The Effectiveness of the COMPASS Teen Sexual Health Education Program

Program Analysis

December 9, 2016

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The Effectiveness of the COMPASS Teen Sexual Health Education Program

COMPASS is a teen sexual health education curriculum designed to serve 7th, 8th, and 9th grade students. The program is currently delivered in 15 school districts in southwest Missouri. The program developers train community educators who provide

relevant, age-appropriate, and medically accurate information with a goal of aiding students to attain healthy, life-long outcomes. The 10-day adolescent sexual risk avoidance program educates students about changes in their bodies during adolescence, provides current CDC statistics regarding STDs, contraception effectiveness, teen pregnancy issues, healthy decision-making about dating and marriage, boundary-setting skills, and the importance of goal setting for future success.

COMPASS Curriculum Development

The COMPASS curriculum was developed in the late 1990's, in response to increasing teen pregnancy rates in the community of Joplin, MO. The community health program, LifeChoices, created a department dedicated to the promotion of teen sexual health with the goal of reducing teen pregnancy and STD infection rates (Centers for Disease Control, 1993). The original curriculum delivered an abstinence-only message to area schools through programing called, *Virtuous Reality*, and a school-based curriculum called *Choosing the Best.* In 2000, a state contract with the MO Dept. of Health, provided education to over 11,000 students in area schools. Due in part to Title V funding in 2001, *Virtuous Reality* expanded into 35 schools, serving over 19,000 students. By 2003 the prevention department at LifeChoices was called *"Connection Institute"* with its own website and plans to move into 18 counties due in part to a SPRANS grant award.

By the late 2000's, as research consistently indicted that abstinence-only sex education was not effective in decreasing teen pregnancy (c.f. DiCenso, Guyatt, Willan, & Griffith, 2002; Trenholm, Devaney, Fortson, Quay, Wheeler, & Clark, 2007), LifeChoices began moving away from pre-packaged school programming and began

creating the curriculum that became COMPASS. This change in direction allowed LifeChoices to deliver current medical data and statistics with time-sensitive responsiveness. Unlike packaged curricula that were updated every 6-8 years, COMPASS could be updated in real time. If the CDC released new statistics or findings, students in COMPASS classrooms would receive the new medically accurate information that afternoon, rather delivering medically inaccurate data or waiting years for an update. This responsiveness to current scientific research allowed LifeChoices to immediately address community-specific needs, such as an STD outbreak, and respond quickly to teen sexual health crises. Since 2011, COMPASS has been researched, written, and updated, in-house at LifeChoices.

Empirical Evidence About Abstinence-Only Sex Education

The COMPASS curriculum has changed in response to empirical evidence about the abstinence-only sex education curricula currently offered in public schools. The teen pregnancy rates in the United States have been decreasing since 1996 when the passage of Title V, Section 510 of the Personal Responsibility and Work Opportunity Reconciliation Act mandated government funding for abstinence-only sex education in schools (Social Security Act, 1996). From 1996 to 2013, teen birth rates between ages 15-19 have decreased from 53.5 to 26.5 per 1,000 females (Ventura, Hamilton, & Mathews, 2014). Proponents of abstinence-only sex education have been quick to claim credit for the decrease in teen pregnancy rates. Cook (2008) reiterated the oft-repeated claim that the promotion of abstinence offers 100% effectiveness in preventing pregnancy. The National Abstinence Education Foundation (AbstinenceWorks, 2013)

cited 23 published and unpublished studies supporting positive outcomes from various abstinence education programs. Jemmott, Jemmott, & Fong (1998) reported that students taught abstinence reported less sexual activity than a control group. Lieberman and Su (2012) reported *Choosing the Best* students were 1.5 times more likely to delay intercourse than a control group. AbstinenceWorks also pointed to the 73% of female and 72% of male students under age 17 who are still virgins, as further evidence of the effectiveness of abstinence education in schools.

Despite the correlational evidence offered as support of abstinence-only sex education by its proponents, the empirical evidence shows that abstinence-only sex education have found little to no support for attitudinal and behavioral changes resulting from abstinence education. Empirical data suggests that teens stay abstinent at the same rate regardless of the type of sex education they receive: "the abstinence, safer sex, and control groups did not differ significantly in the percentage of virgins who reported sexual debut by 6- or 12-month follow-up" (Jemmott, et al, 1998, p. 1529). In a meta-analysis of both abstinence-based and school based programs reported by DiCenso, et al, (2002), neither type of program resulted in delay of intercourse.

Trenholm, et al, (2007) reported that after the first year "youth in the [abstinence] program group were no more likely to abstain from sex than their control group counterparts" (p. 29). Ironically, Jemmott, et al, also found that comprehensive programs might promote abstinence better for teens who already sexually active: "among adolescents who reported sexual experience at baseline, the safer-sex intervention group reported less sexual intercourse in the previous 3 months at 6- and 12-month follow-up

than did control and abstinence intervention" (p. 1529). And the claim that abstinence-only sex education is working because 73% of female and 72% of male students under age 17 are still virgins (AbstinenceWorks, 2013), is unimpressive in light of the fact that the median age of sexual initiation is 17.8 years (Finer & Philbin, 2014). Teens aged 13 to 17 comprise the 73% of teens who have not yet reached the age at which half of teens say they first had sex.

Other research has established that the program effects of abstinence-only sex education, when they occur, tend to be short-lived. Regarding two previously cited studies, Jemmott et al (1998) wrote: "Abstinence intervention participants were less likely to report having sexual intercourse in the 3 months after intervention than were control group participants, *but not at 6- or 12-month follow-up*" (p. 1529, emphasis added) and Lieberman and Su (2012) wrote: "students who were virgins at the pretest were nearly 1.5 times more likely to delay onset of sexual behavior by the end of the 9th grade, *a difference*, *however, that was not sustained by the beginning of the 10th grade* [at the 3 month follow-up]" (p. 9, emphasis added). The time limitations of the effects of abstinence-only sex education are often ignored. For instance, on their website, *Choosing the Best* quotes only Lieberman and Su's interim finding about students being 1.5 times more likely to delay onset of sexual behavior, but omits mention that the effect disappeared within 3 months.

Rather than reducing teen pregnancy, abstinence-only sex education may actually represent a risk factor for teen pregnancy. Belying the claim that abstinence offers 100% effectiveness in preventing pregnancy (c.f. Cook, 2008), the DiCenso, et al (2002)

meta-analysis reported that “four abstinence programmes and one school based sex education programme were associated with an increase in number of pregnancies among partners of young male participants” (pooled odds ratio 1.54; 95% confidence interval 1.03 to 2.29) (p. 1). In an evaluation of the relationship between public policy regarding teaching of abstinence in school and morbidity outcomes, Stanger-Hall & Hall (2011) found that “the more strongly abstinence is emphasized in state laws and policies, the higher the average teenage pregnancy and birth rate” (p. e24658).

COMPASS Approach to Sexual Delay

The curriculum developers at LifeChoices distinguish COMPASS from *abstinence-only* curricula in two ways. First, the COMPASS curriculum is designed to be inclusive of and applicable to all students, regardless of sexual orientation. The program stresses that the COMPASS program will benefit anyone who can get pregnant, get someone pregnant, contract a sexually transmitted infection (STI), or infect someone else with an STI. Second, COMPASS avoids messages that promote sex as shameful, or that judge those who have had past sexual experiences, either by victimization or by choice.

The philosophical approach underlying COMPASS is that youth are capable of making healthy choices when presented with medically accurate information. Therefore, the focus of COMPASS is to empower teens to make healthy choices. The motto of the program is: *The Choice is Yours, Choose to Know*. Rather than presenting students with a single option – the approach used by abstinence-only curricula – COMPASS acknowledges that students face a multitude of choices about when and if to become sexually active and challenges students to ask themselves, “Why right now?” when

considering their sexual health choices. The program reiterates that CDC guideline that sexual risks are lowest when sex occurs within "a long-term mutually monogamous relationship with an uninfected partner" (CDC, 2016, p. 1), or within a committed relationship such as marriage.

Purpose and Approach of the Evaluation

Although COMPASS has adapted in response to empirical scientific literature and advances in medical knowledge, this evaluation represents the first comprehensive examination of the outcomes of the COMPASS program itself. The LifeChoices leadership team expressed their desire that the evaluation not simply be designed to tell them that the program worked, but rather to ask "in what ways does it work," "for whom does it work," and "under what conditions does it work?" If the program was ineffective in some way or was not reaching maximal effectiveness, the team said, they wanted to know so that the curriculum could continue to be improved. Therefore, we approached the analysis with minds open to understanding the nuance of effectiveness in whatever ways the effectiveness may reveal itself.

The evaluation focused on the aspects of the COMPASS program that were important to the curriculum developers. One goal of LifeChoices is the reduction of outcomes of morbidity (pregnancy and disease). O'Leary, DiClemente, and Aral (1997) recommended including biomedical morbidity markers such as teen pregnancy and STD rates, as part of the evaluation of any sex education program. This evaluation asked about both.

Because of the importance of knowing their sexual health status, COMPASS connects teens to community resources through which they can be tested for STDs and pregnancy. And COMPASS provides current, relevant, and medically-accurate information through yearly updates to their Junior High and Middle School students workbooks, along with real time updates to their instructors with information from the Centers for Disease Control, the American Sexual Health Association, the Medical Institute for Sexual Health, and the Missouri Department of Health. This evaluation surveyed students on their empowerment to access healthcare and support for their own sexual heath.

