Sexuality Research & Social Policy
Journal of NSRC http://nsrc.sfsu.edu

December 2005 Vol. 2, No. 4

Content Analyses of Title V Abstinence-Only Education Programs: Links Between Program Topics and Participant Responses

Jenifer K. McGuire, Michele Walsh, Craig Winston LeCroy

Abstract: To better understand the potential impacts of federal Abstinence-Only Education (AOE) funds in preventing teen pregnancy, the current study measured the specific content of Title V AOE programs, and the relationships between program content and adolescents' pretest to posttest changes for 11 outcome indicators. Program content areas were coded for number of minutes spent on each of 71 specific topics (e.g., what it means to be a parent, dating behavior, sexual refusal skills) that were collapsed to 14 more general content areas. Both personal characteristics and program elements were significant predictors of participants' changes from pretest to posttest on the outcome scales. However, personal characteristics accounted for substantially more variability than program elements. Overall, females were more responsive to the variability in AOE program messages than males.

Key words: abstinence education evaluation; program content; sexuality education

Considerable public debate has been expended in recent decades on the effectiveness of Abstinence-Only Education (AOE), although little is known about the specific content in these programs. The current study attempted to clarify the content of Title V AOE programs and linked the content to changes in participants' attitudes, beliefs, and intentions about sexual behavior. Three distinct research questions were addressed: (a) What is the content of Title V Abstinence-Only Education as it is taught? (b) Do personal characteristics impact individual responses to the AOE programs? and (c) Does program content impact individual responses to the AOE programs? We first describe the political context of Title V programs. We continue with a review of outcome studies of AOE programs. Finally, we describe the few studies that have specifically addressed the content of AOE education and explain how the current study's link of content to participant outcomes helps to further the scientific understanding of AOE.

Title V Abstinence-Only Education

In 1998, Title V Federal Welfare Reform programs to teach AOE were first funded with eight criteria to guide selection of programs. The requirements stated that "abstinence education" refers to a program that

(a) Has as its exclusive purpose, teaching the social, psychological, and health gains to be realized by abstaining from sexual activity;
(b) Teaches abstinence from sexual activity outside marriage as the expected standard for all school-age children;
(c) Teaches that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems;
(d) Teaches that a mutually faithful monogamous relationship in the context of marriage is the expected standard of human sexual activity;

Correspondence concerning this article should be addressed to Jenifer K. McGuire, Division of Family Studies and Human Development, PO Box 210033, University of Arizona, Tucson, AZ 85721. E-mail: jmcguire@u.arizona.edu; Michele Walsh, Department of Psychology, PO Box 210068, University of Arizona, Tucson, AZ 85721. E-mail: mwalsh@u.arizona.edu; Craig LeCroy, Arizona State University, School of Social Work, 340 N. Commerce Park Loop, Suite 250, Tucson, AZ 85745. E-mail: craig.lecroy@asu.edu

Sexuality Research and Social Policy: Journal of NSRC, Vol. 2, Issue 4, pp. 18-31, online ISSN 1553-6610. © 2005 by the National Sexuality Research Center. All rights reserved. Please direct all requests for permissions to photocopy or reproduce article content through the University of California Press's Rights and Permissions website, http://www.ucpress.edu/journals/rights.htm

(e) Teaches that sexual activity outside marriage is likely to have harmful psychological and physical effects;
(f) Teaches that bearing children out of wedlock is likely to have harmful consequences for the child, the child's parents and society;
(g) Teaches young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances; and
(h) Teaches the importance of attaining self-sufficiency before engaging in sexual activity. (Section 510, Title V of the Social Security Act, 1996, ¶ 3)

Programs were not required to teach all eight requirements, but they could not contradict any requirement and could not teach about contraception except to present failure rates.

Policy debates about the use of Title V monies have continued for the ensuing decade. Because so few empirical studies have been published about the actual content of Title V programs (Wilson, Goodson, Pruitt, Buhi, & Davis-Gunnels, 2005), little is known to the scientific community about what is included in abstinence-only curricula. AOE is typically defined by what is not included (contraceptive education) rather than by what is included.

Abstinence Education Outcome Studies

Most of the existing literature on abstinence education stemmed from studies of the less restrictive abstinence-based programs of the early 1990s (Aarons et al., 2000; Denny, Young, Rausch, & Spear, 2002; DiCenso, Guyatt, Willan, & Griffith, 2002; Silva, 2002; Thomas, 2000). Meta-analyses of evaluations of abstinence programs typically identified small gains in approval of abstinence and intentions to abstain (Denny et al., 2002, Silva, 2002; Thomas, 2000). The impacts on onset of intercourse were found to be mixed, with some meta-evaluations concluding that there were delays in onset of intercourse for abstinence program participants (Silva, 2002; Aarons et al., 2000) and other meta-evaluations finding no differences between participants and nonparticipants (DiCenso et al., 2002; Thomas, 2000).

Existing studies compared abstinence-only education to abstinence education paired with contraceptive education, education that teaches only contraception, or no sexuality education (Landry, Darroch, Susheela, & Higgins, 2003). Such a strategy exemplified the differences among program types in whether or not contraception was taught but did not explore the many other ways that programs may differ in content across or within abstinence-only, abstinence paired with contraception, and contraceptive-only education programs. For instance, programs may spend time teaching sexual refusal skills regardless of whether they teach abstinence or contraception. Therefore, an abstinence-only program and a contraceptive program may be more similar in that they both teach refusal skills than are two abstinence-only programs that differ in this element.

