

Evaluation of Two Comprehensive Sexuality Education Programs: Safer Choices and Reducing the Risk

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ABSTRACT. It has been over ten years since the Safer Choices and Reducing the Risk comprehensive sexuality programs have been evaluated with high school students. A pretest-posttest design was used to examine the effectiveness of these two programs with a 2009 sample. Three hundred and seventy-four middle school students participated in the Safer Choices program and 469 high school students participated in the Reducing the Risk program. Findings show that knowledge of pregnancy and sexually transmitted infections as well as behavioral intentions to engage in safer sex behavior significantly increased from pretest to posttest. Overall, the programs were found to be effective for males and females and the race/ethnic groups examined.

Adolescents are a high risk group for unintended pregnancies and sexually transmitted infections (STIs) such as HIV (Walcott, Meyers, & Landau, 2008). Though sexuality education programs developed to reduce risky sexual behaviors are commonly taught in many high schools and middle schools in the United States, the contents of these programs vary considerably. Most sexuality education programs can be divided into one of two categories--abstinence-only or comprehensive sexuality education (Kirby, 2002; Walcott et al., 2008). Although abstinence is considered 100% effective in preventing STIs and teenage pregnancies, abstinence-only education has been deemed ineffective whereas comprehensive sexuality education programs which combine an emphasis on abstinence, birth control/condom use, and information on skills

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in practicing safer sex behaviors have been found to be more effective in improving sexual risk behaviors. Therefore, school-based prevention programs that go beyond abstinence are necessary (Kirby, 2002; Walcott et al., 2008).

The aim of this research is to assess whether the comprehensive sexuality education curricula taught by Planned Parenthood of Greater Ohio (PPGOH) health educators to middle school and high school students were effective in increasing students' knowledge of sexual and reproductive health and increasing their behavioral intentions to avoid risky sexual situations.

Literature Review

Currently, the U.S. teen pregnancy and birth rates are among the highest in industrialized countries despite a steady decline in teen pregnancy rates since 1991 (Hamilton, Martin, & Ventura, 2012). For example, the 2009 U.S. birth rate for females between 15 and 19 years of age was reported to be 37.9 live births per 1,000 adolescent females in contrast to 25 per 1,000 for the United Kingdom, 14.2 per 1,000 for Canada, 9.1 per 1,000 for Germany, and 4.9 per 1,000 for Japan for the same year (The National Campaign to Prevent Teen and Unplanned Pregnancy, 2012). Although the U.S. teen birth rate declined from 1991 to 2011, the 2011 rate remains high at 31.3 per 1,000 adolescent females (Hamilton, Martin, & Ventura, 2012). Further, 82% of teen pregnancies within this age group are unintended (Guttmacher Institute, 2012).

There are many negative consequences associated with teenage pregnancies. Oftentimes babies born to adolescent mothers suffer from low birth-weight, a risk of preterm delivery, and high rates of infant mortality (Fritz, 2010). Furthermore, adolescent mothers are less likely than non-parenting adolescent girls to graduate from high school (CDC, 2012a). Low education and dropping out of school affect the mother and child both socially and economically. Children born to adolescent mothers, particularly adolescent mothers between the ages of 15 and 17, are less likely to be raised in stimulating home environments, resulting in lower cognitive development, and may experience higher rates of behavioral problems, teenage pregnancies, and incarceration (particularly among sons) when compared to children born to adult mothers (Hoffman, 2006; Kirby, 2007; Maynard, 1997). On a broader scale, teenage pregnancies carry significant public financial costs, as well. In 2008, U.S. taxpayers paid close to \$11 billion in increased health care and foster care for the children, public assistance, child welfare, criminal justice system costs, and lost tax revenues due to both lower income and lower educational attainment of the teenage mothers (CDC, 2012a).

Further, the high incidence of STIs in the U.S. is of great concern. Based on 2010 national data, the CDC estimated that, 19 million new cases of STIs occur each year and, although only 25% of the sexually active population are between the ages of 15 and 24, this age group accounts for nearly half of the newly reported STI cases (CDC, 2011). Common types of STIs in the U.S. include genital human papillomavirus (HPV), syphilis, chlamydia, gonorrhea, genital herpes, and HIV (CDC, 2011; Guttmacher Institute, 2009; Kirby, 2007).

STIs have negative consequences that affect both the U.S. as a whole and the individual (CDC, 2011; Guttmacher Institute, 2009). For the U.S., the direct annual medical costs associated with the treatment, diagnoses and complication of STIs are estimated at \$17 billion based on 2010 national data. This estimate does not include treating HIV. Individuals may experience significant health consequences. For example, untreated gonorrhea and chlamydia can lead to infertility in women. Finally, research has shown that people who have gonorrhea, chlamydia, and syphilis are at an increased risk of contracting the HIV virus (CDC, 2011).

Education as a Form of Prevention

In response to the high incidence rate of unintended pregnancies and STIs among adolescents, many schools and organizations have developed various types of STI/HIV and sex education programs to curb these high rates (Kirby, 2007). As noted earlier, the two main types of educational programs taught in U.S. public schools are comprehensive sexuality education and abstinence-only education (Walcott et al., 2008; Landry, Darroch, Singh, & Higgins, 2003). Comprehensive sexuality education equips adolescents with skills to remain abstinent if desired, teaches them how to protect themselves against STIs and unintended pregnancy if they choose to become sexually active, and encourages them to make responsible decisions. Abstinence-only sexuality education is aimed at educating adolescents on the benefits of abstaining from sexual activity until marriage with no discussion of effective means of preventing pregnancy or STIs should the adolescent choose to be sexually active.

To assess the effectiveness of these programs, studies have been conducted to measure the impact on adolescents' sexual behavior. Based on Kirby's (2007) extensive review of this literature, he concluded that abstinence-only-until-marriage programs did not have a significant effect on the sexual behavior of adolescents. In contrast, comprehensive sexuality education was deemed to have a more positive impact, resulting in adolescents engaging in safer sexual behaviors such as delaying sexual initiation, increasing condom and contraceptive use, and reducing the number of sexual partners. Despite the fear by some parents that such programs will increase the incidence and frequency of sexual intercourse, Kirby reports that this has not been found.

Further, Kirby, Laris, and Rolleri (2007) reviewed 83 studies conducted in 18 countries, including the U.S., to examine the impact of curriculum-based sex and HIV/STI education programs. Seventeen characteristics were found to be significantly associated with safer sexual behavior (e.g. delayed sexual initiation, reduced number of partners, increased contraceptive use), attitudes (e.g. recognizing the risk of contracting HIV and STDs, intentions to use a condom, refusing unwanted sex), and knowledge (e.g. greater knowledge of HIV, STDs, and methods to prevent pregnancy) of young adults under the age of 25 years. These characteristics are listed in Table 1. Programs that incorporated these 17 characteristics were more likely to be effective at reducing risky sexual behavior. (See Table 1, p ???)