Building on scientific literature that shows that teens who are connected to responsible adults are more likely to delay sexual debut and the other antisocial behaviors correlated with early sexual onset, COMPASS encourages students to build connections with their parents and/or grandparents through conversations about the curriculum. The program also encourages students to build connections with their teachers and fellow students who are committed to protecting their sexual health. The survey asked students for their evaluation of the program success in addressing delayed sexual debut, antisocial behaviors, and greater comfort in talking to parents and grandparents about topics that can be uncomfortable to discuss. Further details about the content of the survey will follow and a copy of the survey is contained in Appendix A.

Program Evaluation for COMPASS

Methods

Surveys

Students who participated in the COMPASS program were surveyed before and after their participation in order to evaluate the effects of the program. The survey was designed by a Ph.D. evaluator and based on current scientific literature about research-based, best practices models in sex education program evaluation. The survey used dichotomous, categorical, and Likert-type item response scales. All Likert-type item response scales were anchored with five response options so that resulting data could be treated as scale-level data for analysis (Dawes, 2008).

Demographics

Students who participated in the COMPASS teen sexual health education curriculum were asked to provide basic demographic information about themselves. A count of all students served by the program and details about their demographic characteristics are contained in Table 1. A breakdown of the number of students participating in the program by school is contained in Table 2.

Survey Methodology

For this research we employed a quasi-experimental methodology and collected data using an anonymous, cross-sectional survey. A pretest was administered to participants at the beginning of the first class, and a posttest was administered upon completion of the program. The pretest contained 33 items. The posttest contained 45 items. All items on the pretest were also on the posttest (sexual intentions, future plans, perceptions of condoms, sexting, antisocial behaviors, and empowerment). The posttest

had unique items about sexual behavior and consequences, contraception use, program evaluation, and a qualitative item inviting feedback about the program). Both the pretest and posttest asked for demographic data so that if a student took only one of the tests, we would still have demographic data for as many students as possible. Both the pretest and posttest included an explanation about the purpose of the survey for the purpose of informed assent. A copy of the pretest and posttest is contained in Appendix A.

Anonymous Matching of Pretests and Posttests

Surveys were administered through the survey website Survey Monkey. In order to match pretest and posttest survey responses, an anonymous coding system was implemented. (Prior to administration of the pretest, instructors were asked to randomly assign a number to each of their students from a pre-assigned range of unique identifier numbers.) Students were asked to create a unique identifier consisting of various pieces of demographic data. Instructors remained in the classroom to supervise the completion of the surveys and answer any questions from the students. Although the instructors knew the students, the unique identifier blinded the evaluator to the identity of the students and kept the surveys anonymous while still allowing for matching of pretests and posttests. An administrator at LifeChoices downloaded an electronic dataset from the Survey Monkey website that was provided to the evaluator for data cleaning and analysis.

Participants

A total of 6755 students completed either a pretest, a posttest, or provided enough demographic data to document their participation in the program. Of the total 6755 students surveyed, 5518 of them completed a pretest, and 4527 completed a posttest. This

resulted in 3043 students who had a matched pretest and posttest. Because not every student answered every question, the number of students included in any particular analysis might fall short of the 3043 total. To the degree possible, we included as many students as provided usable responses in analyses.

Demographic data collection included gender, grade level, racial or ethnic background, and age. Respondents were predominantly White (66.3%), male (52.4%) enrolled in either 7th or 8th grade (69.9%), aged between 13 and 15 (82.3%) with an average age of 13.10 years (*SD* = 0.95). Details about the numbers, percentages, and demographic characteristics of participants who answered at least one survey or who otherwise provided usable demographic data are contained in Table 1.

Table 1

Demographic Characteristics of Students Completing Surveys, N = 6755

Characteristic	Frequency	Percent
Gender		
Male	3540	52.4%
Female	3215	47.6%
Age (*M* = 13.10 years, *SD* = 0.95)		
12 or younger	966	14.3%
13	2137	31.6%
14	2285	33.8%
15	1142	16.9%
16	163	2.4%
Grade		
7th grade	2299	34.0%
8th grade	2426	35.9%

9th grade	1847	27.3%
10th Grade	103	1.5%
11th Grade	44	0.7%
12th Grade	36	0.5%
Race/Ethnicity		
Asian/South Asian	158	2.3%
Black/African American	194	2.9%
White	4479	66.3%
American Indian or Alaska Native	689	10.2%
Hispanic or Latino	600	8.9%
Prefer not to answer	635	9.4%

Table 2

Number of Students Participating by School, N = 6755

	n	percent
Baxter Springs Middle School	194	2.9%
Carl Junction Middle School	15	0.2%
Carl Junction High School	273	4.0%
Carthage Junior High School	653	9.7%
Carthage High School	358	5.3%
Central Junior High School	165	2.4%
College Heights Christian School	1	0.0%
Columbus High School	5	0.1%
Diamond Middle School	170	2.5%
Diamond High School	119	1.8%
East Middle School	429	6.4%
Joplin High School	523	7.7%
Neosho Middle School	56	0.8%
Neosho Junior High School	711	10.5%
Neosho High School	5	0.1%
North Middle School	269	4.0%
Riverton Middle School	244	3.6%

Riverton High School	169	2.5%
Sarcoxie Middle School	50	0.7%
Sarcoxie High School	83	1.2%
Seneca Junior High	95	1.4%
Seneca High School	305	4.5%
St. Peter's Middle School	46	0.7%
South Middle School	236	3.5%
Webb City Middle School	245	3.6%
Webb City High School	1208	17.9%
McAuley Catholic School	128	1.9%
Total	**6755**	**100%**

Data Analysis

Accuracy of the Data File

Data analysis was conducted largely with the statistical program IBM SPSS Statistics 21 (SPSS). Online survey data were retrieved as an SPSS file from the Survey Monkey website (www.SurveyMonkey.com). The pretest and posttest datasets were combined into a single file then restructured to match individual respondents' answers from pre to post. Data were checked for accuracy to ensure that the students' demographic data (i.e. gender, age, and ethnicity) matched from pretest to posttest. A random identification number was assigned to replace the code that students entered on the survey, so to remove any potentially personally identifying information.

Missing Data

For all cases in which the student did not provide an answer but the response option existed for "prefer not to answer", missing data were coded as a preference not to provide a response. In the case of missing demographic or categorical data, if the student provided an answer on either the pretest or posttest, that answer was used. If the student

provided contradictory answers (i.e. “male” on pretest and “female” on posttest) the pretest response was used. In the case of contradictory pretest and posttest responses for categorical data, (i.e. conflicting answers on how many times the student had consumed alcohol or gotten into fights in he last 6 months), the lower figure was used. Students who specified that they were sexually experienced at the pretest but did not provide an answer on the posttest or provided a conflicting answer (i.e. experienced on pretest but a virgin on the posttest) were coded as having become sexually experienced. Fewer than 1% of cases were recoded for conflicting answers.

For missing scale data, cases were excluded pairwise. In *pairwise exclusion*, when a participant is missing data for any variable, that participant is excluded from analysis only on analyses involving variables for which that participant is missing data (Byrne, 2009). Using pairwise exclusion will cause the sample size to fluctuate per analysis because only students who provided complete data were analyzed (Gravetter & Wallnau, 2012). Whenever a student provided usable responses, that student was included in the analysis for that item or scale.

Power Analysis

When evaluating the effect of a program on participants, researchers commonly subtract the average posttest score from the average pretest score to determine the mean difference (M_D) of the change over time (Gravetter, & Wallnau, 2012). The magnitude of the mean difference indicates how much overall scores changed from pretest to posttest or the *program effect*. Of course, some variation between the pretest and posttest scores can be expected simply by random chance; therefore, the researcher is not simply looking

for differences but rather for *statistically significant* differences in the scores. Statistical significance means that any differences observed between the pretest and posttest scores were unlikely to have occurred by random chance (Field, 2013).

To determine the power of our study to detect statistically significant differences between pretest and posttest scores (should they exist), we conducted a power analysis. Using Cohen's (1988) conventions, we established a minimal effect size at $d = .20$, or one-fifth of a standard deviation. Given our sample size of 3043 matched pairs we concluded that the sample size in this study would allow us to find a very small effect size of $d = .10$ at an alpha level of .001, with 99% power (Faul, Erdfelder, Lang, & Buchner, 2007; Faul, Erdfelder, Buchner, & Lang, 2009). The power analysis confirmed that 99% of the time we could detect even trivial program effects with extremely high confidence that those effects represented non-random differences.

An Overpowered Study

While statistical significance (measured by *p* values) informs the researcher whether observed program effects were likely due to chance, *statistical* significance is not the same thing as *practical* significance of the outcome. The central limit theorem dictates that as sample size increases, the standard error of the mean decreases (Johnson, 2015). The mathematical result is that the same mean differences (M_D) that would not be statistically significant with a sample size of, say, 30 would become statistically significant if the sample size was inflated to 100 (Tanguma, 2001). Most of the analyses conducted on our data used sample sizes of $n > 3000$. Because of our large sample size, even the tiniest shifts on scale scores would be statistically significant regardless of

whether they were clinically significant or practically valuable. This created a circumstance in which our study was statistically *overpowered* such that even trivial shifts in outcome variables would nonetheless be statistically significant, $p < .05$. To honestly interpret the findings, therefore, we elected to use analyses that clarified the nature of program effects, ad report effect sizes for all analyses, rather than mindlessly rely upon *p* values as evidence of successful outcomes.