Evaluations of abstinence education programs are further confounded by the difficulty in attributing identified changes in attitudes or behavior to the programs because individuals in such programs are simultaneously experiencing rapid maturation and are subject to multiple outside influences that may lead to changes that have nothing to do with the programs. Biases from maturation and competing influences (such as prior education and personal interest in taking the program) can be reduced by including elements of the program content in the analytic models that assess change. Correlating change on an outcome scale with time spent on a given topic while controlling for the many other factors that may influence change can provide a more convincing test of the program impact than simply documenting pretest to posttest changes. When multiple programs are studied, they can provide a natural comparison to one another, even without a control group of individuals who received no program (Smith, Steen, Spaulding-Givens, & Schwendinger, 2003).

Research (Adam, McGuire, Walsh, Basta, & LeCroy, 2005) has linked probability of onset of intercourse to adolescent characteristics such as age, ethnicity, religiosity, risk and pro-social behavior, and grades in school. Evaluations of abstinence education programs (Smith, Steen, Schwendinger, Spaulding-Givens, & Brooks, 2005) have not been able to specify populations or characteristics of persons that may be associated with differential program responses.

Studies of Program Content

We found only one study that systematically reviewed Title V abstinence-only curricula (Wilson et al., 2005). The study evaluated 21 curricula written for use with middle school students for their quality as defined by the following: coverage of the a-h requirements specified in Title V; average accuracy and completeness across nine key concepts (character formation, human development, relationships, family, sexual behavior, sexual health, society and culture, personal skills, and state knowledge requirements); and teaching methods. They found considerable variability in the overall quality of AOE curricula. Most of the curricula were explicitly aligned with most of the a-h

criteria and consistently focused on nonsexual antecedents of sexual behavior such as skills, life goals, and self-esteem. Wilson and colleagues utilized a quantitative approach to the assessment of AOE curricula, promoting a more scientifically informed debate about the content of these programs.

A review by Pedlow and Carey (2004) of 24 published randomized control trials of sexual risk reduction intervention studies on adolescents (not all of which were abstinence-only) linked elements of curricula content (biological, psychological, or social content) to participant outcomes. The study found that programs that addressed biological issues were effective at delaying the onset of intercourse for preteens, but not for young teens. Additionally, programs that effectively taught cognitive (risk perception) and social (sexual communication) skills were found to be more likely to achieve reductions in sexual risk taking at follow-up assessments.

The current study builds on the important contributions of Wilson and colleagues (2005) and of Pedlow and Carey (2004) by linking content of AOE programs to short-term outcomes of individuals who have participated in these programs. In this study we consider both the strength of association between program components and participant responses and the percent of variance in participant responses that are accounted for by the program components. Including the percent of variance accounted for allows for a closer examination of the relative benefits of different program strategies in promoting participant change. This approach allows policy makers to consider with more detail what has been taught using Title V and other AOE funds and to better estimate the potential impact of those programs for reducing adolescent pregnancies.

Method

Sample

A total of 22,495 Arizona students in grades 7 through 12 participated in AOE programs during 2000 and 2001. Of those, 14,671 completed preprogram and postprogram surveys, were successfully matched to curriculum content, had complete data on all of the individual predictor variables, and were included in the current study. In the final sample, 55% were female, 47% were White, 35% were Hispanic, 4% were Native American, 28% received a free school lunch, and the average age was 14.9 (range 12–19). The average grade reported was B-. About one-third (33%) were currently dating. Most had received prior sex education (78%) and abstinence education (51%), while fewer reported prior birth control education (39%). Participants received the AOE program in group settings, usually at school during class time.

To examine how representative our sample was of the state of Arizona, we compared databases available from the Arizona Department of Education (DOE) for 80 matched schools that received the program in 2000 (approximately half of the current sample) on total enrollment, ethnicity, gender for each grade sampled, and percent receiving free lunch. Our sample represents a 5–6% bias in overrepresentation of Hispanics, a 7–8% bias in overrepresentation of females, and a 12% bias in underrepresentation of students receiving a free lunch. To reduce the impact of bias, we controlled for these and other personal characteristics in our analyses.

Data Collection

Program coordinators for each program completed the Curricula Content Questionnaire (CCQ) (LeCroy & Milligan Associates, Inc., 2001), which included a chart documenting each activity, the teaching strategy used (lecture, film, etc.), and the number of minutes spent on that activity. Thirty-nine unique programs from 11 providers were included in these analyses. Evaluators worked collaboratively with program providers to ensure accuracy and completion utilizing site visits and specific confirmation of each activity (LeCroy & Milligan Associates, Inc.).

Survey data were collected at pretest and posttest from all youth who participated in the AOE programs with permission from the Arizona Department of Health Services Human Subjects Protection Program. Active parental consent and subject assent procedures were utilized. Less than 5% of participating youth refused participation in the survey. Although the AOE program currently serves a wide age range, only those participants who received a teen survey (grades 7–12) were included in this study because most participants fell in this age range, and most programs were developed with this age range as the focus. Surveys were administered by program providers using a script available in Spanish and English and took about one class period for most youth to complete (LeCroy & Milligan Associates, Inc., 2001).