Efforts by PPGOH to Prevent Unintended Pregnancies and STIs

Since 1988 Planned Parenthood of Greater Ohio (PPGOH) health educators have taught a comprehensive sexuality education program to middle school and high school students in several central Ohio public schools. The educational programs are *The Safer Choices Program* and *Reducing the Risk: Building Skills to Prevent Pregnancy, HIV and STD Program* used in the middle schools and high schools respectively. Both curricula were developed by ETR Associates (2009a, 2009b) based on social cognitive theory, social influence theory, cognitive behavioral theory, and models of school change. A distinct sexuality education program is used at each educational level. The Safer Choices curriculum was chosen for the middle school because it places a bit more emphasis than Reducing the Risk on delaying the initiation of sex. This emphasis better matches the developmental level of middle school students who are less likely than high school students to have initiated sex. The overall goals of both curricula are to move students towards abstinence or safer sex behaviors.

The Safer Choices Program (middle school) consists of 20 lessons. The program is designed to positively influence adolescents' sexual decisions and help them make the safest choices. The program objectives include students (a) increasing what they know about STIs and HIV, (b) having a more positive orientation about toward abstinence or condom use, (c) gaining more confidence in their ability to say no to sex or negotiate safer sex, (d) seeing fewer barriers to using condoms, (e) becoming more aware of their risk for HIV and STIs, (f) feeling comfortable discussing sex with their parents, (g) improving skills for saying no to sex or negotiating safer sex, and (h) choosing to decrease their sexually risky behaviors (ETR Associates, 2009b). PPGOH delivered the program across a five-day period, one 45-minute session per day.

The *Reducing the Risk: Building Skills to Prevent Pregnancy, HIV and STD Program* (high school) is comprised of 16 lessons designed to accomplish the following objectives: Students being able to (a) assess the risks and consequences associated with teen parenting and STIs, (b) recognize that abstinence and contraceptive use are the only effective means of avoiding pregnancy and STIs, (c) conclude that factual information is needed to prevent adolescent pregnancy, HIV, and other STIs, and (d) use effective communication skills with sexual partners to remain abstinent or negotiate safer sex (ETR Associates, 2009a). PPGOH delivered the program across a five-day period, one 55-minute session per day.

We systematically examined the program development, content, instructional methods, and implementation of each curriculum to determine if the 17 criteria Kirby et al. (2007) found to be associated with programs that effectively reduced risky sexual behavior were met. Both the Safer Choices and Reducing the Risk programs met all 17 criteria. Further, four research articles report on the effectiveness of the Safer Choices curriculum (Basen-Engquist et al., 2001; Coyle et al., 2001; Coyle et al., 1999; Kirby et al., 2004). All four articles utilized the same data set in which baseline and follow-up data were collected between 1993 and 1997 from a sample of students who participated in the program and a comparison group who did not participate while attending one of 20 high schools located in Texas and California. Five schools in each state were

randomly assigned to receive the program with the remaining five schools in each state not receiving the program. Overall, the findings establish the effectiveness of the program. For example, although program participants were not found to delay sexual initiation or feel better able to refuse sex until they felt ready, their knowledge of HIV and other STIs, positive attitudes towards condoms, frequency of intercourse with a condom, use of condoms at last intercourse, and use of protection against pregnancy at last intercourse were greater for program participants than nonparticipants at both the seven-month and 31-month follow-ups (Coyle et al., 2001; Coyle et al., 1999). Analysis of gender and ethnic group differences at the 31-month follow-up showed the program to have a significant impact on the condom use of males but not females, on delayed sexual initiation of Hispanics but not Whites and African Americans, and on the frequency of protected sex and condom use at last sex for Hispanics and Whites but not African Americans (Kirby et al., 2004).

Three evaluation studies were located for the Reducing the Risk curriculum used by PPGOH with high school students (Kirby, Barth, Leland, & Fetro, 1991; Hubbard, Giese, & Rainey, 1998; Zimmerman et al., 2008). Kirby et al. (1991) randomly assigned 46 classrooms from 13 California high schools to receive either the curriculum or the standard sexuality education program offered by the schools. The curriculum was found to be effective for several variables. For example, students who had not yet initiated sexual intercourse prior to the program were significantly less likely to have initiated sex at the 18-month follow-up after participating in the Reducing the Risk compared to students in the standard program. Although students from both groups demonstrated significant increases in knowledge from pretest to six-month and 18-month follow-ups, the increases were significantly greater for those in the Reducing the Risk group. However, no significant differences were found between program participants' and nonparticipants' intentions to avoid unprotected intercourse; nor did participants' intentions significantly change from pretest to posttest. Further, analyses revealed no significant gender or white/Latino differences for these program outcomes.

Similarly, Hubbard et al. (1998) studied students from five high schools who received the Reducing the Risk curriculum and compared them to students from five matching high schools who received the standard sexuality education offered by the school. Data were collected prior to and 18 months after completion of the programs. Students who were not sexually active at pretest were significantly less likely to have initiated intercourse at the 18-month posttest if they received the Reducing the Risk rather than the standard sexuality education program. Sexually active students in the Reducing the Risk programs were significantly more likely to use protection against pregnancy or STIs than were those in the standard education program. Gender and race/ethnic differences in the effect of the program on students were not examined.

Finally, Zimmerman et al. (2008) compared the Reducing the Risk curriculum to a version of the curriculum modified to more fully engage high sensation-seeking and impulsive students. Both curricula also were compared to the standard school sexuality program. Seventeen Ohio and Kentucky high schools participated in the study from 1995 to 1997. Within each school, one of three matching classrooms was randomly assigned to each of the three programs. No significant differences were found between the Reducing the Risk and the modified Reducing

the Risk curricula; however, both versions of the curricula were significantly more effective in increasing knowledge of pregnancy prevention and STDs at the three-to-six month follow-up and delaying initiation of sexual intercourse at the 12- to 18-month follow-up than was the standard curriculum. Although racial differences were not examined for knowledge gain, the program effect on delayed sexual initiation was greater for blacks than whites. Gender differences were not examined for either knowledge gain or delayed intercourse. No program differences between the Reducing the Risk/modified Reducing the Risk curricula and the standard school sexuality program were found for several variables including frequency of condom use, condom use at last intercourse, or being able to refuse unwanted sex.

Although the studies described above clearly support the effectiveness of both the Safer Choices and Reducing the Risk curricula, this support is based on one to three samples examined in the mid-1990s or earlier. Scholars have noted the importance of replicating the effectiveness of sexuality education programs with many samples to ensure these programs have wide applicability rather than assuming a handful of studies establishes effectiveness across all communities and schools (Hubbard et al., 1998; Morrison et al., 2007). Indeed, *Science*, “the world’s leading journal devoted to original scientific research,” recently devoted a special section to the importance of data replication and reproducibility, stating that replication “is considered the scientific gold standard” (Jasny, Chin, Chong, & Vignieri, 2011, p. 1225).

Further, Morrison et al. (2007) argue that the knowledge and skills targeted by sexuality education programs may change over time, making program content less relevant. For example, the Youth Risk Behavior Survey conducted every two years from 1991 to 2011 with a nationally representative sample of high school students has documented a significant increase in the proportion of students who used a condom during last intercourse (46.2% in 1991; 60.2% in 2011) (CDC, n.d.). If condom use is becoming accepted cultural practice among sexually active adolescents, program content emphasizing their use may have less impact on behavior since teens already are inclined to use them.