Effect Sizes and Confidence Intervals

To aid in interpretation of our findings, we reported effect sizes and confidence intervals wherever appropriate. In studies such as this one, in which the large sample size (e.g., $n > 1000$) will almost certainly render even small mean differences between pre and post tests as statistically significant, effect sizes and confidence intervals lend interpretive clarity that is lacking when solely considering *p* values. Although not a funding source for this project, the U.S. Department of Health and Human Services has requested the reporting of effect sizes in "teen pregnancy prevention research" (2014, p. 11).

In the current study, we used Cohen's *d* as the effect size to measure the magnitude of the mean differences (i.e., *practical significance*) from pretest to posttest with reference to the standard deviation of the pretest. Jacob Cohen (1988) provided rough guidelines for interpreting effect sizes (represented by the letter *d*) by describing $d < .20$ as *small*, effects between $d = .20$ and .50 as *medium*, and effect sizes exceeding .50 as *large*. If the effect size is below the $d = .20$ level, this indicates that the program had very small *practical significance* for the participants. Effect sizes approaching the $d = .50$ level indicate that the program had moderate practical significance (usefulness), and an

effect size greater than $d = .50$ indicates the program had substantial practical significance.

When the data analysis required an ANOVA, we reported partial eta squared (η^2_p) as the effect size. The eta squared family measures the strength of relationship between the variables, measured by the percentage of variance in the dependent variable(s) that can be accounted for by the independent variable(s). As with Cohen's *d*, eta squared can be interpreted by guidelines: $\eta^2 = .01$ as *small*, $\eta^2 = .06$ as *medium*, and $\eta^2 = .14$ as *large* (Cohen, (1988).

A *95% confidence interval* displays the accuracy of the point-estimate (e.g., means and mean differences; Tabachnick & Fidell, 2007). Whenever appropriate, we calculated bootstrapped 95% confidence intervals (95% CI) using SPSS, based on 1000 iterations. For point-estimate means the 95% CIs tell us the general accuracy of the reported means. For example, if the descriptive statistic mean is 3.0 with a 95% CI of [2.5, 3.5], we can interpret that as the mean is 3.0 plus or minus 0.5. In cases where the CI includes 0 (i.e. one CI is positive and the other is negative), then it is unlikely that the mean difference – even if it is statistically significantly different – is truly different.

Results

In order to measure potential connections between teen sexual activity and potential psychological and physical risks, we included scales to measure students' antisocial Risk Behavior, Substance Abuse Risk Behaviors, and Sexual Risk Behaviors. The scales are described below.

Antisocial Risk Behavior

Five survey items on the pretest were used to assess students' potential antisocial behavior. Two additional items asked about alcohol use and sexual activity. The items were preceded by the question-stem "In the last 6 months, did you…" Students were given three answer options for each item (*No*, *Once*, *More than once*), with the researchers assigning a numerical score of 0, 1, 2 to each answer option, respectively. A summation score of all five items was used to construct an Antisocial Behavior scale ranging from 0 (student answered "No" to all five items) to 10 (student answered "More than once" to all five items), $N = 1422$, $M = 0.40$, $SD = 1.03$. Overall, 89.9% of students scored 0 or 1 on the Antisocial Behavior scale. These results indicate that the vast majority of these students were not at high risk for antisocial behavior. A list of all seven risk behaviors sorted by prevalence can be found in Table 3.

Table 3

Student Risk Behaviors Sorted by Prevalence, N = 6755

In the last 6 months, have you…	*n*	Percent
…drank alcohol, other than a few sips?		
No	5963	88.3%
Once	418	6.2%
More than once	374	5.5%
Total Yes	**792**	**11.7%**
…been in physical fights on school property?*		
No	6053	89.6
Once	490	7.3
More than once	212	3.1
Total Yes	**702**	**10.4%**
…driven a car without permission?*		
No	6207	91.9%
Once	314	4.6%
More than once	234	3.5%
Total Yes	**548**	**8.1%**
… had sexual intercourse?		
No	6322	93.6
Once	184	2.7
More than once	249	3.7
Total Yes	**433**	**6.4%**
…been suspended from school?*		
No	6448	95.5%
Once	228	3.4%
More than once	79	1.2%
Total Yes	**307**	**4.6%**
…run away from home?*		
No	6453	95.5%
Once	213	3.2%
More than once	89	1.3%
Total Yes	**302**	**4.5%**

Table 3 continued

In the last 6 months, have you…	*n*	Percent
…tagged graffiti in a public place?*		
No	6509	96.4%
Once	132	2.0%
More than once	114	1.7%
Total Yes	**246**	**3.7%**

Note. Items with an asterisk (*) were included in the antisocial behavior scale. The items about drinking alcohol and having sex were not tallied as part of the antisocial behavior scale.

Sexual Risk Behaviors

On both the pretest and posttest, students were asked if they had even had sex or had sex in the last 6 months. Students were given three answer options for each item (*No*, *Once*, *More than once*). On the posttest, students were asked about having been or gotten someone pregnant, use of contraception, and sexual behavior. Between 6.4% and 10.5% of the students indicated that they have had sex at least once in the last 6 months; 1.3% (*n* = 56) of the students indicated that they have been pregnant or caused a pregnancy; and 4.1% (*n* = 179) of the students indicated that they have had multiple sexual partners at least once in the last 6 months. We did not ask about engaging in sexual activities other than intercourse. See Table 4 for more details.

Table 4

Sexual Behaviors and Conditions

In the last 6 months, have you had sexual intercourse?						
	Pretest		Posttest			
No	6322	93.6%	4102	89.5%		
Once	184	2.7%	215	4.7%		
More than once	249	3.7%	266	5.8%		
Total Yes	433	6.4%	481	10.5%		
To the best of your knowledge, have you ever been pregnant or gotten someone pregnant?						
No	4330	98.7%				
Yes	56	1.3%				
The last time you had sex, did you or your partner…						
	…use a condom?		*…use contraception?*		*…drink alcohol before?*	
No, we did not	208	4.7%	234	5.3%	315	7.2%
Yes, we did	171	3.9%	145	3.3%	64	1.5%
Never had sex	4006	91.4%	4006	91.4%	4006	91.4%
During your life, with how many people have you had sexual intercourse?						
None	4006	91.3%				
1	201	4.6%				
2	70	1.6%				
3	41	0.9%				
4 or more	68	1.6%				

Responses for sexual debut were broken down by age. Given the average age of the students in this survey (13.1 years), it was not surprising that very few respondents were sexually experienced. In light of the claim that 73% of female and 72% of male

students under age 17 are still virgins (AbstinenceWorks, 2013), nearly all (99.1%) of students were less than age 17, and 86.3% of all students under age 17 were virgins.

To further clarify the rates of sexual activity, we compared the rates of sexual debut to the national averages reported by Finer and Philbin (2014). Percentages were slightly higher for all age groups (except 18 year olds), as can been seen Table 5. Because of the small number of respondents aged 16 and older, their percentages are unrepresentative of national averages and of the majority of respondents.

Table 5

Sexual Debut by Age

	Percent of x-year-olds who report having had sex at posttest			
Age	No	Yes	% Yes	National
12	709	19	2.6%	2.4%
13	1322	119	8.3%	5.4%
14	1339	194	12.7%	11.0%
15	558	170	23.4%	20.0%
16	65	45	40.9%	33.0%
17*	7	21	75.0%	48.0%
18*	6	9	60.0%	61.0%
Total	**4006**	**577**	**12.60%**	

Note: Because of the small sample size, findings for 17 and 18 year olds may not be representative. National results from Finer & Philbin (2013)

The percentages of sexual activity reported were higher on the posttest than on the pretest, but the number of students answering the posttest dropped by over 2000 (29.5%), which may skew the results. To better understand the 48 students who said that they were

virgins on the pretest, but not so on the posttest, we examined only the matched pairs of students who answered both the pretest and posttest to determine a more accurate conversion rate. Because student were asked about their sexual status at both the pretest and posttest, we were able to determine hat the conversion rate during the program was 1.2%, $X^2(1) = 4077.93$, $p < .001$, Cramer's $V = .943$, $p < .001$. This represents only the students who answered both the pretest and posttest. Further descriptive statistics about students' rate of sexual conversion are contained in Table 6.

