few, easily identified, and removed prior to analysis.

Analysis was performed using the following variables: number of sources of sex education, satisfaction with sex education, and type of birth control education. We examined relationships between these and number of unplanned pregnancies and abortions using ANOVA, Chi Square, and various post hoc tests.

RESULTS

Sources of Formal Sex Education

The majority of women received some type of formal sex education. Table 1 displays the percentage of women receiving different types of

Table 1

Percentage Receiving Birth Control Information by Modality

	Modality			
	School	Parents	Own Doctor	Clinic/Agency
Yes	81.9%	66.5%	47.7%	40.2%
No	17.1%	31.0%	47.8%	54.3%

Note. Percentages do not add up to 100% as not all respondents provided a response to this question.

birth control information (contraceptive, abstinence, or equal amounts of both), by modality.

Satisfaction with Sex Education

Respondents were asked to rate the usefulness of each modality on a scale of 1-7. Overall, women were more satisfied with sex education from friends, books, and the Internet than that received from parents, schools, clinics, and doctors, as noted in Figure 1.

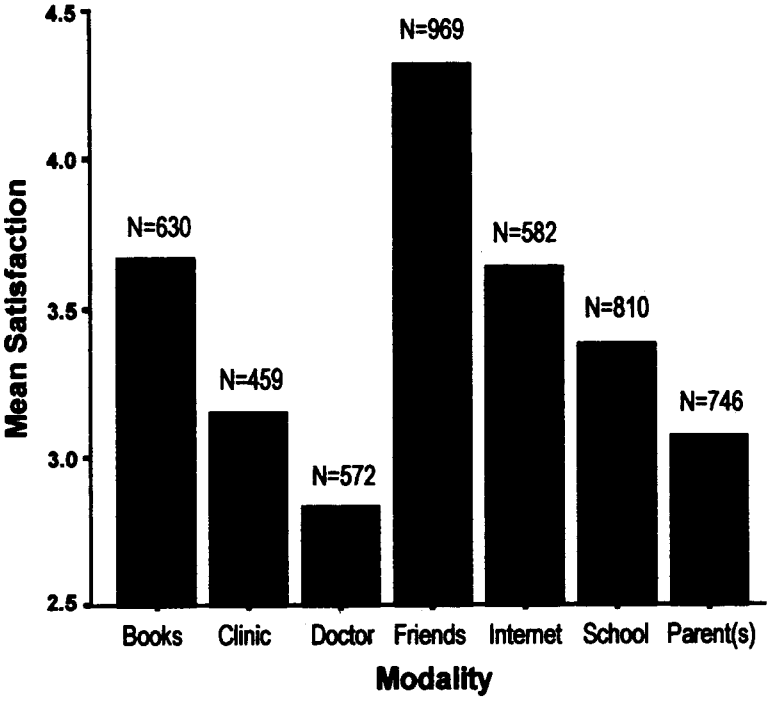
Mean satisfaction with sources of sex education was significantly negatively correlated with number of unplanned pregnancies ($r = 0.13$, $p < 0.01$). An ANOVA found significant differences in satisfaction by type of sex education received in school ($N = 808$, $F = 46.5$, $df = 3$, $p < .001$). A Dunnett post hoc test revealed that women most preferred equal amounts of contraceptive and abstinence education to courses containing either primarily contraceptive information, primarily abstinence information, or neither (Mean differences: 0.54, $SE = .143$; 0.99, $SE = .163$; 2.14, $SE = .189$; $p < .001$). Contraceptive information alone was preferred to abstinence information alone, but this difference was not significant (Mean differences: .45, $SE = .176$, $p = .081$). Women who were offered neither type of information found their school sex education least useful ($N = 98$, $p < .001$).

Type of Sex Education and Unplanned Pregnancy

Respondents were asked to classify the type of birth control information received from varying sources as primarily contraceptive, primarily abstinence, both equally, or other/none. The tables below compare type of sex education with number of reported unplanned pregnancies.

Figure 1

Mean Satisfaction with Sex Education by Modality



Note. Subjects rated usefulness on a scale of 1–7.

Respondents were not required to answer all questions, and those who left these questions blank were not counted in the analysis. (See Table 2.)