Measures

Personal Characteristics

Participants reported biological sex. Age was calculated by subtracting the participant's reported birth date from the date of the pretest survey. Participants were asked to indicate which ethnic group best described them, with choices being Caucasian (White), Hispanic/Mexican

American, African American (Black), Asian American, Native American (specify tribe), and Mixed Ethnicity (write in specifics). Individuals of mixed ethnic descent were coded into the minority group listed first for analyses. Youth were asked if they received a free lunch at school and responses were coded 0 (No or don't know) and 1 (Yes).

Social history. Religiosity was measured with a mean score of three standardized items assessing the importance of religion, frequency of church attendance, and endorsement of religion as a reason to be abstinent (α = .72). Prior risk behavior was assessed at pretest only by taking the mean of seven items asking how many times in the past 6 months teens had engaged in behaviors such as drinking alcohol, skipping school, or stealing something (α = .85). Prior pro-social behavior was assessed at pretest only by taking the mean of five items asking how many times in the past 6 months teens had engaged in behaviors such as volunteering in the community or after-school activities. Both scales had response categories from 0 (*Never*) to 4 (*Almost Every Day*). Grades in school were assessed with a 5-point scale from 0 (*Mostly Fs*) to 4 (*Mostly As*). Currently dating was coded with 0 (no) or 1 (yes).

Sex education experience and interest. Interest in the course was assessed with one question: "Which statement best describes you?" Response choices ranged from 0 (*I am not interested in learning about abstinence*) to 2 (*I am very interested in learning about abstinence*). Prior sex education history was measured with three items, each coded as 0 (no) and 1 (yes) with results included independently in the analyses. The questions were, "Have you ever had a class about . . . sex education, birth control, and abstinence?" Among 7th graders, 63% had received a previous sex education class, with increasing percentages each year, up to 86% of seniors. Only 20% of 7th graders had received education about birth control, but this number increased steadily with each grade to 59% for 12th graders. Experience of prior abstinence education ranged from 39% to 53% across the grades but was not systematically higher with each increasing grade.

Outcome Indicators

Eleven independent scales were assessed as indicators of changes in attitudes, skills, or intentions related to sexuality and social relationships. Some were previously published (Card, 1993) and some were developed for this study.

Abstinence skills. Sexual refusal skills is a scale that measured teens' perceived ability to refuse unwanted sexual advances. Scores for the four items on the survey ranged from 0 (*strongly disagree*) to 4 (*strongly agree*) (α = .74 at pretest; α = .78 at posttest). An example item stated "I can say no to sex in a way that won't hurt the other person's feeling" (Card, 1993). Sexual efficacy is a scale that measured teens' sense of their ability to navigate sexuality in ways broader than decision-making or refusal skills. Teens were asked to indicate agreement on the same 0–4 Likert scale used for refusal skills with five statements such as "I can tell when the media are showing sex in ways that are not true to life" and "I can talk to my parents about sex" (α = .53 at pretest; α = .61 at posttest). Items for the sexual efficacy scale were adapted from similar items in another published sexual efficacy scale (Card).

Values identity. Items for the two values identity scales were developed for the current study. Social information seeking included five items developed for this study asking participants to indicate agreement with a series of statements about interacting with the social environment regarding sexual values. An example item stated "Talking to other people about sexuality helps me to clarify my own sexual values," with responses ranging from 0 (*not true*) to 4 (*very true*) (α = .77 at pretest; α = .81 at posttest). Teens were also asked to indicate level of agreement with three items about exploration of sexual values developed for this study. An example item stated "I spend a lot of time thinking through my sexual values." Responses ranged from 0 (*not true*) to 4 (*very true*) (α = .77 at pretest; α = .81 at posttest).

Social/cognitive motivations. The sexual decision-making scale was measured with four items ranging from 0 (*not true*) to 4 (*very true*) (α = .68 at pretest; α = .74 at posttest). An example item stated "I can make good decisions about sex" (Card, 1993). Personal/social reasons to abstain included six statements to which participants were asked to indicate their level of agreement as potential reasons that they would choose not to have sex. Scores ranged from 0 (*strongly disagree*) to 4 (*strongly agree*) (α = .80 at pretest; α = .82 at posttest). An example item stated "I want to save my virginity for the person I marry" (adapted from Card). Health reasons to abstain included three statements about the possible negative health effects of sex: pregnancy, AIDS, and other STDs. Participants indicated level of agreement with each as a reason to not have sex, 0 (*strongly disagree*) to 4 (*strongly agree*) (α = .80 at pretest; α = .82 at posttest) (adapted from Card). The reasons-to-have-sex scale was developed for the current study and consisted of nine statements to which teens indicated their level of agreement; scores ranged from 0 (*strongly disagree*) to 4 (*strongly agree*) (α = .76 at pretest; α = .75 at posttest). Sample items developed for this survey included "I might choose to have sex because I feel mature enough to make this decision" and "Sex

would help my partner and I [*sic*] learn more about each other."