Table 6

Rate of Sexual Conversion During the Program, (N of Valid Cases = 4583)

	Had Sex?				
	Pretest	Posttest	Change		Cramer's V
No	4150 (90.6%)	4102 (89.5%)	- 48	$X^2(1) = 4077.93$, $p < .001$	.943, $p < .001$
Yes	433 (9.4%)	481 (10.5%)			

Associations Between Sexual Status and Antisocial Behavior

Early onset of sexual activity has been associated with associated with other high-risk adolescent behaviors such as school suspension, running away from home, marijuana use, and suicide among females, and with psychological outcomes like depression, anxiety, and low self-esteem (Orr, Beiter, & Ingersoll, 1991). Only longitudinal studies can demonstrate the trajectory of onset of these potentially health-endangering behaviors, so causal assertions are not warranted. Figure 1 depicts the distribution of antisocial behavior risk scores (on a scale of 0 – 10) comparing students who were sexually active at the posttest or not. Students who were virgins had a median

antisocial risk score of zero. Having sex was associated with a three unit median (Mdn = 3) increase in antisocial risk. Sexually active students were much more likely to score in upper quartile of risk behaviors, as indicated by the "whiskers" on the boxplot in Figure 1. It was highly unlikely that non-sexually active students would score above a 4 on risk factors.

Remembering that the average age of participants in this program was 13.1, the findings of Finer and Philbin, (2013) bear consideration. They found that for many adolescents under 14, first intercourse was neither voluntary nor consensual. It could be that the risk behaviors identified in this study and their association with early onset intercourse might reflect a more pervasive pattern of chaos and instability in the lives of these teens. These items asked about behaviors such as running away from home, being suspended from school, and fighting.

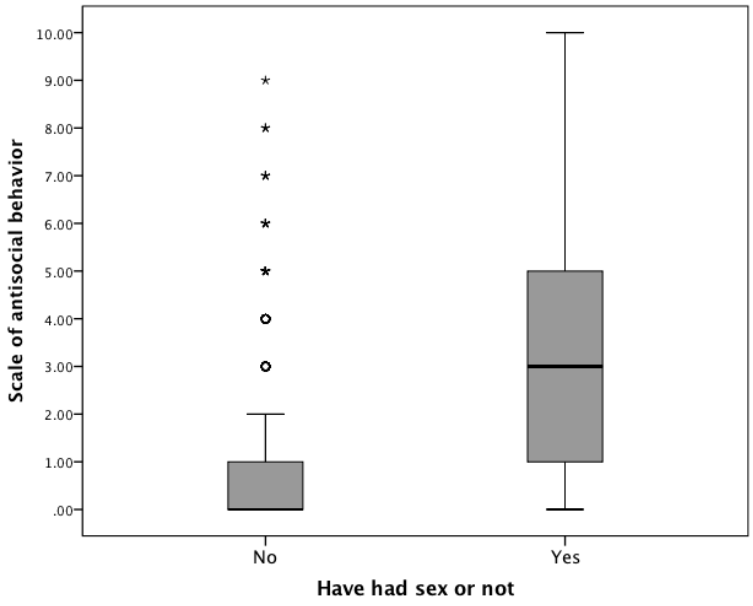

Figure 1. Distribution of behavior risks based on sexual activity

Digital Exchange of Sexually Explicit Pictures ("Sexting")

With the proliferation of camera-equipped cell phones, the incidence of the digital exchange of sexually explicit pictures (a.k.a. "sexting") among teens has come to the attention of teachers and parents. The National Campaign to Prevent Teen and Unplanned Pregnancy (2008) surveyed students about their participation in sexting and found that 22% of teen girls and 18% of teen boys have posted or sent semi-nude pictures or videos of themselves. Most commonly, the pictures or videos are sent to a boyfriend/girlfriend (71% of girls; 67% of boys), but teens also say that those images are sometimes shared with others: 25% of teen girls and 33% of teen boys say they have had someone who received nude or semi- nude images share those images with them. Five items asked participants about their participation in sexting activities. The results are contained in Table 7. The results are split by gender in Table 8.

Table 7

Exchange of Sexually Explicit Pictures ("Sexting") Sorted by Prevalence (N = 6755)

Item	*n*	Percent
Has somebody else you know sent you nude pictures of himself/herself?		
No	5174	76.6%
Once	634	9.4%
More than once	947	14.0%
Total Yes	**1581**	**23.4%**
Has someone showed you nude pictures that they received of someone they know?		

No	5344	79.1%
Once	791	11.7%
More than once	620	9.2%
Total Yes	**1411**	**19.9%**

Table 7 continued

Item	*n*	Percent
Have you ever sent nude pictures of yourself to someone you know?		
No	6214	92.0%
Once	279	4.1%
More than once	262	3.9%
Total Yes	**541**	**8.0%**
Have you asked someone to send you nude pictures of himself/herself?		
No	6327	93.7%
Once	209	3.1%
More than once	219	3.2%
Total Yes	**428**	**6.3%**
Have you received nude pictures of someone you know and shown them to someone else?		
No	6433	95.2%
Once	200	3.0%
More than once	122	1.8%
Total Yes	**322**	**4.8%**

Table 8

Exchange of Sexually Explicit Pictures Split by Gender (N = 6755)

Item	Female (n = 3215)		Male (n = 3540)	
Has somebody else you know sent you nude pictures of himself/herself?				
No	2318	72.1%	2856	80.7%
Once	358	11.1%	276	7.8%
More than once	539	16.8%	408	11.5%
Total Yes	**897**	**27.9%**	**684**	**19.3%**
Has someone showed you nude pictures that they received of someone they know?				
No	2597	80.8%	2747	77.6%
Once	378	11.8%	413	11.7%
More than once	240	7.5%	380	10.7%
Total Yes	**618**	**19.3%**	**793**	**22.4%**
Have you ever sent nude pictures of yourself to someone you know?				
No	2911	90.5%	3303	93.3%
Once	156	4.9%	123	3.5%
More than once	148	4.6%	114	3.2%
Total Yes	**304**	**9.5%**	**237**	**6.7%**
Have you asked someone to send you nude pictures of himself/herself?				
No	3071	95.5%	3256	92%
Once	68	2.1%	141	4%
More than once	76	2.4%	143	4%
Total Yes	**144**	**4.5%**	**284**	**8%**
Have you received nude pictures of someone you know and shown them to someone else?				
No	3068	95.4%	3365	95.1%
Once	108	3.4%	92	2.6%
More than once	39	1.2%	83	2.3%
Total Yes	**147**	**4.6%**	**175**	**4.9%**

Intentions to Delay Sexual Activity

Both parents and their teens express robust support for sexual abstinence. Most parents favor promoting abstinence to their teen children: 83% of parents supported

promoting sexual abstinence in public schools and 70% opposed sex before marriage for their children (Olsho, Cohen, Klein-Walker, Johnson, & Locke, 2009). Teens largely agreed with their parents' views. In this same survey, 62% of teens opposed sex before marriage in general and 53% reported that it would be against their personal values to have sex before marriage. Teens, however, were generally more permissive in their attitudes toward their own sexual behavior: 39% of teens agreed that sex before marriage was okay if the couple planned to marry.

We measured students' change in commitment to wait (i.e. intention to delay onset of sexual debut if the student was still a virgin or to postpone future sexual activity if the student was sexually experienced) by asking them multiple questions about their level of commitment to wait both before and after the program. Five items about wait intentions and beliefs were included on both the pretest and the posttest. The five-item block was preceded by the stem: "These are some statements about abstinence. Please tell us if you agree." Students were given five answer options for each item ranging from 1 to 5 (*Strongly disagree* to *Strongly agree*). Frequency and percentage of students answering each question are contained in Table 9. For Table 9, items were groups on agreement, disagreement, or neutrality.

A repeated measures *t*-test was used to determine the students' overall difference in commitment to abstinence before the program and immediately after the program. Students' commitment to abstinence score was slightly higher at the posttest ($M = 8.76$, $SD = 2.18$) than at the pretest ($M = 8.54$, $SD = 2.24$), $t(3042) = 5.65$, $p < .001$, $d = 0.10$. The results were statistically significant $p < .001$, as would be expected from the large

sample size, but reflected a very small effect size of $d = 0.10$, less than Cohen's (1988) lower bound of a small effect of .20. The increase in commitment to abstinence is visually represented in Figure 2.

Table 9

Commitment to Wait (Delay Sexual Debut if Virgin or Postpone if Previously Sexually Active)

Item	Pre (N = 5412)		Post (N = 4386)		% Difference
	Frequency	%	Frequency	%	
I am willing to wait to have sex now in order to achieve my future goals.					
Agree/Strongly Agree	3735	69.0%	3330	75.9%	6.9%
Neutral	1006	18.6%	549	12.5%	-6.1%
Disagree/Strongly disagree	671	12.4%	507	11.6%	-0.8%
Waiting to have sex now will reduce my risk for an unplanned pregnancy.					
Agree/Strongly Agree	4270	78.9%	3661	83.5%	4.6%
Neutral	704	13.0%	423	9.6%	-3.4%
Disagree/Strongly disagree	438	8.1%	302	6.9%	-1.2%
Waiting to have sex now gives me more life choices later.					
Agree/Strongly Agree	4076	75.3%	3535	80.6%	5.3%
Neutral	773	14.3%	474	10.8%	-3.5%
Disagree/Strongly disagree	563	10.4%	377	8.6%	-1.8%
There are many good reasons for me to wait to have sex.					
Agree/Strongly Agree	4260	78.7%	3688	84.1%	5.4%
Neutral	795	14.7%	454	10.4%	-4.3%
Disagree/Strongly disagree	357	6.6%	244	5.6%	-1.0%

I am willing to wait to have sex until I am in a committed relationship.