Finally, since approximately one third of adolescents have engaged in sexual intercourse by the time they are in ninth grade, with more than six percent becoming sexually active by the time they reach age 13 (CDC, 2012b), offering sex education prior to high school is crucial. However, the effectiveness of the Safer Choices program has not been evaluated with middle school students. Therefore, the current study contributes to the literature by asking whether the Safer Choices and Reducing the Risk curricula are still effective today with other samples and whether Safer Choices is effective with middle school students.

In addition, we explore gender and race/ethnic differences in the effectiveness of the programs. Walcott et al. (2008) suggest that the same educational approach may not be effective for both males and females given gender differences in sexual behaviors and attitudes. For example, they note that males are more likely to become sexually active before age 13 than are females and such early initiation tends to be associated with depression for females but not for males. Studies examining sexual double standards have found that, despite a weakening of the traditional sexual double standard (e.g., it has become more acceptable for both males and

females, rather than just males, to engage in premarital sex with affection), different standards for each gender remain, with less permissive attitudes towards female than male sexual expression (Crawford & Popp, 2003; Ronen, 2010; Sclafane et al., 2005).

However, the implications of such differences for sex education programming have received little attention in the literature and few program evaluation studies have examined gender effects (Kirby et al., 2004). Indeed, as noted earlier, only one of the three articles evaluating the Reducing the Risk program explored gender effects, with no gender differences reported for knowledge gained or delayed intercourse (Zimmerman et al., 2008). Similarly, only one of the four studies assessing the Safer Choices curriculum examined gender differences. Although no gender differences were found for delayed initiation of sex, the curriculum was found to have a stronger effect on male than female condom use (Kirby et al., 2004). Kirby et al. proposed that this difference may reflect the fact that males have greater control than females over condom use since it is a male method of birth control. Further, traditional gender roles that encourage male initiation of sex and female passivity may make it more difficult for females than males to be assertive about condom use (Sclafane et al., 2005). In light of the gender disparity in condom use found by Kirby et al. (2004) as well as the suggestion by some scholars that male-female discrepancies in sexual behaviors and attitudes continue to exist, gender differences in the effectiveness of the Reducing the Risk and Safer Choices curricula implemented by PPGOH are explored in the current study.

Similarly, Walcott et al. (2008) note that the effectiveness of specific prevention programs may vary across racial/ethnic groups due to differences in cultural norms and sexual behavior in these groups. For example, the 2009 Youth Risk Behavior Survey of middle school students and the 2005 and 2007 New York City Youth Risk Behavior Survey for high school students revealed that Blacks and Hispanics were significantly more likely to have had sex and initiate sex at a young age (prior to age 11 for middle school students and prior age 14 for high school students) than were Whites, with the highest incidence reported by Blacks (Kaplan, Jones, Olson, & Yunzal-Butler, 2013; Moore, Barr, & Johnson, 2013). Race/ethnic groups with norms for early sexual initiation may find middle and high school sex education programs to be more relevant to their lives and, consequently, such programs may be more effective for these groups than for groups with later sexual initiation. Because Black and Hispanic parents have been found to have less frequent communication with their children about sex than do White parents, and the topics on which they focus tend to be limited, D'Santiago and Hund (2012) suggest that school sex education programs may be especially effective for Black and Hispanic youth by filling in these gaps.

However, as with gender, race/ethnic differences in the effectiveness of sex education programs are not typically discussed or empirically explored (Blank, Baxter, Payne, Guillaume, & Pilgrim, 2010). Only one of the four studies evaluating the effectiveness of the Safer Choices curriculum examined race/ethnic differences among Hispanics, Blacks, and Whites; delayed sexual initiation was a significant outcome for Hispanics only and reduced frequency of unprotected sex and condom use at last sex were significant for both Hispanics and Whites only (Kirby et al., 2004). No explanation for these findings is offered by the authors. Two of the three

evaluation studies for Reducing the Risk program examined race/ethnic differences (Kirby et al., 1991; Zimmerman et al., 2008). Although both studies measured knowledge gained by students, only Kirby et al. included race/ethnicity in their analysis. No significant differences were found. Both studies explored race/ethnic effects for delayed sexual initiation. While Kirby et al. found no significant differences between the two groups studied (Hispanics and Whites), the two groups analyzed by Zimmerman et al. were significantly different with greater program impact on Black than White students. No explanation for this difference is offered and no other racial/ethnic effects were reported. In light of these research findings and recent calls to attend to race/ethnicity (Blank et al., 2010; Walcott et al., 2008), race/ethnic differences in the effectiveness of the Reducing the Risk and Safer Choices curricula implemented by PPGOH are explored in the current study.

In summary, this study examines whether the Safer Choices and Reducing the Risk curricula are still effective today with other samples and whether Safer Choices is effective with middle school students by examining the short-term effectiveness of the Safer Choices curriculum with a 2009 sample of middle school students and the Reducing the Risk curriculum with a 2009 sample of high school students. Specifically, we hypothesize: (a) Students' knowledge of pregnancy, sexually transmitted infections, and ways to reduce sexual risk will significantly increase from pretest to posttest for both the middle school and high school programs. (b) Students' intentions to reduce their sexual risk will significantly improve from pretest to posttest for both the middle school and high school programs. Further, the study explores gender and race/ethnic differences in the effectiveness of each curriculum. In light of the limited previous research on gender and race/ethnic differences for these programs, research questions rather than hypotheses are offered for these variables: (a) Does the effectiveness of the Safer Choices and Reducing the Risk curricula differ for males and females? (b) Does the effectiveness of the curricula vary for different race/ethnicity groups?

Methodology

Data Collection Procedures

PPGOH health educators taught the Safer Choices curriculum to students in six public middle schools and the Reducing the Risk curriculum to students in seven public high schools during the fall 2009 semester. All schools were located in urban areas in central Ohio. Prior to the start of the programs, "opt-out" forms were sent home with students, allowing parents to take their child out of the program. Parents of approximately 26 students chose this option. Questionnaires were administered by the PPGOH educator to students attending the first session (pretest) and last session (posttest) of the comprehensive sexuality education program. All students in attendance completed the questionnaires. Student initials and date of birth recorded on the answer sheets allowed PPGOH staff to match each student's pretest to posttest. Once matched, PPGOH staff assigned each student an identification number, entered responses to the questionnaires into a database, and discarded student initials and date of birth. Only students who completed both the pretest and posttest were entered into the database. It should be noted that

PPGOH collected and stored these data for the purpose of educational assessment rather than research. Secondary analyses of these data were conducted to address the research questions. The Institutional Review Board of the university with which the first two authors are associated approved the secondary analyses of the data collected.

Measurement

Staff from PPGOH and the Franklin County Children Services for Teen Pregnancy Prevention initiative collaborated to construct the measures used in this study. Ten multiple-choice items were used to assess middle school students' knowledge of information taught in the Safer Choices curriculum. Sample items include "Which STI cannot be cured?" and "Which method helps to prevent pregnancy and helps to protect against HIV/STIs?" Similarly, ten multiple-choice items were used to assess high school students' knowledge of information taught in the Reducing the Risk curriculum. Sample items include "Which of the following behaviors is most risky for passing HIV?" and "Which of the following statements about teenage pregnancy is false?" Students were asked to respond by indicating one correct response out of four or five alternatives. Reading comprehension level, cultural and linguistic suitability, and age appropriateness were considered when constructing the items. In addition, items met the eleven criteria suggested by Purdue University's Center for Instructional Excellence (2008) for developing sound multiple choice questions for knowledge-based assessments. Finally, each question was examined by the research team to determine whether its content matched the information taught in the curriculum. All questions accurately reflected curriculum material, supporting the content validity of the items.