Attitudes and intentions. Teens were asked to indicate agreement on the same 0–4 Likert scale used on the reasons-to-have-sex scale with five statements tapping their attitudes about abstinence (α = .76 at pretest; α = .75 at posttest). An example stated "I think abstinence makes sense for kids my age" (Card, 1993). Attitudes about birth control were assessed by participants' level of agreement (again, on the same 0–4 Likert scale used on the reasons-to-have-sex survey) with four statements, such as "More people should be aware of the importance of birth control" (α = .59 at pretest; α = .61 at posttest) (adapted from Card). The scale of teens' abstinence intentions was developed for this study and asked the likelihood of engaging in heterosexual intercourse before each of five successive milestones: the next year, being in a serious relationship, finishing high school, turning 20, and getting married. Responses ranged from 0 (*not likely*) to 4 (*very likely*) (α = .92 at pretest; α = .93 at posttest). The questions used on all of the attitudes and intentions surveys were developed for use in this study.

Program Features and Content

Features of the individuals' programmatic experience were included in the analyses as program characteristics, including number of hours of program received (accounting for individual absences), time elapsed from pretest to posttest, and diversity of teaching strategies. Once coded, the elements of program content became predictors of individual change in the outcome indicators. The coding process and resultant elements of the programs are described below.

Coding of curricula content. A coding scheme was developed by reviewing samples of the completed Curricular Content Questionnaires (CCQ), which asked providers to specify the exact content of each lesson taught and number of minutes spent on each topic (LeCroy & Milligan Associates, Inc., 2001). Repeating themes or topics were identified and organized according to Kirby's (2001) best practices and the Theory of Reasoned Action (Ajzen & Fishbein, 1980). Consensus coding was used to classify the curricula activities. Each CCQ was coded twice (by two of three evaluators participating in coding, with 86% congruency), and where there were discrepancies, consensus was reached. Each individual who completed a survey was matched to the appropriate curricula content codes.

Description of program content. The included topics were diverse and the programs varied substantially in content and time spent on different topics (see Table 1). Sexuality-specific lessons were present in all curricula to varying degrees. Within the broader topic of health and reproduction, STDs were most commonly covered using a slide show depicting pictures of symptoms for each of five STDs (usually gonorrhea, chlamydia, syphilis, herpes, and HIV). In most cases mode of transmission, symptoms, and prognosis were described as well. In some cases the failure rates of condoms for each of the five STDs were given. Regarding social cognitive motivations to abstain, participants were typically asked to generate lists of reasons that teens may choose to have or not to have sex. A group discussion then followed that was critical of reasons to have sex and endorsed reasons not to have sex. Abstinence skill building was facilitated through role plays to practice refusing unwanted sexual advances or avoiding situations that might become risky. Group discussions about the differences between love and infatuation were used as a way to highlight the differences between short-term and longer-term relationships and more serious (sometimes explicitly stated as marital) and less serious relationships. Participants were sometimes asked to list characteristics of an ideal relationship and then to assess their current relationships against their own stated ideals.

While most programs had some nonsexuality-specific content, some programs spent the majority of time on such content. Most of the programs covered the use of sex as a marketing tool for selling goods and making money. Participants were typically asked to identify and critique sexualized images in popular magazines. Identity development activities focused on the individual participants' sense of themselves and their capacity for future achievement. One self-esteem activity provided participants with a personal crest or shield, and individuals were to complete each of four sections with drawings depicting their own strengths in the realm of physical, intellectual, social, and family. Finally, activities to build general skills and efficacy tended to focus on making future plans and goals. One common activity had participants list their goals for the future in time increments (e.g., 1 month, 1 year, 5 years). Then they were asked to describe how an unwanted pregnancy or STD might affect their ability to achieve their stated goals.

Analysis Plan

We used multivariate linear regression analyses to predict each of the 11 outcome indicators. The analyses were sequential with pretest values of each respective indicator entered on the first step, personal characteristics entered on the second step, and program elements entered on the third step. We examined the percent of variance accounted for by each step to examine the relative contribution of combined personal characteristics and of

Table 1. Program Content Areas, Number of Programs Teaching Content Areas, and Range of Time, Mean Time, and Standard Deviation Spent on Each Content Area