Agree/Strongly Agree	4358	80.5%	3659	83.4%	2.9%
Neutral	659	12.2%	484	11.0%	-1.2%
Disagree/Strongly disagree	395	7.3%	243	5.5%	-1.8%

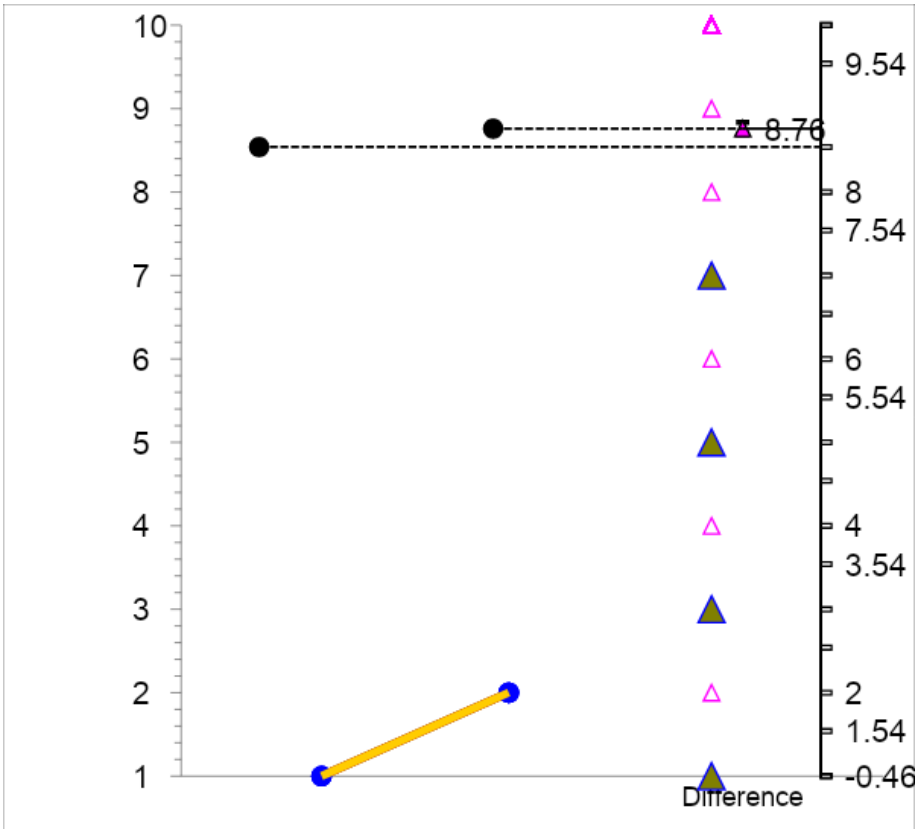

Figure 2. Increase in commitment to waiting as the result of COMPASS education.

Commitment to Sexual Delay as a Function of Sexual Experience

To test whether the differences in delay sexual behavior differed depending upon whether a student was a virgin or sexually experienced, we conducted a repeated measure ANOVA (See Table 10). There was a significant main effect for improvement from

pretest to posttest for all students ($F(1,3041) = 9.60$, $p = .002$), and a significant main effect for differences between students based on sexual experience ($F(1,3041) = 316.01$, $p < .001$). There was not a significant interaction ($F(1,3041) = 1.58$, $p = .21$, *ns*), indicating that the rate of change did not differ significantly depending on sexual experience. Overall these results suggest that sexually experienced teens have less commitment to delay sexual behavior than virgin teens, all students improved somewhat in their commitment to delay, although overall commitment was high at the beginning due to the large number of virgin teens, and the program works the same in increasing commitment to delay regardless of whether the students are sexually experienced or virgins. The overall trends for increase in commitment to waiting split by sexual experience are represented in Figure 3. The overall high levels of commitment to wait, compared from pretest to posttest are in Table 11 and the distribution shift in commitment to abstinence from pretest to posttest is in Figure 4.

Table 10

ANOVA Table for Commitment to Abstinence

Source	SS	df	MS	F	p	η^2_p
Pre to Post	68.71	1	68.71	9.598	.002	.003
Have Sex YN	8083.21	1	8083.21	316.01	< .001	.094
Interaction	11.29	1	11.29	1.58	.209	.001
Error (PrePost)	21769.62	3041	7.16			

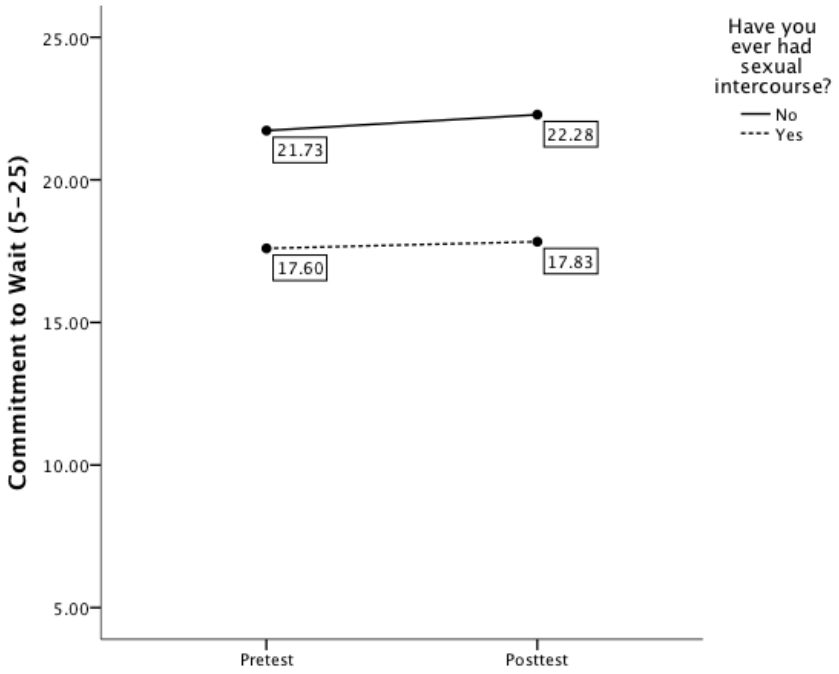

Figure 3. Increase in commitment to waiting by sexual experience.

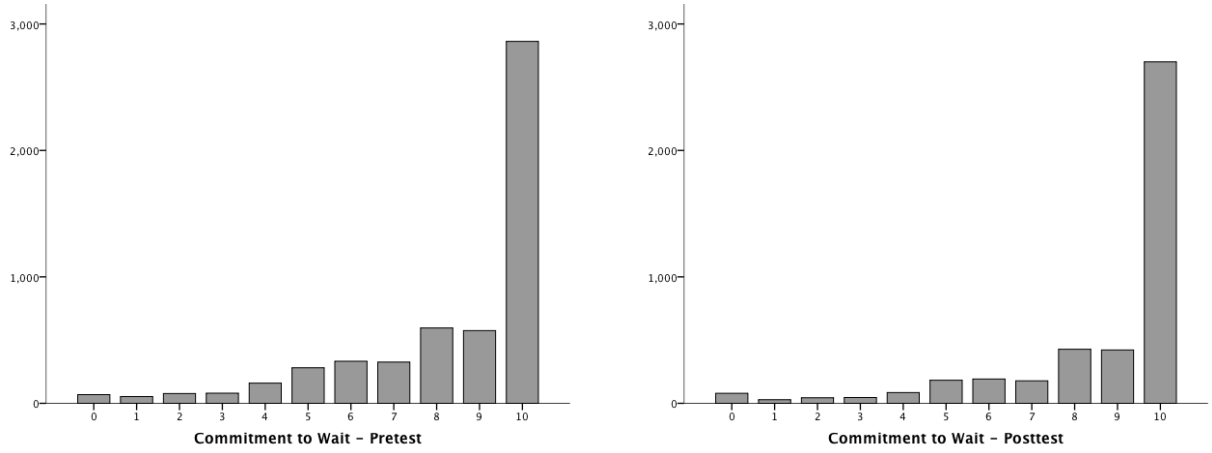

Figure 4. Distribution shift in commitment to abstinence from pretest to posttest.

Table 11

Change in Commitment to Abstinence From Pretest to Posttest

Score	Pretest	Posttest	Change
10	52.9%	61.6%	+8.7
9	10.6%	9.6%	-1.0
8	11.0%	9.8%	-1.2
7	6.0%	4.1%	-1.9
6	6.2%	4.4%	-1.8
5	5.2%	4.2%	-1.0
4	3.0%	1.9%	-1.1
3	1.5%	1.0%	-0.5
2	1.4%	1.0%	-0.4
1	1.0%	0.7%	-0.3
0	1.3%	1.8%	0.5

Intentions Regarding Future Sexual Behavior

Students were also asked about their intentions regarding your future sexual behavior. Students were asked whether they felt ready for sex now, planned to put off having sex until some specified future time, or planned to delay sexual activity until marriage. Students were asked about their plans for future sexual behavior on both the pretest and posttest. The frequency of responses for matched pairs is displayed in Table 12. The results are visually depicted in Figure 5. Students who were virgins were asked about their reasons for not having had sex. Their responses are contained in Table 13.