Four items assessed the behavioral intentions of both middle school and high school students to engage in safer sex behaviors. Each item reflects a safer sex behavior emphasized in both curricula. Students responded on a seven-point scale with one being the least and seven being the most. The items were:

- (1) If/when you decide to have sex, how likely are you to use a condom or other birth control? Response categories ranged from probably will not to probably will.
- (2) Please rate how likely you are to get tested for STIs on a regular basis if/when you are sexually active. Response categories ranged from not very likely to very likely.
- (3) Please rate how likely are you to discuss birth control with a sexual partner. Response categories ranged not very likely to very likely.
- (4) How able are you to refuse sex if/when you do not want to have sex? Response categories ranged from not able to refuse to very able to refuse.

When the data were entered into the database by PPGOH, students who responded from **1 - 4** (i.e. those with lower intentions) were recorded as **0** (not intending to engage in the behavior) and students who responded from **5 - 7** (i.e. those with higher intentions) were recorded as **1** (intending to engage in the behavior). Therefore, the original seven-point response data were unavailable and these variables were treated as dichotomous in the analyses.

Finally, students were asked to indicate their gender (male, female) and race/ethnicity (African American, Asian American, Caucasian, Hispanic/Latino/Latina, Somali/African, Multicultural). Hispanic, Asian-American, African/Somali, and Multicultural students in the sample were collapsed into one group because data checking revealed that each of these groups had an inadequate cell size for several of the analyses.

Analyses

To examine whether middle school students' mean knowledge scores regarding pregnancy, STIs, and ways to reduce sexual risk significantly increased from pretest to posttest and to explore gender and race/ethnic differences in knowledge scores, a 2 (pretest versus posttest) x 2 (males versus females) x 3 (Caucasian versus African American versus Other) mixed between-within-subjects ANOVA was conducted with pretest/posttest as the repeated measure. A 2 (intend/do not intend to engage in safer sex behavior at pretest) by 2 (intend/do not intend to engage in safer sex behavior at posttest) McNemar analysis was conducted for each behavioral intention item to examine whether the percentage of middle school students intending to engage in safer sex increased from pretest to posttest. Unlike the Chi-square statistic which assumes independent observations, the McNemar statistic allows for dependent observations which fits the pretest/posttest nature of the intention scores (Field, 2005). To determine whether an increase in the percentage of middle school students intending to engage in safer sex behaviors occurred for each gender, the McNemar analyses were rerun separately for males and females. Similarly, to determine whether an increase in the percentage of middle school students intending to engage in safer sex behaviors occurred for each race/ethnic group, the McNemar analyses were rerun separately for Caucasians, African Americans, and the Other racial/ethnic group. Finally, the above analyses were rerun using the data for high school students. A significance level of $p \leq .05$ was established for this study.

Results

Sample Characteristics

Three hundred and seventy-four students participated in the Safer Choices program at the middle school level. Of these students, 46% ($n=172$) were female and 54% ($n=202$) were male. Student age ranged from 11 to 16 years, with a mean age of 12.98. The sample consisted of 54.0% ($n=202$) Caucasians, 19.8% ($n=74$) African Americans, 12.6% ($n=47$) Multicultural students, 8.6% ($n=32$) Hispanics/Latinos/Latinas, 4.0% ($n=15$) Asian Americans, and 1.1% ($n=4$) Somalis/Africans.

Four hundred and sixty nine students took part in the Reducing the Risk program at the high school level. Of the 469 students, 47.8% ($n=224$) were females and 52.2% ($n=245$) were males. Student age ranged from 13 to 21 years with a mean age of 15.65. The high school sample consisted of 51.8% ($n=243$) Caucasians, 25.4% ($n=119$) African Americans, 7.0% ($n=33$)

Hispanics/Latinos/Latinas, 6.4% (n=30) Multicultural students, 6.2% (n=29) Somalis/Africans, and 3.2% (n=15) Asian Americans.

Changes in knowledge

The 2 (pretest versus posttest) x 2 (males versus females) x 3 (Caucasian versus African American versus Other) mixed between-within-subjects ANOVA conducted for the middle school students' knowledge scores found a significant difference between the means at pretest and posttest ($F(1, 324) = 2043.03, p \leq .001, \eta^2 = .86$). As seen in Table 2, the mean knowledge score at the posttest ($M = 9.03, s.d. = 1.54$) was significantly higher than the mean knowledge score at the pretest ($M = 3.39, s.d. = 1.75$). The main effect for race/ethnicity also was significant ($F(2, 324) = 3.23, p \leq .05, \eta^2 = .02$). Post hoc analyses were conducted using Bonferroni adjustment to examine which racial/ethnic groups significantly differed from each other. When controlling for multiple comparisons with the Bonferroni adjustment, none of the pairwise mean comparisons reached significance at the $p \leq .05$ level established for this study. Neither the main effect for gender nor any of the interaction effects were significant. See Table 2).

The mixed between-within-subjects ANOVA run for the high school data revealed a significant difference between the means at pretest and posttest ($F(1, 389) = 2252.64, p \leq .001, \eta^2 = .85$) (see Table 2). As seen in Table 2, the mean knowledge score at posttest ($M = 8.72, s.d. = 1.48$) was significantly higher than the mean knowledge score at the pretest ($M = 3.31, s.d. = 1.74$). Neither the main effects for race/ethnicity and gender nor any of the interaction effects were significant.

Changes in behavioral intentions

The 2 (intend/do not intend to engage in safer sex behavior at pretest) by 2 (intend/do not intend to engage in safer sex behavior at posttest) McNemar analysis conducted for each behavioral intention item examined whether the percentage of middle school students and percentage of high school students intending to engage in safer sex improved from pretest to posttest. There was a significant change from the pretest to the posttest for all behavioral intention items for both the middle school and high school students (See Table 3).

At the middle school, 79.3% of the students intended to use a condom or other forms of birth control when having sex and 71.5% intended to refuse sex if/when they do not want to have sex at the pretest. These percentages increased to 96.7% and 90.9%, respectively, at the posttest. About 51% of students intended to get tested for STIs on a regular basis if/when they were sexually active and 58.5% were likely to discuss birth control with a sexual partner at the pretest. These percentages increased to 89.4% and 88.2%, respectively, at the posttest.

Similarly, at the high school level, 67.3% of the students intended to use a condom or other form of birth control when having sex, 69.1% of the students intended to discuss birth control with a sexual partner, and 60.5% intended to refuse sex if/when they do not want to have

sex at the pretest. These percentages increased to 92.2%, 91.4% and 88.4%, respectively, at the posttest. At pretest, 44.8% of students intended to get tested for STIs on a regular basis if/when they were sexually active at the pretest. This percentage increased to 83.5% at the posttest.

Did both females and males change their behavioral intentions?