Content area	Number of programs teaching (N = 39)	Range of time spent on content area (minutes)	Mean time (minutes)	Standard deviation (minutes)
Sexuality-specific content area				
Sexuality is holistic	11	5–35	15.00	8.06
Defining abstinence	10	3–25	11.60	6.43
Health and reproduction—general	17	5–50	19.35	13.55
STDs	24	9–110	33.92	23.75
AIDS	9	5–39	15.78	10.27
Pregnancy	7	10–110	33.57	35.29
Contraceptive failure rates	5	2–15	6.60	4.93
Hormone pressures	10	2–10	7.60	3.13
Puberty—physical development	15	5–135	48.33	40.25
Power and sex	3	6–20	12.00	7.21
Sexual abuse	1	10–10	10.00	
Sexual harassment	2	10–10	10.00	0.00
Pornography	1	10–10	10.00	
Social/cognitive motivations toward abstinence	5	3–30	9.20	11.67
Reasons to have/not have sex	22	7–55	24.00	12.39
Nonphysical harmful consequences	16	5–55	18.00	13.29
Benefits of waiting	14	1–40	10.21	9.69
Social/relational reasons to not have sex	9	5–25	9.67	6.60
Personal values reasons to not have sex	3	3–5	3.67	1.15
Personal interest reasons to have sex	5	5–10	8.60	2.19
Social/relational reasons to have sex	1	5–5	5.00	
Challenges of parenting—general	1	30–30	30.00	
What it means to be a parent	1	30–30	30.00	
Time/money/maturity for parenting	1	30–30	30.00	
Baby simulator doll	1	25–25	25.00	
Abstinence skill building				
Dating behavior	12	2–35	14.17	10.03
Avoiding difficult situations	6	5–25	14.67	9.73
Communication about sexuality	3	10–30	20.00	10.00
Sexual refusal skills	20	7–163	63.45	57.31
Interview parents about sex/dating	5	3–10	6.60	3.36
Self-talk	5	10–10	10.00	0.00
Sexual decision making	3	15–45	26.67	16.07
Decisions about intercourse	2	3–8	5.50	3.54
Decisions about interim behaviors	13	5–34	13.08	7.98
Choosing secondary virginity	6	5–20	8.50	5.96
Offering pledge cards to sign	3	3–5	4.33	1.15
Romantic relationships	19	5–35	16.47	8.55
Love vs. infatuation	16	10–55	28.25	14.04
The development of intimacy	8	4–38	18.00	12.18
Gender roles	6	12–45	27.00	12.81
Critique your own relationship	6	2–27	12.33	9.31
Defining your sexual values	6	5–39	17.50	13.72
Benefits of marriage (marital sex)	6	4–33	15.33	10.19
Nonsexuality-specific content area				
Social contexts	12	4–23	11.17	5.10
Parents/family	2	8–20	14.00	8.49
Communication with parents	6	7–25	14.50	6.89
Peers—including peer pressure	21	1–50	16.33	11.32
Friends	5	5–20	9.80	6.14
Finding good friends	8	5–57	23.00	15.59
Keeping friends	4	5–79	38.25	32.74
Responding to sex in the media (skills)	15	3–25	14.80	7.19
Media—using sex to sell	28	5–68	19.39	17.33
Other risk behaviors	6	3–20	9.67	6.50
Alcohol use	3	25–34	29.67	4.51
Drug use	1	30–30	30.00	
Gangs	1	20–20	20.00	.

Table 1. Continued

Content area	Number of programs teaching (N = 39)	Range of time spent on content area (minutes)	Mean time (minutes)	Standard deviation (minutes)
Nonsexuality-specific content area				
Individual identity	8	5–50	20.38	15.01
Self-esteem/self-worth	18	5–74	27.06	20.11
Psychological maturity/development	1	66–66	66.00	
Talent identification (personality test)	11	4–60	28.09	16.46
Connection between mind and body	1	20–20	20.00	
Identifying personal boundaries	11	10–60	24.82	17.33
Body image	1	60–60	60.00	
Skill building/efficacy	2	5–10	7.50	3.54
General decision making	11	10–92	37.91	22.58
Why we have boundaries and rules	7	8–115	32.29	37.44
Communication skills	8	15–118	48.50	30.95
Anger management	1	39–39	39.00	
General refusal skills	9	10–85	33.56	24.54
Making future plans/goals	23	2–155	28.74	32.15
Positive community involvement	3	30–75	45.00	25.98

combined program components. Analyses were run separately by gender due to prior documented gender interactions in these data (LeCroy & Milligan Associates, Inc., 2001) and in the relevant peer-reviewed literature regarding gender differences in receptivity to abstinence education (Smith et al., 2005).

Results

Personal Characteristics as Predictors of Change in Abstinence Attitudes and Values

The findings for those personal characteristics (age, religiosity, prior risk and pro-social behavior, grades in

Table 2. Personal Characteristics Predicting Change in Outcome Scales for Females

Personal characteristics	Sexual refusal skills	Other sexual efficacy	Social information seeking	Exploration of values	Sexual decision making	Personal reasons to abstain
ΔR^2 for all personal characteristics	0.01 ***	0.02 ***	0.01 ***	0.02 ***	0.02 ***	0.02 ***
	β	β	β	β	β	β
Pretest score	0.52 ***	0.53 ***	0.56 ***	0.50 ***	0.48 ***	0.63 ***
Age				0.04 ***		−0.06 ***
White						
Hispanic						
African American	−0.02 *					
Asian American						
Native American			0.02 *			
Free lunch						
Religiosity			0.02 **	0.06 ***	0.04 ***	0.05 ***
Risk	−0.05 ***	−0.04 ***	−0.03 **		−0.05 ***	−0.07 ***
Pro-social	0.07 ***	0.09 ***	0.04 ***	0.03 **	0.06 ***	0.03 ***
Grades		0.02 *			0.03 *	
Dating				0.03 ***		−0.03 ***
Interest	0.03 ***	0.03 ***	0.07 ***	0.08 ***	0.05 ***	0.05 ***
Prior sex education		0.02 *				
Prior birth control education					−0.02 *	
Prior abstinence education						

Table 2. Continued

Personal characteristics	Health reasons to abstain		Reasons to have sex		Attitudes about abstinence		Attitudes about birth control[a]		Abstinence intentions	
ΔR^2 for all personal characteristics	0.02	***	0.02	***	0.02	***	0.03	***	0.01	***
	β		β		β		β		β	
Pretest score	0.46	***	0.64	***	0.64	***	0.50	***	0.75	***
Age	−0.05	***	0.04	***	−0.02	**	0.10	***	−0.03	***
White										
Hispanic	−0.05	*					−0.05	**		
African American	−0.02	*			−0.02	*				
Asian American										
Native American			−0.03	**			−0.05	***		
Free lunch	−0.04	***								
Religiosity	0.02	*	−0.06	***	0.10	***	−0.07	***	0.05	***
Risk	−0.03	**	0.07	***	−0.06	***	0.02	*	−0.07	***
Pro-social	0.04	***			0.02	**				
Grades							0.03	**	0.02	***
Dating	−0.03	**	0.04	***	−0.03	***			−0.04	***
Interest	0.05	***	−0.03	***	0.03	***			0.03	***
Prior sex education							0.03	**		
Prior birth control education							0.03	**		
Prior abstinence education			−0.02	*			−0.03	**		

Note. Only significant findings are reported.
[a]Attitudes about birth control showed average declines, indicating that a positive β could mean less decline or an increase.
**p* , .05. ***p* , .01. ****p* , .001.