Table 12

Plans for Future Sexual Behavior (N = 3043)

	Figure X	Pretest	Posttest
I feel that I am ready for sex now.	*Ready now*	126	98
I plan to put off having sex for now.	*Later*	243	240
I plan to wait until I am living on my own before having sex	*Graduate*	201	119
I plan to wait until I find someone really special before having sex	*In love*	417	318
I plan to wait until I am in a committed, monogamous relationship	*Committed*	552	700
I plan to wait until I am married before having sex.	*Married*	1504	1568

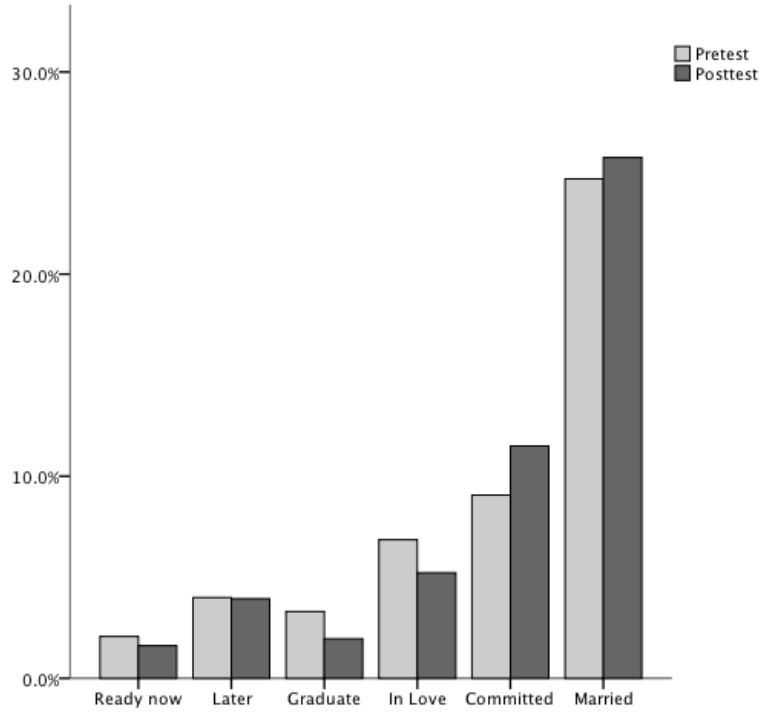

Figure 5. Future plans for sexual behavior

Table 13

What is your main reason for never having had sex? (N = 4386)

	Frequency	Percent
It would be against my religion or my morals.	773	17.6%
I don't want to get pregnant (or get someone pregnant).	740	16.9%
I haven't found the right person yet.	684	15.6%
It would disappoint my parents if they found out.	418	9.5%
I don't want to get a sexually transmitted infection.	382	8.7%
I am in a relationship, but we are waiting for the right time	277	6.3%
Other	1112	25.4%

Empowerment Regarding Personal Sexual Health

The developers of the compass curriculum expressed a desire to empower students regarding their personal sexual health by teaching them where they could go to get a pregnancy test or to be tested for sexually transmitted disease. Furthermore, the curriculum aimed to enable students to talk more freely with a physician about their personal sexual health and to discuss the topic with their parents, grandparents, or guardians.

Five items about empowerment were included on both the pretest and the posttest. Students were given five answer options for each item ranging from 1 to 5 (*Strongly disagree* to *Strongly agree*). Frequency and percentage of students answering each question are contained in Table 14. A repeated measures *t*-test was used to determine the students' overall difference in empowerment before the program and immediately after

the program. Students' empowerment beliefs were uniformly higher at the posttest than at the pretest. All *t* tests' results were statistically significant $p < .001$, but the Cohen's *d* values ranged from 0.196 to 0.788, indicating that the program participation led to a large improvement in empowerment beliefs (Cohen, 1988).

Table 14

Student Empowerment as a Result of the Program (N = 3043)

	Pretest		Posttest			
	Frequency	Percent	Frequency	Percent	t	d
I know where to go if I (or someone I know) wants to have a pregnancy test.					$t(3042) = 26.61$	0.551
Strongly agree	1363	25.2%	2076	47.3%		
Mildly agree	1092	20.2%	966	22.0%		
Neutral	1841	34.0%	908	20.7%		
Mildly disagree	417	7.7%	171	3.9%		
Strongly disagree	699	12.9%	265	6.0%		
I know where to go if I (or someone I know) wants to get STI testing.					$t(3042) = 36.98$	0.788
Strongly agree	1070	19.8%	2118	48.3%		
Mildly agree	858	15.9%	922	21.0%		
Neutral	1967	36.3%	896	20.4%		
Mildly disagree	563	10.4%	175	4.0%		
Strongly disagree	954	17.6%	275	6.3%		
I could talk to a doctor if I was concerned about my sexual health.					$t(3042) = 12.77$	0.243

Strongly agree	2000	37.0%	2181	49.7%
Mildly agree	1506	27.8%	1066	24.3%
Neutral	1338	24.7%	850	19.4%
Mildly disagree	260	4.8%	123	2.8%
Strongly disagree	308	5.7%	166	3.8%

Table 14 continued

	Pretest		Posttest			
	Frequency	Percent	Frequency	Percent	t	d
I could talk to my parent or guardian if I was concerned about my sexual health.					$t(3042) = 11.15$	0.196
Strongly agree	2120	39.2%	2136	48.7%		
Mildly agree	1147	21.2%	901	20.5%		
Neutral	1201	22.2%	861	19.6%		
Mildly disagree	378	7.0%	206	4.7%		
Strongly disagree	566	10.5%	282	6.4%		
No matter what I have done or what has been done to me, I can always start fresh.					$t(3042) = 4.26$	0.083
Strongly agree	1752	32.4%	1692	38.6%		
Mildly agree	1320	24.4%	1049	23.9%		
Neutral	1452	26.8%	1019	23.2%		
Mildly disagree	498	9.2%	332	7.6%		
Strongly disagree	390	7.2%	294	6.7%		

Note. All t tests were significant $p < .001$

Overall Program Evaluation

Students were given the opportunity to evaluate their experience in the program. At the posttest, students were asked to respond to items regarding whether the COMPASS curriculum met its goals of the avoiding sexual shaming techniques common to abstinence-only sex education, respecting sexual differences, and being religiously neutral. Four items about program evaluation were included on the posttest. Students

were given five answer options for each item ranging from 1 to 5 (*Strongly disagree* to *Strongly agree*). Frequency and percentage of responses are contained in Table 15. Approximately 6-7% of students had a negative experience as evidenced by consistently low ratings, and approximately 60% of students had a uniformly positive experience. Only 6.7% if respondents disagreed that the program was a worthwhile experience.

Table 15

Program Evaluation (N = 4386)

Item	Frequency	Percent
This program did not shame me if I had already had sex.		
Strongly agree	2561	58.4%
Mildly agree	452	10.3%
Neutral	1022	23.3%
Mildly disagree	105	2.4%
Strongly disagree	246	5.6%
This program was respectful of people of all sexual orientations.		
Strongly agree	2744	62.6%
Mildly agree	674	15.4%
Neutral	748	17.1%
Mildly disagree	84	1.9%
Strongly disagree	136	3.1%
This program did not push a religious view.		
Strongly agree	2601	59.3%
Mildly agree	513	11.7%
Neutral	854	19.5%
Mildly disagree	149	3.4%
Strongly disagree	269	6.1%

Table 15 continued

Item	Frequency	Percent
It was worth my time to participate in this program.		
Strongly agree	2430	55.4%
Mildly agree	955	21.8%
Neutral	705	16.1%
Mildly disagree	106	2.4%
Strongly disagree	190	4.3%

Fidelity to Best Practices

The Centers for Disease Control and Prevention (2015) list best practices that characterize effective teen health education programs and distinguish them from curricula that are minimally effective in promoting positive health outcomes for teens. While minimally effective programs focus on primarily knowledge acquisition, effective programs have the following four characteristics:

- Knowledge focus is on functional knowledge,
- Emphasize developing values and beliefs about healthy lifestyle,
- Foster life skills that promote and maintain a healthy lifestyle,
- Encourage norms that promote and maintain a healthy lifestyle.

The COMPASS curriculum has been designed in accordance with each of these best practices and the outcomes noted in this report may be considered a reflection of the success that can be expected when a teen health education program incorporates scientifically-derived best practices in its implementation. The remainder of this section

will explain how the findings in this report fit within the CDC characteristics of effective programming.

Knowledge focus is on functional knowledge

The COMPASS curriculum is research-based and theory-driven. The theoretical foundation of the program is social cognitive theory (Bandura, 1976; 1986). Bandura's social cognitive theory states that when human beings observe behaviors and their subsequent consequences, they use the observed causal connections to moderate their future behavior. When observed behavior is rewarded, it is more likely to be engaged in by observers. Similarly, when observed behavior is punished, observers are less likely to engage in that behavior. However, learning can still occur when the behavior and consequences are described and imagined, or played out in hypothetical situations, provided that the "observed" *identifies* with the individual experiencing the consequences and does not physiologically distance him or herself with ideations like, "but that would never happen to *me*."

COMPASS instructors present students with social interactions, vignettes, and media that require students to consider consequences for various behaviors and life choices. Students are not told what to think, but rather presented with options and the precept "the choice is yours, choose to know." This best practice of promoting functional knowledge contrasts to less effective "abstinence only" approaches whose instruction remains at a shallow cognitive level, present only cloying views that instructors hope students will internalize, and measure success by students' reiteration of the bromides

provided them (Kirby, 2001). COMPASS goes beyond this shallow cognitive level of assent to empowering students to make healthy life choices.