To determine whether the significant increase in the percentage of students intending to engage in safer sex behaviors occurred for each gender, the McNemar analyses were rerun separately for males and females. For both males and females, the McNemar tests were significant for all behavioral intention items at the middle school as well as the high school. Specifically, there was a significance increase from pretest to posttest in the percentage of both males and females intending to engage in safer sex after they had received the program (See Table 4).

Did behavioral intentions change by race/ethnic group?

To determine whether the significant increase in the percentage of students intending to engage in safer sex behaviors occurred for each race/ethnicity group, the McNemar analyses were rerun separately for Caucasians, African Americans, and the Other racial/ethnicity group. For both Caucasians and the Other group at the middle school, the McNemar tests were significant for all behavioral intention items (see Table 5). For African Americans, the McNemar tests were significant for all but one item. The exception was intending to refuse sex if/when they do not want to have sex. For all significant findings, there was an increase in the proportion of middle school students intending to engage in safer sex behaviors after receiving the program. (See Table 5).

For both Caucasians and African Americans at the high school, the McNemar tests were significant for all behavioral intention items (see Table 4). For the Other race/ethnicity group, the McNemar tests were significant for only two of the four behavioral intention items. The percentage of students intending to use a condom or other forms of birth control and those intending to refuse sex if/when they do not want to have sex significantly increased from pretest to posttest.

Discussion

The primary objective of the study was to evaluate whether the comprehensive sexuality education curricula taught by PPGOH's health educators at the middle school (*The Safer Choices Program*) and high school (*Reducing the Risk: Building Skills to Prevent Pregnancy, HIV and STD Program*) were effective. The curricula were evaluated by determining whether or not students' score on the knowledge test and their reported intentions to engage in safer sex behaviors improved after participating in the middle school and high school programs. As hypothesized, the results indicate that there were significant improvements in both knowledge and behavioral intentions. The specific behavioral intentions examined were: (a) How likely are

you to use a condom or other birth control? (b) How likely you are to get tested for STIs on a regular basis if/when you are sexually active? (c) How likely are you to discuss birth control with a sexual partner? (d) How able are you to refuse sex if/when you do not want to have sex?

These findings match earlier research which found significant increases in student knowledge after program participation in the Safer Choices (Coyle et al., 2001; Coyle et al., 1999) and Reducing the Risk programs (Kirby et al., 1991; Zimmerman et al., 2008). Intentions to get tested for STIs and discuss birth control with a sexual partner have not been previously explored and the significant program effects found for these two variables in this study are new contributions to the literature.

Although previous evaluations of Safer Choices did not assess participants' intentions to use a condom or other birth control, Kirby et al. (1991) did examine intentions to avoid unprotected intercourse for Reducing the Risk. In contrast to the significant changes found in the present study, Kirby et al. reported that participants' intentions to avoid unprotected intercourse did not significantly change as a result of the program. One reason for this discrepancy may be the timing of the posttest. The present study assessed students' intentions right after they completed the program. Kirby et al. assessed changes six months and 18 months after program completion. It is possible that students' intentions are strong right after experiencing the program but dissipate over time.

Alternatively, the National Survey of Family Growth has documented a substantial increase in contraceptive use at last intercourse for both sexually active adolescent males and females from 1995 (82% males, 71% females), around the time Kirby et al. were delivering the program, to 2006-2010 (93% males, 86% females), around the time of program delivery by PPGOH (Martinez, Copen, & Abma, 2011). With more adolescents using contraceptives today, program participants may be more receptive than participants in the past to program messages encouraging them to use it themselves. Indeed, research has found that teens who perceive their peer network to be more supportive of safer sex behavior are more likely to practice safer sex than peers who perceive their peer network to be less supportive (Dolcini, Harper, Boyer, & Pollack, 2010; Kapadia, et al., 2012).

Finally, unlike previous research on the Safer Choices and Reducing the Risk programs (Coyle et al., 2001; Coyle et al., 1999; Zimmerman et al., 2008), this study found a significant effect for students feeling equipped to refuse unwanted sex. Again, this discrepancy may be related to the timing of the posttest, immediately after the program for the current study, seven and 31 months post-program for Safer Choices and 12 and 18 months post-program for Reducing the Risk. Further, it should be noted that the previous evaluation studies based their conclusion on differences between the Safer Choices or Reducing the Risk program groups and a comparison group rather than an examination of pretest to posttest differences as was the case with the current study. Whether or not the refusing unwanted sex variable significantly changed from pretest to posttest for these programs was not reported in the earlier studies.

However, it is also possible that changing gender roles account for discrepancies in the findings. Several scholars note that, although a sexual double standard for males and females persists, it is weaker than in the past (Crawford & Popp, 2003; Sclafane et al, 2005). The shift toward greater equality, although not yet fully achieved, may allow both males and females to feel more comfortable expressing their preference to not have sex to their partner rather than feeling stuck in the traditional male-initiator/female-passive recipient sexual roles. Therefore, today, males and females may be more responsive to program messages that encourage such expression.

These results indicate that, despite the passage of time since the curricula were evaluated in the 1990s, the programs continue to be an effective approach to increasing student knowledge and establishing a positive orientation to engaging in safer sex behavior, and that they are effective with a new group of students. Perhaps this should not be surprising since both curricula met all of the 17 characteristics described by Kirby et al. (2007) as being effective in reducing risky sexual behavior. Particularly important is the finding that the Safer Choices program, which had previously been evaluated only with high school students, is effective at the middle school. Despite the fact that the median age of first intercourse in the U.S. is between 16 and 17, one-third of adolescents have initiated intercourse by ninth grade (CDC, 2008). Further, younger adolescents are more likely than older adolescents to engage in unprotected sex, making them more vulnerable to STIs and pregnancy (Diamond & Savin-Williams, 2009). Therefore, it is crucial to identify sexuality education programs that are effective with middle school students.

This study also examined whether improvements in students' knowledge and behavioral intentions differed by their gender and race/ethnicity. No significant gender differences were found in knowledge score improvement at either the middle school or high school, and the percentage of both males and females intending to engage in safer sex behaviors improved after experiencing the program. These results are compatible with previous findings for Reducing the Risk. The one study which explored gender differences in student response to the program also found no significant gender differences in knowledge gained or intentions to avoid unprotected intercourse (Kirby et al., 1991). Although previous research on Safer Choices found the program to have a greater impact on male than female condom use (Kirby et. al., 2004), it did not assess gender effects for the outcome variables included in the present study, knowledge gained and behavioral intentions. Thus, where comparisons are possible, the findings for gender in the present study match previous research.

While conclusions cannot be drawn regarding gender differences in program impact on actual condom use, the results from this study show both programs to be effective in changing knowledge and behavioral intentions for males as well as females. Since research has established a strong relationship between sexual behavioral intentions such as intentions to use condoms and actual sexual behavior (Turchik & Gidycz, 2012; Zimmerman et al., 2008), future research may reveal that the lack of gender differences in intentions found in the current study may be extended to sexual behaviors. If so, the move toward greater gender role equality discussed earlier, although not fully established, may lead males and females to respond more similarly to sex education programming (Crawford & Popp, 2003; Sclafane et al., 2005).

