

# Evaluation of Choosing the Best

Stan Weed, PhD., Nicole Anderson, M.S.

Institute for Research and Evaluation

Salt Lake City, Utah

10/1/05

## Abstract

Choosing the Best (CTB) is a set of new abstinence education curricula using a multi-year, sequential approach for students in the 6<sup>th</sup> through 9<sup>th</sup> grades. CTB was developed incorporating elements of social learning, cognitive learning and inductive learning theories and utilizes multi-dimensional learning methods including video vignettes, discussion groups, a student workbook, activities and homework assignments. Using a quasi-experimental design, 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade students in one Georgia high school and its feeder middle school received either CTB or the health textbook abstinence education curriculum that complies with state guidelines. The students were administered a 58-item survey prior to the study, immediately after receiving CTB or the health textbook material, and twelve months later. Three hundred eighteen students who were virgin at pre test were able to be tracked and linked with a 12 month follow-up and had usable sexual activity status data. The comparison group and the treatment group did not differ on key demographics. After the interventions, the CTB students had more positive scores on the intervening variables associated with delaying sexual intercourse at the post-test and at the 12 month follow-up. Furthermore, there was a significant decrease in the initiation of sex of 47% ( $p=.03$ ) between the groups at the 12 month follow-up, indicating that CTB does have a significant and positive effect on important mediators of, and on the initiation of, sexual activity.

## Introduction

According to the YRBS in 2003, 46.7% of 9<sup>th</sup> – 12<sup>th</sup> graders have ever had sexual intercourse<sup>1</sup>. Since 1991, when the percent having had sexual intercourse was 54.1%, the results of the YRBS have consistently shown that fewer adolescents were reporting having ever had sexual intercourse. While the most recent studies of adolescent sexual behaviors are encouraging, the numbers are still too high for those who want adolescents to make wise choices and avoid negative health consequences. Consequently, program directors and curriculum developers are interested in determining the factors that will contribute to the continuation of this downward trend.

In 1996 the federal government significantly increased funding for abstinence education. Since that time there has been a marked increase in the number and type of abstinence programs being implemented across the country<sup>2</sup>. The majority of programs were created in compliance with the A-H legislative requirements within Health Resources and Services Administration in the Department of Health and Human Services<sup>3</sup>. However, there is presently a dearth of evidence demonstrating whether these new abstinence programs are effective in decreasing the number of

sexually active adolescents. According to Thomas, a failure of programs to implement rigorous evaluations may be the root cause of the lack of measurable successes<sup>4</sup>.

Even when there is evidence of effectiveness, it is hard to determine whether all the effects were due to the program especially when the program is geographically dispersed and covers several years. Evidence of this type of problem is seen in the “Not Me Not Now” evaluation in Monroe County, NY<sup>5</sup>. On the other hand, when tight controls are put on an evaluation and the study region is limited, there is a problem with diminishing some of the effects because of contamination of the comparison group. This problem was a limitation of the Children’s AID Society – Carrera Program<sup>6</sup>. The *Sex Can Wait* curriculum (Denney, et al., 2002) produced significant reductions in sexual initiation ( $R=-.1788$ ,  $p<.0004$ ) and also improved scores on key mediating psycho-social constructs (*attitudes, future orientation, and abstinent intentions*) in a sample of high school students<sup>7</sup>. But these effects were short-term, measured only one to two months after the program’s end.

Several well-designed evaluations of comprehensive sex education curricula with an abstinence component have reported significant abstinence results for their programs. For example, the evaluation of *Reducing the Risk* found a significant reduction (24%,  $p<.05$ ) in sexual initiation rates for high school students after 18 months<sup>8</sup>. And *Becoming a Responsible Teen*, a skills-based HIV/AIDS prevention program for high risk teens that did not target abstinence outcomes, reported an unanticipated reduction in sexual initiation after one year. Among virgins in the program, 11% percent initiated sex versus 31% in the control group, a 67% reduction ( $\chi^2=6.29$ ,  $p<.01$ )<sup>9</sup>. Studies such as these suggest that it is possible for program interventions to increase sexual abstinence among adolescents. These findings further highlight the need for good evaluations of programs that have abstinence as their primary focus.

There is a wealth of research from longitudinal, cross-sectional and correlational studies which point to factors that could help reduce teen sexual activity. Psycho-social constructs are an important focus in the study of behavior change because they are often strong predictors of behavior and are amenable to program influence<sup>10</sup>. Constructs from social learning theory such as “behavioral intentions” or “proximal goals”, “self-efficacy”, “outcome expectancies”, “attitudes”, “values”, and “perceived norms” have been shown to be consistent predictors of health behavior and have been found to be important in understanding adolescent sexual behavior<sup>10,11,12,13,14,15,16,17,18</sup>. For instance, Blinn-Pike and colleagues (2004) conducted a longitudinal follow-up of sexually abstinent adolescents and found conservative values contributed to the ability of adolescents to persist in sexual abstinence<sup>19</sup>. And a study by Bearman and Bruckner (2001), found that under certain circumstances adolescence who have taken an abstinence pledge will remain virgins longer than those who have not<sup>20</sup>.