For the modalities of Doctor and Clinic/Agency, mean unplanned pregnancies was inflated as many seek help from these sources only after becoming pregnant. We corrected for this by eliminating all respondents who indicated obtaining birth control information after their first unplanned pregnancy from each individual category, and included only those who indicated receiving contraceptive information, abstinence information, or both. The total number of participants thus eliminated was small (approximately 5%). Results appear in Table 3. Most comparisons were nonsignificant, but our analysis did show some statistically significant differences, discussed below.

Table 2

Mean Number of Unplanned Pregnancies
by Modality and Type of Birth Control Information Received

	Modality							
	School		Parents		Doctor		Clinic/Agency	
Type of Birth Control Information	*M*	*N*	*M*	*N*	*M*	*N*	*M*	*N*
Primarily Abstinence	0.34	247	0.39	459	0.76	37	1.26	23
Contraception and Abstinence Equally	0.38	541	0.41	270	0.61	187	0.53	180
Primarily Contraceptive	0.57	331	0.56	173	0.70	425	0.77	349
Other/None	0.87	212	0.61	413	0.32	640	0.34	728
Total	0.50	1331	0.49	1315	0.50	1289	0.50	1280

Table 3

Mean Number of Unplanned Pregnancies
Adjusted for Time Birth Control Information Received

	Modality							
	School		Parents		Doctor		Clinic/Agency	
Type of Birth Control Information	*M*	*N*	*M*	*N*	*M*	*N*	*M*	*N*
Primarily Abstinence	0.31	230	0.33	417	0.32	28	0.67	15
Contraception and Abstinence Equally	0.32	522	0.36	258	0.32	156	0.26	141
Primarily Contraceptive	0.40	295	0.43	155	0.41	325	0.40	258
Total	0.34	1047	0.36	830	0.38	509	0.36	414

Type of Sex Education and Unplanned Pregnancy

The number of unplanned pregnancies was severely skewed and did not approximate a normal distribution. Therefore, further analyses were conducted using nonparametric statistics. The data were recast in terms of number of women who had ever experienced unplanned pregnancy versus those who had not, and a Chi Square analysis was performed. For the modalities of School and Parents, women receiving neither abstinence nor contraceptive information experienced significantly more unplanned pregnancies ($p < .05$). In schools, students receiving abstinence or equal parts abstinence-contraceptive education were 1.68 times less likely to experience unplanned pregnancy than those receiving no sex education; students receiving contraceptive education were 1.45 times less likely to experience unplanned pregnancy than those receiving no sex education. For the modalities of School and Parents, mean unplanned pregnancies for the abstinence and abstinence-contraception groups were indistinguishable. Combining these two groups and comparing them to the remaining women who did not receive abstinence education, we found that significantly fewer women experienced unplanned pregnancy when abstinence education was a major component of the instruction received. Mean number of women experiencing unplanned pregnancies for groups with and without abstinence education were 0.23 vs. 0.28 for school ($\chi^2 = 5.62$, $df = 1$, $p = .018$) and 0.20 vs. 0.28 for parents ($\chi^2 = 12.79$, $df = 1$, $p = .000$).

School Sex Education and Abortions

A one-way ANOVA revealed significant differences in number of abortions experienced by women receiving different types of sex education in school ($F = 3.08$, $df = 3$, $p = .027$). A Tukey post hoc test revealed that compared to no sex education ($N = 207$, $SD = 0.27$), both abstinence ($N = 216$, $SD = 0.12$) and a combination of contraceptive and abstinence education ($N = 480$, $SD = 0.18$) were significantly correlated with fewer abortions ($p = .049$ and $p = .031$, respectively).

Religion and Unplanned Pregnancy

A one-way ANOVA revealed significant differences in number of unplanned pregnancies experienced by women of different religions ($F = 2.162$, $df = 4$, $p = .071$), whereby respondents with no religious identification were more likely to have at least one unplanned pregnancy. Those affiliated with major non-Christian religions (Judaism, Hinduism, Islam, and Buddhism) had a mean of 0.38 unplanned pregnancies ($N = 32$, $SD = 1.36$). Those affiliated with Christian religions had a mean of 0.44 unplanned pregnancies ($N = 942$, $SD = 1.13$), and

those not affiliated with any religion had a mean of 0.66 unplanned pregnancies ($N = 171$, $SD = 1.79$).