With regard to race/ethnicity, no differences in knowledge gained were found for either the middle school or high school students. However, a few differences were found for behavioral intentions. At the middle school level, both Caucasians and the Other group showed significant improvement for all behavioral intention items after completing the Safer Choices program. For African Americans, there was significant improvement for all behavioral intention items but one: intending to refuse sex if/when they do not want to have sex. However, at the pretest it should be noted that the percentage of African Americans intending to refuse sex was fairly high (79.7% for African Americans versus 68.1% for Caucasians and 73.3% for Other). Although the increased percentage of African Americans intending to refuse sex was not statistically significant, the posttest percentage reached a level similar to that of the other two race/ethnicity groups (89.8% for African Americans, 90.3% for Caucasians, and 93.0% for Other). Therefore, the lack program impact for African Americans may be due, at least in part, to a higher percentage intending to refuse sex prior to the program rather than not achieving levels similar to the other two race/ethnic groups after program completion. Comparisons with previous research on the Safer Choices program are not possible since race/ethnic differences in knowledge and behavioral intentions were not explored in earlier work (Kirby et al. 2004).

At the high school level, both Caucasians and African Americans showed significant improvement for all behavioral intention items. In contrast, although the Other race/ethnic group showed significant improvement for two of the four behavioral intention items (i.e. intending to use a condom or other forms of birth control and intending to refuse sex/if when they do not want to have sex), there was no significant improvement in their intentions to get STI testing or their intentions to discuss birth control with a partner. Previous research suggests that school sex education programs may be especially helpful to Black and Hispanic students because, compared to Whites, they are more likely to be sexually active, making such programs more relevant to their current behavior; they also tend to have less frequent communication with their parents than do Whites about sex, leaving sex education programs in the school to fill gaps in knowledge and skills (D'Santiago & Hund, 2012; Kaplan, Jones, Olson, & Yunzal-Butler, 2013). The significant improvements found for African Americans in the current study are compatible with this previous research

In contrast, that only two of the of the behavioral intentions for the Other group achieved significance is interesting since approximately a third of this group was comprised of Hispanics. Perhaps the limited discussions of sexuality experienced by Hispanics in their home lead to discomfort with the idea of having a direct conversation with a partner about birth control or requesting STI testing. Swenson, Hadley, Houck, Dance and Brown (2011) found Hispanic adolescents to be significantly less accepting than African Americans of rapid HIV testing offered to them. Alternatively, this finding may be due to cultural differences among the groups comprising the Other category with an additional 31% identifying themselves as Multicultural, 27% as African/Somali, and 14% as Asian Americans. Although no research on sexual behavior or sex education could be located for multicultural or African/Somali high school students, Asian Americans have been found to be significantly less likely than either Hispanic or Black high school students to have initiated sex (Kaplan et al., 2013). Reducing the Risk may have had

different effects on these groups which were hidden since the groups were combined. As noted earlier, inadequate cell sizes prevented running separate analyses for these groups. It will be helpful for future research to explore these groups more fully to determine whether their cultural attitudes and behaviors suggest the need to tailor educational programs to the unique characteristics of each group.

Finally, the results of the current study are compatible with previous research on the Reducing the Risk program in that no significant race/ethnic differences were found for knowledge gained (Kirby et al., 1991). No previous studies on the program explored race/ethnic differences in behavioral intentions.

Limitations and Recommendations

To evaluate the curricula, PPGOH administered questionnaires at the beginning and completion of the comprehensive sexuality education program to students who had participated in the program. Collecting data at both pretest and posttest was a key strength of their approach, making it possible to determine whether students' knowledge and intentions to engage in safer sex behavior improved after experiencing the program. However, it is not clear whether students retained their level of posttest knowledge and behavioral intentions over time. In the future, it would be beneficial to repeat assessments of students' knowledge and behavioral intentions periodically after program completion (e.g. immediately after the program and every three months for about a year) to monitor the degree to which their knowledge and behavioral intentions at posttest are maintained or dissipate over time. Also, the inclusion of a comparison group would strengthen the study design.

Since the *Safer Choices* and *Reducing the Risk* curricula were constructed to change both students' knowledge and behavioral intentions, measuring both of these variables was a strength of the assessment approach. However, since the ultimate goal of the curricula is to increase students' safer sex behaviors, it would be helpful to assess the degree to which students change their sexual behaviors as well. For example, questions could be developed to measure how frequently they actually performed each of the behaviors identified in the behavioral intention items (e.g. When you have had sex over the last four weeks, how often did you use a condom or other birth control?). Still, it should be noted that behavioral intentions have been found to be reliable predictors of the targeted behavior (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975).

The items measuring behavioral intentions used a seven-point scale. However, when coding the data, PPGOH data entry staff recoded responses 1- 4 on the scale as 0 (i.e. not intending to engage in safer sex behavior) and responses 5 - 7 as 1 (i.e. intending to engage in safer sex behavior), reducing the measure to a two-point scale. Thus, for the secondary analyses undertaken by the current researchers, the original seven-point responses were unavailable. By collapsing a seven-point scale into a two-point scale, item variability was reduced, making the measure less sensitive. In the future, it would be helpful to retain the seven-point scale when coding the data.

Conclusion

The main objective of the study was to evaluate the efficacy of the comprehensive sexuality education curricula Safer Choices and Reducing the Risk, taught by PPGOH's health educators at both the middle and high school respectively. The overall pattern of the results indicated that there were significant improvements in both knowledge and behavioral intentions for students at both the middle school and high school. Since the effectiveness of Safer Choices has not previously been examined with middle school students, the findings of this study are particularly important in establishing that this curriculum has merit on the middle school level. Further, the programs were found to be effective for both males and females and, for the most part, different race/ethnic groups. Therefore, this research suggests that the Safer Choices and Reducing the Risk curricula are effective tools for sex education at the middle school and high school levels.

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References

- Basen-Engquist, K., Coyle, K. K., Parcel, G. S., Kirby, D., Banspach, S. W., Carvajal, S. C., & Baumler, E. (2001). Schoolwide effects of a multicomponent HIV, STD, and pregnancy prevention program for high school students. *Health Education & Behavior, 28*, 166-185.
- Blank, L., Baxter, S. K., Payne, N., Buillaume, L. R., & Pilgrim, H. (2010). Systematic review and narrative synthesis of the effectiveness of contraceptive services interventions for young people, delivered in educational settings. *Journal of Pediatric Adolescent Gynecology, 23*, 341-351.
- Center for Instructional Excellence. (2008). *The basics of testing*. (Unpublished workshop handout). Purdue University, West Lafayette, IN.
- Centers for Disease Control and Prevention. (2008, June 6). Youth risk behavior surveillance—United States, 2007. *Morbidity and Mortality Weekly Report, 57*, SS04. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5704a1.htm>
- Centers for Disease Control and Prevention. (2011, November 17). *STD trends in the United States: 2010: National data for Gonorrhea, Chlamydia and Syphilis*. Retrieved from <http://www.cdc.gov/std/stats10/trends.htm>
- Centers for Disease Control and Prevention. (2012a, November 21). *Teen pregnancy in the United States*. Retrieved from <http://www.cdc.gov/teenpregnancy/aboutteenpreg.htm>
- Centers for Disease Control and Prevention. (2012b, June 8). Youth risk behavior surveillance—United States, 2011. *Morbidity and Mortality Weekly Report, 61*, SS04. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss6104a1.htm>
- Centers for Disease Control and Prevention (n.d.). *Trends in the prevalence of sexual behavior and HIV testing, national YRBS: 1991-2011*. Retrieved from http://www.cdc.gov/HealthyYouth/yrbs/pdf/us_sexual_trend_yrbs.pdf
- Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Collins, J., . . . Harrist, R. (2001 supplement). Safer Choices: Reducing teen pregnancy, HIV, and STDs. *Public Health Reports, 116*, 82-93.
- Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Harrist, R., . . . Weil, M. (1999). Short-term impact of Safer Choices: A multicomponent, school-based HIV, other STD, and pregnancy prevention program. *Journal of School Health, 69*(5), 181-188.
- Crawford, M., & Popp, D. (2003). Sexual double standards: A review and methodological critique of two decades of research. *Journal of Sex Research, 40*, 13-26.