There are also external influences on teen sexual behavior that are amenable to program intervention. Numerous studies show the effect of parents on various issues related to teenage sex<sup>21,22,23,24,25,26,27</sup>. Two studies indicate that parent-child homework assignments in programs enhance the effectiveness of the program<sup>28,29</sup>. The negative role of alcohol use in issues related to teenage sex is also supported by the research<sup>19,30</sup>.

Like their predecessors, the newer abstinence programs that have emerged since the increase in funding since 1996 not only emphasize these key variables and components, but have evolved to

a higher level of learning theory strategies, dosage levels, presentation modes and teacher selection and training.

## **Choosing The Best Intervention**

One of the new abstinence programs, Choosing the Best (CTB), is a theoretically based curriculum that has been taught to approximately one million 6<sup>th</sup> – 9<sup>th</sup> graders in 48 states. A key feature of CTB is its sequential exposure of topics targeting the developmental level of the students. To this end, students are able to assimilate similar fundamental information as they mature. The core information included in the program includes: emotional, physical and health risks of teen sexual activity; rewards of abstinence; refusal skills in dealing with sexual pressures; relationship education; the effect of alcohol and sex; building self-esteem; character education; and parental involvement and discussion. CTB provides age appropriate versions of this core material for lower middle school (CTB WAY), upper middle school (CTB PATH) and high school (CTB LIFE). The CTB program is designed to fit into the existing schedule and curricula of school districts, and to utilize on-site educators through teacher training components and the packaging of Leader Guides. The program materials include student manuals, leader manuals, videos, relevant posters, and parent components.

CTB is based upon three learning theories: Experiential Learning Theory, Social Learning Theory, and Cognitive Learning Theory. Experiential Learning Theory (C. Rodgers, 1994) suggests that significant learning takes place when the subject matter is relevant to the personal interests of the student instead of just the delivery of content. To create interest in the subject, CTB utilizes real-life video vignettes at the beginning of each lesson. Learning is also facilitated by directly confronting practical, social, and personal problems. For instance, the health risk of STDs and pregnancy are confronted through real-life video interviews of teens who are struggling or have struggled with these problems. The CTB curriculum emphasizes that abstinence is the only 100% certain method to avoid these risks.

Social Learning Theory (Bandura) emphasizes the importance of learning by observing desired behavior and the outcomes of those behaviors. CTB curriculum uses Social Learning Theory through role-plays and activities that demonstrate how to resist unwanted peer and relational pressure to have sex. The role-play activities in the classroom helps students develop confidence that these same skills will work in their personal situations.

Cognitive Learning Theory (Holder et al., 1991; Miller et al., 1995) underscores the importance of gaining attention, stimulating recall of prior learning and providing guidance and feedback to enhance retention. CTB utilizes a student manual which was developed based on this theory. Each student records responses to discussion questions and receives feedback on key learning points. In addition large classroom posters are used to reinforce key messages. Retention is further encouraged by highlighting key action steps for the student. For example the three steps to resisting peer pressure and being assertive are: Set it! (setting boundaries for sexual activity and determining how far the individual will go), State It! (verbalizing those boundaries) and Show it! (showing that they mean no).

Parental discussion and involvement is an important element of the CTB program. Several strategies were used in the CTB program to foster parent involvement and discussion. First, there

were homework discussion assignments with parents after each lesson. To encourage compliance, student discussion sheets were checked at the beginning of the next class followed by recognition awards. Over half of the students regularly completed each discussion assignment. Second, a parent informational seminar was held at the beginning of each instructional cycle. Lastly, the BIG TALK Parent Book was distributed to the second cohort of treatment students through the mail. The book was “in press” when the first cohort was in the treatment group. The book provided ten interactive discussions that a parent could have with his/her child on abstinence sex education. This evaluation did not focus on the parent discussion and involvement component of CTB. However, future evaluations will incorporate data collection in this area to provide insight into the effectiveness of these parent strategies.

It is important for program evaluations to determine what types of programming work and don't work, and use this information in program revisions. Subsequently, this evaluation attempts to add to the literature of abstinence education programs by reporting results on the CTB program. The research questions of interest in this evaluation are: 1) Is there a difference between the CTB treatment group and the comparison group on the intervening variables related to sexual abstinence, and 2) Is there a difference in sexual initiation rates between virgins who receive CTB and virgins who receive the regular school curriculum?

## **Methods**

### **Design**

The evaluation of Choosing the Best used a quasi-experimental design with a 12-month longitudinal follow-up and included behavioral outcome measures. Because of increasing concerns by Georgia public school districts to safeguard confidentially issues relating to questionnaires on sensitive topics such as teen sexual practices, finding a school district that would allow an intensive survey and tracking of individual student behaviors was difficult. However, one district in the south metro Atlanta area agreed to participate in the study and conduct the surveys; that school district is represented in this evaluation. This district was comprised of one high school and its feeder middle school.