Also in contrast to most abstinence-only programs, COMPASS begins with the functional knowledge foundational to any teen sexual education: education about human sexuality (Kirby, 2001). COMPASS presents developmentally appropriate, medically accurate information about physical changes in adolescence. Beginning in 7th grade, students learn about the changes that occur within their bodies during adolescence. Additionally, each gender also learns about the changes that occur in the opposite sex. These lessons are presented as applying to everyone who can become pregnant, get someone pregnant, or contact a sexually communicable disease. In this way, COMPASS presents information in a culturally sensitive way that involves students regardless of sexual or gender orientation.

In addition to Bandura's (1976, 1986) social cognitive theory, the functional knowledge presented in COMPASS is grounded in developmental theory, so that the lessons are age-appropriate, relevant, and medically accurate. The COMPASS curriculum derives from scientifically-sound sources like the Centers for Disease Control and the American Medical Association. Statistics in the curriculum are continually monitored and kept current.

Emphasis on developing values and beliefs about healthy lifestyle

By providing functional information relevant to human sexuality, the COMPASS program equips students to recognize behaviors that could compromise their physical or emotional health, then links students to resources that they can access to address health

issues. As the findings in this evaluation show, students are better equipped to access resources for pregnancy testing and STD testing following completion of the COMPASS program. The program also increased student empowerment to advocate for their sexual health and talk to a physician, and a parent or guardian about their sexual health. The program accomplishes this by reinforcing clear, health-related goals and promoting health-minded norms.

Fostering life skills that promote and maintain a healthy lifestyle

COMPASS is designed to build skills such as accessing information, communication with parents and trusted adults, and relationship-building skills, all of which are components of programs demonstrated to be effective in promoting youth health (CDC, 2015). The curriculum encourages students to think about life-long outcomes resulting from teenaged choices and to consider the most effective way for each student to achieve their desired life outcomes. Planning and goal-setting are stressed as ways to promote and maintain a healthy lifestyle, such as avoiding or reducing risk behaviors. Adolescent egocentrism (Elkind, 1967; the tendency among adolescents to see themselves as unique, invulnerable, or omnipotent) is addressed by encouraging students to consider that unpleasant consequences are connected to actions, not persons, and that believing "it can't happen to me" is not a protective factor.

Encouraging norms that promote and maintain a healthy lifestyle

Bandura's (1976, 1986) social cognitive theory stresses the importance of students analyzing the relationship between behaviors and consequences. When students are exposed to social coercion such as pressure to engage in risky behaviors, they can

internalize personal learning about healthy decision-making. COMPASS addresses social pressures and influences about dating and marriage, boundary-setting skills, and the importance of goal setting for future success allowing students the opportunity to explore options and potential consequences in a structured environment.

Discussion

COMPASS is a 10-day adolescent sexual risk avoidance program designed to teach 7th, 8th, and 9th grade students about changes in their bodies during adolescence, provide to current CDC statistics regarding STDs, contraception effectiveness, teen pregnancy issues, healthy decision-making about dating and marriage, boundary-setting skills, and the importance of goal setting for future success. The curriculum was developed to provide relevant, age-appropriate, and medically accurate information with a goal of aiding students to attain healthy, life-long outcomes.

Students who participated in the COMPASS program were surveyed before and after their participation in order to evaluate the effects of the program. A total of 6755 students completed the program and 3043 students could be matched for both pretest and posttest. Participants were predominantly White (66.3%), male (52.4%) enrolled in either 7th or 8th grade (69.9%), aged between 13 and 15 (82.3%) with an average age of 13.10 years (SD = 0.95). The largest subgroup was from Webb City High School (17.9%).

Data from the surveys were cleaned and analyzed. Data were screened for missing data and for accuracy. A power analysis was conducted and it was determined that the sample size would render any pretest to posttest changes, no matter how small, as

statistically significant. To provide better information about the findings, we also reported effect sizes and confidence intervals whenever appropriate.

Students were asked about their participation in antisocial behaviors such as drinking, fighting, or tagging graffiti. Rates of antisocial risk behavior were uniformly low, but were higher among students with early onset sexual debut. The most common antisocial risk behavior was fighting. The vast majority (89.9%) of students scored 0 on the Antisocial Behavior scale or had done only one behavior one time. Students who had scores higher than 2 on antisocial behaviors were overrepresented among those who were sexually active, linking early onset sexual activity with other high-risk behaviors.

The vast majority (89.5% to 93.6%) of students were not sexually active; 1.3% reported having been pregnant or caused a pregnancy. Of students who were sexually active 45% used a condom or other contraception (38.2%) the last time that they had sex. Forty-eight students (1.1%) reached sexual debut during the duration of the program. When asked about digitally exchanging sexually explicit pictures (a.k.a. “sexting”), students were much more likely to have received or viewed images than they were to have sent nude or semi- nude images. Students were slightly more likely to endorse intentions to maintain abstinence following the program (d = .10), but were already high on commitment to maintaining abstinence at the pretest. Students who had not reached sexual debut were more likely to endorse maintaining abstinence than students who had already become sexually active. The most common reason for not having sex among students who had not yet become sexually active was “It would be against my religion or my morals” (17.6%).

The program increased student empowerment to advocate for their own sexual health. Students became more empowered to act on their own behalf to attend to concerns about their sexual health or to assist other with such concerns. After completing the program, students stated that they were better equipped to know where to go to get a pregnancy test, get STI testing, talk to a physician, and talk to a parent or guardian about their sexual health. Finally, students felt favorably about their experience in the program and their instructors.

Summary. *COMPASS* was effective in increasing student empowerment to advocate for their sexual health and to assist others in taking responsible action in service of their own sexual health. The program was received positively by a vast majority (93%) of the students who participated. Students completing the program were already highly committed to delaying onset of sexual activity and the program effects were positive in reinforcing the message of the benefits of sexual delay. The program was also highly rated for delivering a message about sexual responsibility without shaming students who were sexually active and being respectful of students' sexual choices.

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Appendix A: Data Collection Instruments

Compass Pretest Items

1. Hello Compass Student, we have put together a survey to make sure that this program, Compass, is making a difference for people your age. We want to make sure that you understand that every question on the survey will remain CONFIDENTIAL. No one will know who you are or how you have answered. Your name will never be used. Your answers will be combined with other students' answers so that we can only see group responses. We are asking that you be honest on this survey so that we can truly evaluate the impact Compass has on students. If you wish to NOT have your information be a part of this survey, click the NO button. If you would like to participate in the evaluation of this program, click YES. Thank you, Compass Staff

☐ Yes ☐ No

2. What it your student identification number? _____

3. What school do you attend?

Check One	
Baxter Springs Middle School	☐
Carl Junction Junior High	☐
Carl Junction High School	☐
Carthage Junior High	☐
Carthage High School	☐
Central Junior High	☐
Children's Division	☐
College Heights Christian School	☐
Columbus High School	☐

Diamond Middle School ☐

Diamond High School ☐

East Middle School ☐

Galena High School ☐

Gateway School ☐

Joplin High School ☐

Liberal Junior High School ☐

Liberal High School ☐

McAuley High School ☐

Neosho Middle School ☐

Neosho Junior High School ☐

Neosho High School ☐

North Middle School ☐

Riverton Middle School ☐

Riverton High School ☐

Sarcoxie Middle School ☐

Sarcoxie High School ☐

Seneca Junior High School ☐

Seneca High School ☐

St. Peter's Middle School ☐

South Middle School ☐

Webb City Middle School ☐

Webb City High School ☐

4. Are you:

☐ Female ☐ Male

5. How old are you?

☐ 12 ☐ 13 ☐ 14 ☐ 15

☐ 16 ☐ **17** ☐ 18

6. What is your ethnicity? (Please select all that apply.)

☐ American Indian or Alaskan Native ☐ Asian or Pacific Islander

☐ Black or African American ☐ Hispanic or Latino

☐ White/Caucasian ☐ Prefer not to answer

7. What grade are you in?

☐ 7th ☐ 8th ☐ 9th ☐ 10th

☐ 11th ☐ **12th**

Mark one answer for each row.	**Strongly disagree**	**Mildly disagree**	**Neutral**	**Mildly agree**	**Strongly agree**
8. I am willing to wait to have sex now in order to achieve my future goals.	☐	☐	☐	☐	☐
9. Waiting to have sex now will reduce my risk for an unplanned pregnancy.	☐	☐	☐	☐	☐
10. Waiting to have sex now gives me more life choices later.	☐	☐	☐	☐	☐
11. There are many good reasons for me to wait to have sex.	☐	☐	☐	☐	☐
12. I am willing to wait to have sex until I am in a committed relationship.	☐	☐	☐	☐	☐

13. No matter what I have done or what has been done to me, I can always start fresh.	☐	☐	☐	☐	☐

14. Which of the following best describes your plans about having sexual intercourse in the future?

☐ I feel that I am ready for sex now.
☐ I plan to put off having sex for now.
☐ I plan to wait until I am living on my own before having sex.
☐ I plan to wait until I find someone really special before having sex.
☐ I plan to wait until I am in a committed, monogamous relationship before having sex.
☐ I plan to wait until I am married before having sex.