- Diamond, L., & Savin-Williams, R. (2009). Adolescent sexuality. In R. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., Vol. 1, pp. 479-523). New York: Wiley.
- Dolcini, M. M., Harper, G. W., Boyer, C. B., & Pollack, L. M. (2010). Project ORE: A friendship-based intervention to prevent HIV/STI in urban African American adolescent females. *Health Education & Behavior, 37*, 115-132.
- D'Santiago, V., & Hund, A. M. (2012). Culturally sensitive best practices for sex education programs. *Communique, 40*(6), 18-20.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt, Brace, Janovich.
- ETR Associates. (2009a). *Reducing the risk*. Retrieved from <http://recapp.etr.org/recapp/index.cfm?fuseaction=pages.ebpDetail&PageID=129>
- ETR Associates. (2009b). *Safer choices*. Retrieved from <http://recapp.etr.org/recapp/index.cfm?fuseaction=pages.ebpDetail&PageID=131>
- Field, A. (2005). *Discovering statistics using SPSS*. Thousand Oaks, CA: Sage.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fritz, G. K. (2010). Teenage pregnancy: A disturbing trend. *Brown University Child and Adolescent Behavior Letter, 26*(1), 8.
- Guttmacher Institute. (2009, June). *Facts on Sexually Transmitted Infections in the United States*. Retrieved from http://www.guttmacher.org/pubs/2009/06/09/FIB_STI_US.pdf
- Guttmacher Institute. (2012, February). *Facts on American Teens' Sexual and Reproductive Health*. Retrieved from <http://www.guttmacher.org/pubs/FB-ATSRH.html#23>
- Hamilton B. E., Martin J.A., & Ventura S.J. (2012). Births: Preliminary data for 2011. *National Vital Statistics Reports Web Release, 61*(5). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_05.pdf
- Hoffman, S. D. (2006). *By the numbers: The public costs of adolescent childbearing*. Washington, DC: The National Campaign to Prevent Teen Pregnancy
- Hubbard, B. M., Giese, M. L., & Rainey, J. (1998). A replication study of *Reducing the Risk*, a theory-based sexuality curriculum for adolescents. *Journal of School Health, 68*(6), 243-247.

- Jasny, B. R., Chin, G., Chong, L., & Vignieri, S. (2011, December 2). Introduction: Again, and again, and again . . . *Science*, 334, 1225.
- Kaplan, D. L., Jones, E. J., Olson, E. C., & Yunzal-Butler, C. B. (2013). Early age of first sex and health risk in an urban adolescent population. *Journal of School Health*, 83(5), 350-356.
- Kapadia, F., Frye, V., Bonner, S., Emmanuel, P. J., Smaples, C. L., & Latka, M. H. (2012). Perceived peer safer sex norms and sexual risk behaviors among substance-using Latino adolescents. *AIDS Education and Prevention*, 24(1), 27-40.
- Kirby, D. (2002). Effective approaches to reducing adolescent unprotected sex, pregnancy and childbearing. *Journal of Sex Research*, 39, 51-57.
- Kirby, D. (2007). Abstinence, Sex and STD/HIV education program for Teens. Their impact on sexual behavior, pregnancy and sexually transmitted diseases. *Annual Review of Sex Research*, 18, 143-177.
- Kirby, D., Barth, R., Leland, N., & Fetro, J. (1991). Reducing the risk: A new curriculum to prevent sexual risk-taking. *Family Planning Perspectives*, 23, 6, 252-263.
- Kirby, D. B., Baumler, E., Coyle, K. K., Basen-Engquist, K., Parcel, G. S., Harrist, R., & Banspach, S. W. (2004). The “Safer Choices” intervention: Its impact on the sexual behaviors of different subgroups of high school students. *Journal of Adolescent Health*, 35, 442-452.
- Kirby, D. B., Laris, B. A., & Rolleri, L. A. (2007). Sex and HIV education programs. Their impact on sexual behaviors on young people throughout the world. *Journal of Adolescent Health*, 40, 206-217.
- Landry, D. J., Darroch, J. E., Singh, S., & Higgins, J. (2003). Factors associated with the content of sex education in U.S. public secondary school. *Perspectives on Sexual and Reproductive Health*, 35, 6, 261-269.
- Martinez, G., Copen, C. E., Abma, J. C. (2011). Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006–2010 National Survey of Family Growth. *Vital and Health Statistics*, 23(31), 1-35.
- Maynard, R. A. (1997). *Kids having kids: Economic costs and social consequences of teen pregnancy*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
- Moore, M. J., Barr, E. M., & Johnson, T. M. (2013). Sexual behaviors of middle school students: 2009 Youth Risk Behavior Survey results from 16 locations. *Journal of School Health*, 83(1), 61-68.

- Morrison, D. M., Hoppe, M. J., Wells, E. A., Beadnell, B. A., Wilsdon, A., Higa, D.,...Casey, E. A. (2007). Replicating a teen HIV/STD preventive intervention in a multicultural city. *AIDS Education and Prevention, 19*(3), 258-273.
- Ronen S. (2010). Grinding on the dance floor: Gendered scripts and sexualized dancing at college parties. *Gender and Society, 24*, 355-377.
- Sclafane, J. H., Perry, D. L., Lolacono, M. L., Fryer, C. S., Adair, E. S., Silver, E. J., & Bauman, L. J. (2005). Teaching gender to younger and less sexually experienced adolescents in the context of HIV/STD prevention. *American Journal of Sexuality Education, 1*(1), 119-139.
- Swenson, R. R., Hadley, W. S., Houck, C. D., Dance, S. K., & Brown, L. K. (2011). Who accepts a rapid HIV antibody test? The role of race/ethnicity and HIV risk behavior among community adolescents. *Journal of Adolescent Health, 48*, 527-529.
- The National Campaign to Prevent Teen and Unplanned Pregnancy. (2012, March). *Teen birth rates: How does the United States compare?* Retrieved from http://www.thenationalcampaign.org/resources/pdf/FastFacts_InternationalComparisons.pdf
- Turchik, J. A., & Gidycz, C. A. (2012). Exploring the intention-behavior relationship in the prediction of sexual risk behaviors: Can it be strengthened? *Journal of Sex Research, 49*(1), 50-60.
- Walcott, C. M., Meyers, A. B., & Landau, S. (2008). Adolescent sexual risk behaviors and school-based sexually transmitted infection/HIV prevention. *Psychology in the Schools, 45*(1), 39-51.
- Zimmerman, R. S., Cupp, P. K., Donohew, L., Sionean, C. K., Feist-Price, S., & Helme, D. (2008). Effects of a school-based, theory-driven HIV and pregnancy prevention curriculum. *Perspectives on Sexual and Reproductive Health, 40*(1), 42-51.