The respondent's religion was also significant related to type of sex education received from parents, but not from other sources. Parents of respondents who indicated a Christian affiliation were more likely to teach abstinence to their daughters, but a third of respondents (30.0% Christian and 33.7% non-Christian) had not received any birth control information from their parents.

Our study found no relationship between type of sex education received in school and religion of respondent. However, those whose parents emphasized abstinence were more likely to receive abstinence school education.

Validation of Internet Sample

To validate the representatives of our sample and the verity of responses, we compared several of our measurements to national statistics. For our sample, 15.7% of women aged 15–19 reported ever having experienced one or more unplanned pregnancies, 41.6% of women aged 20–24, 57.8% of women aged 25–29, and 63.9% of women aged 30–34 (adjusted for unequal N in each age group <1% unclassifiable). These numbers were extremely close to those given by Henshaw (1998), indicating a highly representative sample. Our numbers are slightly higher (about 2%), as would be expected since Henshaw's data exclude miscarriages and ours does not.

For our sample, 4% of women aged 15–19 reported having experienced one or more abortions (16.2% not responding), 14% of women aged 24–24 (6.8% not responding), and 19% of women aged 25–29 (6.8% not responding). These values are about 55% lower than would be expected based on Henshaw's (1998) estimates, but compare well when abortion underreporting is taken into account (Smith et al., 1999).

Although we did not specifically ask respondents for racial information, we can estimate these values by other surveys gathered from the same source at approximately the same time. This results in a sample that is 66% White, 17% Black, 11% Hispanic, 1% Pacific Islander, and 5% Other races. This corresponds fairly well to national statistics based on census data (Pollard, 1999), although Hispanics and Asians appear to be underrepresented in our sample.

DISCUSSION

Sex Education Attitudes

As expected, mean satisfaction with sources of sex education was related to fewer unplanned pregnancies. Women were more satisfied

with information they sought out than with information formally provided, preferring friends and the Internet to sources such as schools and doctors. This is so despite the fact that professional sources might be thought to provide more accurate information. The fact that friends were a highly preferred source of information would lend support for a peer-education model (Smith & DiClemente, 2000). Our study indicates that adolescents were most satisfied with school information that emphasized both abstinence and contraceptives equally. Those who design birth control education programs might wish to include periodic evaluations of their students' satisfaction with the information provided to determine the factors influencing satisfaction.

One further point is that participants' descriptions of the sex education they received were based on their own subjective impressions. It is impossible to determine, for example, whether a curriculum designed to present abstinence and contraception equally would be experienced as balanced by students. The method by which the material is presented could leave students recalling primarily elements emphasized by the instructor. The accuracy with which sex education programs convey their intended messages is an interesting avenue for further research.

Sex Education Outcomes

The findings of the current study supported but did not replicate our earlier work (Bonner, Terwilliger, & Kuba, 1999), in which we surveyed women visiting an online pregnancy help service and birth control information site. Among both groups we found a significant relationship between abstinence-focused education and reduced incidence of unplanned pregnancy. However, as the surveys used in those studies were accessed from a website focusing on birth control issues, a certain response demand may have been perceived by respondents. The current study is, as described earlier, free of such bias.

One reason for inconsistent findings in other studies may be the means used to assess effectiveness of education. An intervention that clearly promotes a certain type of pregnancy prevention may create a high perceived demand for a certain type of response. Therefore, when educators question students about the effectiveness of a program, reported rates of compliance may be inflated. Such a possibility is especially salient when adolescent behaviors are involved, since adolescents have been found in other contexts to underreport sensitive reproductive information (Smith, Adler, & Tschann, 1999). Individuals who voluntarily, and with the option of anonymity, contact an Internet-based resource might not have such high response demand and may therefore feel more free to respond accurately.

One potentially important finding in this study is the lower rate of unplanned pregnancy among those who had received sex education which included a focus on abstinence, compared with those educated primarily about contraceptives or no forms of birth control. This finding was consistent for the modalities of school, parents, and own physician, when the information was received prior to an unplanned pregnancy. The challenge for sex educators and other professionals may be to make sure that students and young patients fully understand that delaying sexual activity is a viable alternative to contraception. Women who practice abstinence may be more likely to practice it consistently than those who use contraceptive methods, which may be forgotten or used improperly at times. Nonetheless, differences between types of sex education were small when examined individually. These findings may resolve some of the debate over school sex education content; one clear finding was that any type of sex education was significantly preferable to none in reducing both unplanned pregnancy and abortion.