Table 3. Personal Characteristics Predicting Change in Outcome Scales for Males

Personal characteristics	Sexual refusal skills		Other sexual efficacy		Social information seeking		Exploration of values		Sexual decision making		Personal reasons to abstain	
ΔR^2 for all personal characteristics	0.02	***	0.02	***	0.01	***	0.02	***	0.03	***	0.02	***
	β		β		β		β		β		β	
Pretest score	0.53	***	0.52	***	0.52	***	0.48	***	0.49	***	0.63	***
Age	0.02	*	0.03	**			0.03	**			−0.03	**
White												
Hispanic			−0.05	*								
African American											−0.03	**
Asian American												
Native American			−0.03	*								
Free lunch												
Religiosity							0.03	**			0.03	***
Risk	−0.08	***	−0.08	***	−0.02	*	−0.03	**	−0.08	***	−0.09	***
Pro-social	0.07	***	0.09	***	0.07	***	0.10	***	0.08	***	0.04	***
Grades							−0.03	**				
Dating	−0.03	**			0.03	*					−0.03	***
Prior sex education												
Prior birth control education	0.04	**			0.03	*						
Prior abstinence education												

Table 3. Continued

Personal characteristics	Health reasons to abstain	Reasons to have sex	Attitudes about abstinence	Attitudes about birth control[a]	Abstinence intentions
ΔR^2 for all personal characteristics	0.03 ***	0.02 ***	0.02 ***	0.01 ***	0.008 ***
	β	β	β	β	β
Pretest score	0.46 ***	0.61 ***	0.64 ***	0.47 ***	0.76 ***
Age	−0.04 **			0.07 ***	−0.02 *
White			0.04 *		
Hispanic					
African American					
Asian American	0.03 *				
Native American			0.02 *	−0.04 **	
Free lunch	−0.02 *	−0.03 **		−0.03 **	
Religiosity	0.03 *	−0.04 ***	0.10 ***	−0.06 ***	0.04 ***
Risk	−0.08 ***	0.08 ***	−0.07 ***		−0.05 ***
Pro-social	0.06 ***				
Grades		−0.02 *		0.03 **	0.02 *
Dating	−0.04 ***	0.03 ***			−0.03 ***
Prior sex education			−0.03 **		
Prior birth control education					
Prior abstinence education		−0.02 *			

Note. Only significant findings are reported.
[a]Attitudes about birth control showed average declines, indicating that a positive β could mean less decline, or an increase.
$^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

school, dating, and interest in the class) that surfaced as most influential in predicting outcome changes are summarized in Table 2 (females) and Table 3 (males). Personal characteristics accounted for 0.7–3.0% of the variance in the outcome scales. Age was a significant predictor of program response. Younger students generally responded more favorably to AOE classes and also showed greater increases in personal and health reasons to abstain, abstinence attitudes, and intentions to abstain. In a countervailing trend, older males reported greater gains in sexual refusal skills, sexual efficacy, and exploration of sexual values and older females reported greater gains in exploration of sexual values. Older males and females also had fewer declines in attitudes about the importance of birth control.

Prior behavioral history significantly predicted program response. Religious youth reported significantly greater gains in several of the measured pro-abstinence attitudes and beliefs, larger declines in reasons to have sex, and greater declines in attitudes about birth control, with a stronger pattern emerging for religious females. Youth with histories of greater risk-taking behavior responded more negatively to the AOE programs. Higher risk takers reported losses in most of the measured pro-abstinence attitudes and beliefs and increases in reasons to have sex, but relatively smaller declines in attitudes about birth control (for females only). A reverse trend was evident among youth with a history of pro-social behavior. Pro-social youth and those reporting higher grades in school reported significantly greater gains in most of the measured pro-abstinence attitudes and beliefs, with a stronger effect for females. Youth reporting higher grades reported fewer declines in attitudes about contraception. Youth who reported being more interested in taking the AOE program at pretest reported significantly greater gains in all of the measured pro-abstinence attitudes and beliefs and larger declines in reasons to have sex. Finally, youth who were currently dating someone at the beginning of the program reported fewer gains than nondating youth in several of the pro-abstinence outcomes and greater gains in reasons to have sex.