Table 1

*Characteristics of effective sex education programs**

1. Involved people with diverse backgrounds such as educators and researchers to develop the curriculum
2. Did a needs assessment of the target group
3. Used health behavior model or theories to identify health goals and address factors relevant to achieving these goals
4. Designed activities in accordance with the community's values and resources such as staff time and skills
5. Ran a pilot-test on the program
6. Concentrated on specific health goals (i.e. prevention of STIs and/or unintended pregnancies)
7. Clearly targeted specific behaviors (e.g. condom or contraceptive use) leading to identified health goals addressed contexts that would facilitate or inhibit these behaviors
8. Included risk and protective factors that influence sexual behaviors such as knowledge, attitudes, and self-efficacy
9. Fostered a safe social setting for adolescent participation
10. Incorporated a variety of activities to achieve health goals
11. Used active learning strategies designed to help participants apply information to their lives and change risk and protective factors associated with health goals
12. Used age-appropriate and culturally sensitive educational materials and methods suited to participants' sexual experience
13. Topics were taught in a logical order
14. Cultivated support from relevant community bodies such as health departments and school districts
15. Chose health educators with relevant backgrounds and provided them with training and supervision
16. Employed strategies to attract and retain adolescents and decrease obstacles to their participation
17. Implemented the program as intended

*Kirby et al., 2007

Table 2		
<i>Mean Knowledge Scores for Main Effects</i>		
Effect	Middle School Mean (s.d)	High School Mean (s.d)
Pretest-Posttest		
Pretest	3.39 (1.75)*	3.31(1.74)*
Posttest	9.03 (1.54)	8.72(1.48)
Gender		
Male	6.20 (3.30)	5.98 (3.16)
Female	6.23 (3.25)	6.06 (3.15)
Race/Ethnicity**		
Caucasian	6.36 (3.22)	6.15 (3.08)
African American	6.05 (3.27)	5.85 (3.22)
Other	5.99 (3.38)	5.88 (3.27)
*p ≤ .001		
**Note: Although the main effect was significant at the p ≤ .05 level, Bonferroni post hoc analyses indicated that none of the racial/ethnic groups were significantly different from each other.		

Table 3				
<i>Percentage of middle school and high school students intending to engage in safer sex behaviors at pretest versus posttest</i>				
Type of Behavioral Intention	Percentage of students intending to engage in safer sex behaviors			
	Middle School (n = 329)		High School (n = 395)	
	Pretest	Posttest	Pretest	Posttest
Likely to use condom or other birth control	79.3% ^{***} (n = 261)	96.7% (n = 318)	67.3% ^{***} (n = 266)	92.2% (n = 364)
Likely to get tested for STIs on a regular basis	51.1% ^{***} (n = 168)	89.4% (n = 294)	44.8% ^{***} (n = 177)	83.5% (n = 330)
Likely to discuss birth control with partner	58.5% ^{***} (n = 193)	88.2% (n = 291)	69.1% ^{***} (n = 273)	91.4% (n = 361)
Likely to refuse sex if/when they do not want to have sex	71.5% ^{***} (n = 236)	90.9% (n = 300)	60.5% ^{***} (n = 239)	88.4% (n = 349)
Significant McNemar's test for pretest versus posttest, *p ≤ .05, **p ≤ .01, ***p ≤ .001				

Type of Behavioral Intention	Middle School				High School			
	Females		Males		Females		Males	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Likely to use condom or other birth control	86.4% ^{***} (n = 133)	98.1% (n = 151)	73.1% ^{***} (n = 128)	95.4% (n = 167)	65.6% ^{***} (n = 124)	91.5% (n = 173)	68.9% ^{***} (n = 142)	92.7% (n = 191)
Likely to get tested for STIs on a regular basis	66.2% ^{***} (n = 102)	92.2% (n = 142)	37.7% ^{***} (n = 294)	86.9% (n = 152)	48.7% ^{***} (n = 92)	88.4% ^a (n = 167)	41.3% ^{***} (n = 85)	79.1% (n = 163)
Likely to discuss birth control with partner	65.2% ^{***} (n = 101)	90.3% (n = 140)	52.6% ^{***} (n = 92)	86.3% (n = 151)	70.9% ^{***} (n = 134)	93.7% (n = 177)	67.5% ^{***} (n = 139)	89.3% (n = 184)
Likely to refuse sex if/when they do not want to have sex	86.5% ^{**} (n = 134)	95.5% (n = 148)	58.3% ^{***} (n = 102)	86.9% (n = 152)	66.7% ^{***} (n = 126)	94.2% (n = 178)	54.9% ^{***} (n = 113)	83.0% (n = 171)

Significant McNemar's test for pretest versus posttest, *p ≤ .05, **p ≤ .01, ***p ≤ .001

Table 5

Percentage of middle school students intending to engage in safer sex behaviors at pretest versus posttest by race/ethnicity

Type of Behavioral Intention	Middle School						High School					
	Caucasian		African American		Other		Caucasian		African American		Other	
	Pretest	Posttest	Pretest	Posttest	Pretest	Pretest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Likely to use condom or other birth control	81.6% ^{***} (n = 151)	97.3% (n = 180)	79.7% ^{**} (n = 47)	96.6% (n = 57)	74.1% ^{***} (n = 63)	95.3% (n = 81)	75.4% ^{***} (n = 159)	98.1% (n = 207)	54.9% ^{***} (n = 50)	92.3% (n = 84)	61.3% [*] (n = 57)	78.5% (n = 73)
Likely to get tested for STIs on a regular basis	48.6% ^{***} (n = 90)	88.1% (n = 163)	59.3% ^{***} (n = 35)	93.2% (n = 55)	50.6% ^{***} (n = 43)	89.4% (n = 76)	36.5% ^{***} (n = 77)	83.9% (n = 177)	46.2% ^{***} (n = 42)	91.2% (n = 83)	62.4% (n = 58)	75.3% (n = 70)
Likely to discuss birth control with partner	57.8% ^{***} (n = 107)	89.7% (n = 166)	61.0% ^{***} (n = 36)	89.8% (n = 53)	58.1% ^{***} (n = 50)	83.7% (n = 72)	73.9% ^{***} (n = 156)	96.2% (n = 203)	58.2% ^{***} (n = 53)	91.2% (n = 83)	68.8% (n = 64)	80.6% (n = 75)
Likely to refuse sex if/when they do not want to have sex	68.1% ^{***} (n = 126)	90.3% (n = 167)	79.7% (n = 47)	89.8% (n = 53)	73.3% ^{***} (n = 63)	93.0% (n = 80)	66.8% ^{***} (n = 141)	93.8% (n = 198)	51.6% ^{***} (n = 47)	84.6% (n = 77)	54.8% ^{***} (n = 51)	79.6% (n = 74)

Significant McNemar's test for pretest versus posttest, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$