Our study also indicated that those educated about abstinence by their parents are more likely to come from a religious or cultural tradition in which premarital sexual activity is strongly discouraged. Therefore, these women may be motivated to practice abstinence for reasons other than pregnancy avoidance. These same religious and cultural traditions may similarly discourage single motherhood, so that these women may be more motivated than others to avoid unplanned pregnancy. Such possibilities are not addressed in the current study, but do suggest additional avenues for further research.

The Internet for Data Collection

The central issues addressed in this study were attitudes and outcomes of sex education. However, this study also illustrates the use of the Internet as a research tool. Within the past several years, the Internet has become a prominent source of information on a wide variety of subjects, including health care. The anonymity and convenience of Internet use, and the range of methods in which information may be presented, make the Internet a useful means of gathering information for many individuals.

The Internet is a powerful and efficient research tool. Since many people worldwide have Internet access, it is possible to gather information from a large number of subjects in a shorter period of time. Participants who fill out a brief survey in the course of an Internet search may do so anonymously and without investing excessive time or effort in the process. Participation rates and response veracity may therefore

be improved when compared to other means of data collection. Concerns have been raised about the possibility that individuals, especially adolescents, may tend to be dishonest when answering questions about sensitive topics. Certainly variables, such as race or age of respondents would be more difficult to verify when an experimeter is not present, but recent research indicates that Internet participants are at least as likely to give honest responses as traditional samples (Gosling, Vazire, Srivastava, & John, 2004). Interested individuals are directed to Nosek, Banaji, and Greenwald (2002) for a more in-depth discussion of issues involving research on the Internet, an increasingly important modality of scientific inquiry.

Sample Bias

Like traditional student samples, Internet samples are not representative, which may limit generalizability of the findings. Only those individuals with Internet access were able to participate, which may bias the sample to include more individuals of higher economic and educational status. As Internet access increases, becoming available in public schools, public libraries, and other community sites, this factor becomes less significant. Another issue is that participants are self-selected. Researchers do not contact participants; rather, participants contact researchers. Therefore, only those with a pre-existing interest in the subject matter, and those who perceive a benefit in gathering more information, are likely to participate. It is possible that women who were dissatisfied with their birth control education or method might be more interested in participating in a sex education survey. However this is also true of studies which recruit subjects via newspaper or radio ads. Several studies use clinic subjects for their sample, yet women visiting a clinic for birth control or abortion would represent only those unhappy with their current birth control approach. Personality characteristics of those who use the Internet for birth control information may differ from those of the general population. They might have higher motivation to avoid pregnancy, and they may have higher-than-average belief in their own ability to evaluate the information found in Internet sources. Fortunately, recent research seems to indicate that self-selected Internet participants are at least as likely to produce valid data as traditional samples (Gosling, Vazire, Srivastava, & John, 2004).

The Internet as an Intervention

The Internet was considered a useful modality for information by respondents. This finding may reflect characteristics of this sample,

which was obtained entirely through the Internet. This study highlights the potential of the Internet as a means of making birth control and STD information more widely available. Easy and anonymous access of this type of information is of great benefit to students who would otherwise be required to approach a teacher, clinician or other individual with potentially embarrassing questions. However, it has been pointed out that medical information found on the Internet may not be reliable (Impicciatore et al., 1997). In the course of our research, it was noted that companies marketing birth control drugs and devices provided birth control information favorable to their own products.

CONCLUSION

Women benefit from and prefer a more expansive presentation of sex education, including instruction from a variety of sources, over a single type or modality. School sex education plays a significant role in reducing unplanned pregnancies and abortion, and a combined approach seems more effective than an approach emphasizing only one type of pregnancy prevention. Parental involvement and religious identification also play a critical role in prevention of unplanned pregnancy. Respondents obtained sex education information from multiple resources, including peers and professionals.

The Internet is important as a research tool and as a means of service delivery. It is possible to gather reasonably representative data for the young adult population, and verity of sensitive information may be improved over other modalities.

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