Program Elements as Predictors of Change in Abstinence Attitudes and Values

Combined program elements accounted for 0.24–0.89% of the additional variance (reported in Tables 4 and 5 as ΔR^2) in change on the outcome indicators. Program components associated with at least 4 of the 11 outcome indicators for males, females, or both are described in the text. Program elements that were most influential in predicting changes in attitudes for females are presented in Table 4. For females, teaching that sexuality is holistic was positively associated with changes in

Table 4. Program Components Predicting Change in Outcome Scales for Females

Program components	Sexual refusal skills		Other sexual efficacy		Social information seeking		Exploration of values		Sexual decision making		Personal reasons to abstain	
ΔR^2 for all program components	0.003	***	0.003	**	0.004	***	0.004	***	0.002	n.s.	0.003	***
	β		β		β		β		β		β	
Time elapsed												
Number of hours							0.03	*				
Sexuality is holistic					0.04	**	0.04	**				
Defining abstinence												
Health/reproduction												
Social/cognitive	0.04	*										
Parenting												
Puberty												
Power and sex	−0.04	***	−0.05	***					−0.03	*		
Individual identity	0.04	**			−0.06	***	−0.06	***				
Relationships							−0.03	*				
Skill building												
Other risk behaviors												
Abstinence skills											0.04	**
Social contexts												
Diversity of teaching					0.05	**	0.05	**			0.06	***

Table 4. Continued

Program components	Health reasons to abstain		Reasons to have sex		Attitudes about abstinence		Attitudes about birth control[a]		Abstinence intentions	
ΔR^2 for all program components	0.001	n.s.	0.003	***	0.005	***	0.009	***	0.003	***
	β		β		β		β		β	
Time elapsed										
Number of hours										
Sexuality is holistic					0.02	*	0.03	*		
Defining abstinence			−0.04	***	0.03	*	−0.08	***	0.03	**
Health/reproduction			0.03	**			−0.04	**		
Social/cognitive					0.03	*				
Parenting									−0.02	*
Puberty							0.04	***		
Power and sex									−0.02	**
Individual identity			−0.03	*			−0.07	***	0.03	**
Relationships							0.05	**		
Skill building					0.02	*				
Other risk behaviors			0.03	*			0.07	***		
Abstinence skills			−0.04	**	0.03	*	−0.06	**	0.03	**
Social contexts			0.02	*	−0.03	**			−0.02	**
Diversity of teaching							−0.06	**	0.04	**

Note. Only significant findings are reported.
[a]Attitudes about birth control showed average declines, indicating that a positive β could mean less decline, or an increase.
$^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

social information seeking, exploration of sexual values, attitudes toward abstinence, and attitudes toward birth control. In addition, defining abstinence for females was associated negatively with changes in reasons to have sex and attitudes toward birth control and positively with changes in attitudes toward abstinence and abstinence intentions. Content covering power and sex was negatively associated for females with sexual refusal skills, other sexual efficacy, sexual decision making, and abstinence intentions. Instruction about individual identity was

Table 5. Program Components Predicting Change in Outcome Scales for Males

Program components	Sexual refusal skills		Other sexual efficacy		Social information seeking		Exploration of values		Sexual decision making		Personal reasons to abstain	
ΔR^2 for program components	0.005	***	0.003	n.s.	0.003	*	0.002	n.s.	0.005	***	0.002	n.s.
	β		β		β		β		β		β	
Time elapsed	−0.04	**			−0.04	**					−0.03	**
Number of hours												
Sexuality is holistic									0.04	**		
Defining abstinence									−0.04	*		
Health/reproduction									−0.04	**		
Social/cognitive									−0.04	*		
Parenting			−0.03	*					−0.03	*		
Puberty					−0.02	*						
Power and sex	−0.05	**							−0.05	**	−0.03	*
Individual identity					−0.04	**	−0.03	*				
Relationships												
Skill building												
Other risk behaviors												
Abstinence skills												
Social contexts												
Diversity of teaching												

Table 5. Continued

Program components	Health reasons to abstain		Reasons to have sex		Attitudes about abstinence		Attitudes about birth control[a]		Abstinence intentions	
ΔR^2 for program components	0.002	n.s.	0.002	*	0.002	**	0.007	***	0.004	***
	β		β		β		β		β	
Time elapsed									−0.04	***
Number of hours					0.03	*				
Sexuality is holistic					−0.03	*				
Defining abstinence			−0.04	**	0.05	***			0.03	**
Health/reproduction			0.03	*			−0.06	***		
Social/cognitive			0.05	**			−0.05	**		
Parenting									0.02	**
Puberty							0.03	*		
Power and sex										
Individual identity					−0.04	**	−0.03	*		
Relationships							0.06	**	−0.03	*
Skill building					0.02	*				
Other risk behaviors					−0.04	***				
Abstinence skills										
Social contexts									0.02	*
Diversity of teaching									0.03	*

Note. Only significant findings are reported.
[a]Attitudes about birth control showed average declines, indicating that a positive β could mean less decline, or an increase.
*$p < .05$. **$p < .01$. *** $p < .001$.

negatively associated for females with changes in social information seeking, exploration of sexual values, reasons to have sex, and attitudes about birth control and was positively associated with changes in abstinence intentions and sexual refusal skills. Abstinence skill building for females was positively associated with changes in personal reasons to abstain, attitudes about abstinence, and abstinence intentions, while negatively associated with changes in reasons to have sex and attitudes about birth control. Finally, diversity of teaching techniques was

positively associated with changes in social information seeking, exploration of sexual values, personal reasons to abstain, and abstinence intentions and was associated with greater declines in attitudes about birth control.