Mark one answer for each row.	**Strongly disagree**	**Mildly disagree**	**Neutral**	**Mildly agree**	**Strongly agree**
15. Proper use of latex condoms is effective at preventing HIV.	☐	☐	☐	☐	☐
16. Proper use of latex condoms is effective at preventing STDs other than HIV.	☐	☐	☐	☐	☐
17. Condoms are not effective at preventing pregnancy.	☐	☐	☐	☐	☐

Mark one answer for each row.	**No**	**Once**	**More than once**
18. Have you ever sent nude pictures of yourself to someone you know?	☐	☐	☐
19. Has somebody else you know sent you nude pictures of himself/herself?	☐	☐	☐
20. Have you asked someone to send you nude pictures of himself//herself?	☐	☐	☐
21. Has someone showed you nude pictures that they received of someone they know?	☐	☐	☐
22. Have you received nude pictures of someone you know and shown them to someone else?	☐	☐	☐
23. In the last 6 months, have you been in physical fights on school property?	☐	☐	☐

24. In the last 6 months, have you run away from home?	☐	☐	☐
25. In the last 6 months, have you been suspended from school?	☐	☐	☐
26. In the last 6 months, have you driven a car without permission?	☐	☐	☐
27. In the last 6 months, have you tagged graffiti in a public place?	☐	☐	☐
28. In the last 6 months, have you had sexual intercourse?	☐	☐	☐
29. In the last 6 months, have you drank alcohol, other than a few sips?	☐	☐	☐

Mark one answer for each row.	**Strongly disagree**	**Mildly disagree**	**Neutral**	**Mildly agree**	**Strongly agree**
30. I know where to go if I (or someone I know) wants to have a pregnancy test.	☐	☐	☐	☐	☐
31. I know where to go if I (or someone I know) wants to get STI testing.	☐	☐	☐	☐	☐
32. I could talk to a doctor if I was concerned about my sexual health.	☐	☐	☐	☐	☐
33. I could talk to my parent or guardian if I was concerned about my sexual health.	☐	☐	☐	☐	☐

Compass Posttest Items

1. What it your student identification number? _____

2. What school do you attend?

Check One	
Baxter Springs Middle School	☐
Carl Junction Junior High	☐
Carl Junction High School	☐
Carthage Junior High	☐
Carthage High School	☐
Central Junior High	☐
Children's Division	☐
College Heights Christian School	☐
Columbus High School	☐
Diamond Middle School	☐
Diamond High School	☐
East Middle School	☐
Galena High School	☐
Gateway School	☐
Joplin High School	☐
Liberal Junior High School	☐

Liberal High School	☐
McAuley High School	☐
Neosho Middle School	☐
Neosho Junior High School	☐
Neosho High School	☐
North Middle School	☐
Riverton Middle School	☐
Riverton High School	☐
Sarcoxie Middle School	☐
Sarcoxie High School	☐
Seneca Junior High School	☐
Seneca High School	☐
St. Peter's Middle School	☐
South Middle School	☐
Webb City Middle School	☐
Webb City High School	☐

3. Are you:

☐ Female ☐ Male

4. How old are you?

☐ 12 ☐ 13 ☐ 14 ☐ 15
☐ 16 ☐ **17** ☐ 18

5. What is your ethnicity? (Please select all that apply.)

☐ American Indian or Alaskan Native ☐ Asian or Pacific Islander
☐ Black or African American ☐ Hispanic or Latino
☐ White/Caucasian ☐ Prefer not to answer

6. What grade are you in?

☐ 7th ☐ 8th ☐ 9th ☐ 10th
☐ 11th ☐ **12th**

Mark one answer for each row.	**Strongly disagree**	**Mildly disagree**	**Neutral**	**Mildly agree**	**Strongly agree**
7. I am willing to wait to have sex now in order to achieve my future goals.	☐	☐	☐	☐	☐
8. Waiting to have sex now will reduce my risk for an unplanned pregnancy.	☐	☐	☐	☐	☐
9. Waiting to have sex now gives me more life choices later.	☐	☐	☐	☐	☐
10. There are many good reasons for me to wait to have sex.	☐	☐	☐	☐	☐
11. I am willing to wait to have sex until I am in a committed relationship.	☐	☐	☐	☐	☐
12. No matter what I have done or what has been done to me, I can always start fresh.	☐	☐	☐	☐	☐

13. Which of the following best describes your plans about having sexual intercourse in the future?

☐ I feel that I am ready for sex now.
☐ I plan to put off having sex for now.
☐ I plan to wait until I am living on my own before having sex.
☐ I plan to wait until I find someone really special before having sex.
☐ I plan to wait until I am in a committed, monogamous relationship before having sex.
☐ I plan to wait until I am married before having sex.

Mark one answer for each row.	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree
14. Proper use of latex condoms is effective at preventing HIV.	☐	☐	☐	☐	☐
15. Proper use of latex condoms is effective at preventing STDs other than HIV.	☐	☐	☐	☐	☐
16. Condoms are not effective at preventing pregnancy.	☐	☐	☐	☐	☐

17. To the best of your knowledge, have you ever been pregnant or gotten someone pregnant?

☐ Yes ☐ No

Mark one answer for each row.	I've never had sex before	Yes	No
18. The last time you had sex, did you or your partner use a condom?	☐	☐	☐
19. The last time you had sex, did you or your partner use contraception to prevent pregnancy (such as birth control pills, an IUD, a shot, patch, or birth control ring)?	☐	☐	☐
20. Did you drink alcohol before you had sex the last time?	☐	☐	☐

21. During your life, with how many people have you had sexual intercourse?

☐ None ☐ 1 ☐ **2** ☐ 3 ☐ **4 or more**

22. What is your main reason for never having had sex?

☐ It would be against my religion or my morals.
☐ I don't want to get pregnant (or get someone pregnant).
☐ It would disappoint my parents if they found out.
☐ I don't want to get a sexually transmitted infection.
☐ I haven't found the right person yet.
☐ I am in a relationship, but we are waiting for the right time.
☐ Other (please specify) _____

23. Have you ever had sexual intercourse?

☐ Yes ☐ No

Mark one answer for each row.	No	Once	More than once
24. Have you ever sent nude pictures of yourself to someone you know?	☐	☐	☐
25. Has somebody else you know sent you nude pictures of himself/herself?	☐	☐	☐
26. Have you asked someone to send you nude pictures of himself//herself?	☐	☐	☐
27. Has someone showed you nude pictures that they received of someone they know?	☐	☐	☐
28. Have you received nude pictures of someone you know and shown them to someone else?	☐	☐	☐
29. In the last 6 months, have you been in physical fights on school property?	☐	☐	☐
30. In the last 6 months, have you run away from home?	☐	☐	☐
31. In the last 6 months, have you been suspended from school?	☐	☐	☐
32. In the last 6 months, have you driven a car without permission?	☐	☐	☐
33. In the last 6 months, have you tagged graffiti in a public place?	☐	☐	☐
34. In the last 6 months, have you had sexual intercourse?	☐	☐	☐
35. In the last 6 months, have you drank alcohol, other than a few sips?	☐	☐	☐

Mark one answer for each row.	Strongly disagree	Mildly disagree	Neutral	Mildly agree	Strongly agree
36. I know where to go if I (or someone I know) wants to have a pregnancy test.	☐	☐	☐	☐	☐
37. I know where to go if I (or someone I know) wants to get STI testing.	☐	☐	☐	☐	☐

38. I could talk to a doctor if I was concerned about my sexual health.	☐	☐	☐	☐	☐
39. I could talk to my parent or guardian if I was concerned about my sexual health.	☐	☐	☐	☐	☐
40. It was worth my time to participate in this program.	☐	☐	☐	☐	☐
41. This program did not push a religious view.	☐	☐	☐	☐	☐
42. This program was respectful of people of all sexual orientations.	☐	☐	☐	☐	☐
43. This program did not shame me if I had already had sex.	☐	☐	☐	☐	☐

44. My presenter was:

Check One	
DJ Ackerson	☐
Gallagher Cardona	☐
JoJo Compton	☐
David Conrad	☐
Cody Dougless	☐
Tanner Garver	☐
Conor Le Blanc	☐
Ivy Littles	☐
Addison Houser	☐
Mallory Jenkins	☐
Sara Johnson	

	☐
Kenan Klein	☐
Chase Marcus	☐
Mandy Middick	☐
Joy Parkman	☐
Jana Pirtle	☐
Lew Poe	☐
Megan Pogue	☐
Scott Pogue	☐
Michael Otto	☐
Steven Rice	☐
Seth Reed	☐
Brady Roberts	☐
Daniel Smathers	☐
Melissa Smith	☐
Aaron Smith	☐
Steve Snyder	☐
Jordan Starkweather	☐
Mitzi Starkweather	

	☐
Amber Stinnett	☐
Alyssa Tamerius	☐
Creighton Tamerius	☐
Eugene Tindall	☐
Austin Weece	☐
Crystal Whitesell	☐
Ed Willoughby	☐
Matt Wilkes	☐
Adam Wilson	☐
Other (please specify) _____	☐

45. Is there anything else you would like to tell us about your experience with this class? (What did you enjoy or dislike? What was your favorite day or subject?)

_____