Program elements that were most influential in predicting changes in attitudes for males are presented in Table 5. For males, defining abstinence was negatively associated with changes in sexual decision making and reasons to have sex and positively associated with changes in attitudes toward abstinence and abstinence intentions. Also for males having a longer time elapse between pretest and posttest was associated with declines in sexual refusal skills, social information seeking, personal reasons to abstain, and abstinence intentions.

Discussion

This study allowed the opportunity to consider impacts of the multiple elements of abstinence-only education on individual youth while accounting for their prior sex education experiences and existing personal characteristics. Several interesting considerations emerge from this study to inform implementation of AOE programs. Those findings that are most likely to provide unique information or perspectives included the range of what was taught, students' experiences of prior sex education, participant reactions to the programs based on their own characteristics, and the content areas that were provided.

The AOE programs were diverse in content, length, and teaching strategies. These programs (as they were implemented) varied considerably in topics covered. While some programs stayed close to the message of promoting abstinence only until marriage, many others moved into broader messages of identity and personal development, often with some discussion of how pregnancy or STDs could affect those other aspects of life. For many students AOE programs included daily 1-hour presentations delivered across one school week, often in addition to the existing sex education curricula they may have already received. Other students participated in much longer after-school or community programs, which lasted from 3 weeks to a full semester. Within each program, teaching strategies were diverse and included the use of small and large group discussions, lectures, videos, activities, student presentations, and role plays. For females especially, programs with more diversity of teaching techniques were associated with more positive responses to the program. There was not a systematic pattern of enhanced or reduced AOE program response based on prior sexuality education.

In terms of immediate responses to the program, this study found that youth do vary significantly in program response based on what is taught, even when a variety of personal characteristics are controlled, although the proportion of variance in change accounted for by the programs was small. Combined program elements accounted for 0.24–0.89% of the variance in change on the outcome indicators. However, for most of the outcome scales, program components accounted for less than one-half of 1 percent of the variance in change from pretest to posttest. Overall, student characteristics at pretest accounted for substantially more variance in program response than the content of the programs themselves. Personal characteristics accounted for 0.7–3.0% of the variance in the outcome scales. For most of the outcome scales, personal characteristics accounted for at least 2.0% of the variance in change from pretest to posttest, even while controlling for the impact of program characteristics. While the program content was clearly linked to changes in the outcome scales, the bigger impact in program response was associated with the characteristics of students in the classes before they began the program. Next steps in evaluation research should begin to identify how different types of programs may work more effectively for different types of students based on these characteristics.

Responses to the program varied considerably by gender. Females were more responsive than males to the different aspects of program content. For males, only about one-third of the associations between program elements and change in outcome scales were in the direction of program impact toward enhanced likelihood of abstinence. For females the trend was reversed. About three-quarters of the significant associations were in the direction favoring abstinence.

Limitations

From this study, it is not possible to make conclusions about actual sexual behavior or the role of AOE programs in influencing adolescent birth and STD rates. This study included only short-term outcomes as indicators of differential response to programs based on content. These proximal indicators of change primarily included scales that were closely linked to sexuality topics, even though many of the programs were focused much more broadly, with limited sexuality content. It is harder with these data to estimate the possible impact of broader, less sexuality focused programs. While there are significant differences in the ways that youth respond to AOE programs, and those differences are linked to which particular program content was received, it is not possible through these analyses to determine which content features were linked to different long-term sexuality outcomes such as age of onset of intercourse and teen pregnancy. Additionally, it

is not possible at this time to say whether broader programs with greater emphasis on identity and life skills or programs more narrowly focused on abstinence are more likely to impact later sexuality outcomes such as the onset of intercourse, pregnancy, and STDs.

Contributions to Policy Debates

This study provides an improvement in the documentation of what is taught using Title V abstinence-only education funds. In addition, it is the only known study of AOE to connect content to participant responses. To date, little has been defined about the specific content of AOE programs or how and whether this content influenced youths' attitudes about sexuality or sexual behavior. The peer-reviewed literature on these topics is limited, leaving the debates about content to be waged through evaluation reports and online comparisons or commentaries that have not been subjected to the peer review process. The current study focused on topics covered in AOE curricula in an attempt to better understand content-specific program effects. Additionally, this study incorporated the freedom that program providers had to pick and choose activities from different written curricula and to alter their strategies as they saw fit to best meet the perceived needs of their clientele. Initiatives that leave significant discretion in implementation to the sites have historically been difficult to evaluate but continue to occur in public funding (Rossi & Freeman, 1993). This assessment of the content as taught, not as written, allows for more accurate assessments of program impacts than studies of written curricula only. Feedback from the providers over time has confirmed that their descriptions of content were complete and accurate. The critique or understanding of abstinence-only education can be enhanced by the comprehensive and accurate portrayal of what topics are taught and how that content is associated with participants' short-term reactions.

Acknowledgments

This study was supported in part by grants from the Arizona Department of Health Services to LeCroy & Milligan Associates, Inc., to conduct the Arizona Abstinence-Only Program Evaluation. We wish to thank the LeCroy & Milligan evaluation team for their work in compiling the data and the Abstinence-Only Education program contractors and educators who did the data collection. In addition we wish to acknowledge the support and participation of schools, community organizations, parents, and students. Dr. Stephen T. Russell provided salary support and manuscript reviews through a postdoctoral fellowship for Dr. McGuire during the period of writing this manuscript. Finally, we would like to thank the reviewers for their feedback and suggestions on manuscript revision.

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