The study sample was comprised of fifteen in-tact classes of 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade students. For the 7<sup>th</sup> and 8<sup>th</sup> grade students, groups were created according to which students had signed up for PE/health class with a physical fitness component versus a regular PE/health class. Students who signed up for PE/health physical fitness component comprised the comparison group. Students who signed up for regular PE/health education received the CTB 7<sup>th</sup> (WAY) or 8<sup>th</sup> (PATH) grade curriculum taught by a CTB trained instructor. For the 9<sup>th</sup> grade students, groups were created by assigning one teacher's health/PE classes as the treatment group and one health/PE teacher's classes as the comparison group. All treatment groups received the CTB program over the course of 2 weeks. All classes combined males and females. The number of classes each student attended was not collected. However, debriefing information gathered from the instructors indicates that there was nothing abnormal about the absenteeism rates for the CTB classes.

Fidelity to the CTB program was increased because all CTB instructors completed a teacher trainer certification program consisting of 3 days of classroom instruction and supervised follow-up classroom instruction. Data were also collected on every CTB classroom session by CTB staff

via video review or in-class observation. A 5-point Likert scale was used to grade the sessions where 1 represented poor fidelity and 5 represented strong fidelity. Evaluation scores were consistently in the 4-5 range.

Comparison groups received the abstinence education portion of the pre-approved school health textbook over 4 days. Their program included 4 lessons from Meeks Heit Totally Awesome Health Courses 2-3 for 7<sup>th</sup> and 8<sup>th</sup> grade classes and 4 lessons from Glencoe Health for 9<sup>th</sup> grade classes. Because comparison groups were receiving whatever sexuality education those teachers were already providing, this evaluation measures the impact of CTB curriculum relative to other abstinence sex education material. Fidelity to the program was not collected for the comparison group teachers.

As part of the evaluation design, regular interim meetings and conference calls occurred between the program evaluator and the program director. These meetings served two basic purposes: 1) to discuss the progress of the program evaluation and any issues that surfaced with data collection, and 2) to provide on-going feedback of findings as data were available. This enabled the program director to be able to focus on improving areas of weaknesses based on the data.

### **Instrumentation**

A 58-item questionnaire was administered by CTB staff (not the CTB teachers) on three occasions: prior to the implementation of the program, immediately following the completion of the program, and 12 months later. To protect confidentiality, CTB staff immediately placed completed surveys in sealed folders while in the classroom. The student's regular teachers never handled or saw the completed surveys. For both groups, no other sex education material was taught in the schools between the post and follow-up surveys.

The survey includes four demographic questions, sexual behavioral questions, and multiple items that measure 6 intervening variables. The four key demographic questions include gender, ethnicity, grade, and family composition. The behavioral questions include a basic question of whether or not they have ever had sex, with additional follow-up questions, such as age of first sexual intercourse and last time they had sexual intercourse. The intervening variables include *affirmation of abstinence*, *love justifies*, *personal efficacy*, *future orientation*, *peer independence*, and *behavioral intentions* (defined below). The items were coded or recoded depending on the question such that the value 5 represented the most desirable response.

*Affirmation of Abstinence* measures their understanding of the risks and consequences of sexual activity outside of marriage, appreciating the physical and mental health benefits of abstinence prior to marriage, and accepting marriage as the appropriate and expected context for sexual activity. *Personal efficacy* measures confidence in their ability to resist peer pressure, to explain and defend the value of abstinence, to avoid situations and people which would compromise their value positions, and to disengage from relationships that do not support abstinent values. *Future orientation* measures their perception of attainable options regarding education, careers, marriage and family life – and the extent to which early sexual activity would jeopardize those options. *Independence from peer pressure* measures their ability to follow their own value system and personal goals, and their ability to communicate standards and values. *Justification* measures their agreement with the rationalizing and justifying that students often engage in to

legitimize their initiation of sexual activity, such as “being in love”, adopting “safer sex” practices, or an entitlement mentality – “she owes me”. *Behavioural Intentions* measures their level of intent and commitment to abstain from sexual activity.

The student surveys were matched over time by an iterative process that includes using a unique identifier that each student completes at each survey administration, consisting of the first letter of their first name, the first letter of their mother’s first name, and their day and month of birth. This partial information ensured that students could be matched over time while maintaining their anonymity. The students who completed pre and 12 month follow-up survey administrations, were virgins at pre and could be matched over time are used in subsequent analyses. To ensure an adequate sample size for the study, data from two cohorts (both comparison and treatment) were collected and analyzed. The years of the study were consecutive starting in 2002 and ending in 2004. Approval for the implementation of CTB, the study, and survey administration were approved at the school board level. Parental approval was gained through passive consent.

### **Statistics**

The first analyses performed were designed to test the equivalency between the treatment and comparison groups on relevant demographics. Using a test of differences between two proportions, gender, ethnicity, family composition, and grade were tested to determine whether differences existed between the groups. Secondly, test-retest and internal consistency estimates were calculated on the intervening variables. Lastly, comparisons were made between the treatment and comparison groups on the six intervening variables, the overall score (average of the six intervening variables), and percent of virgins transitioning into non-virgin status. The sample of sexually active kids was too small to perform any statistical tests between the comparison and treatment groups. Repeated Measures Analysis of Variance, controlling for gender, race, cohort, and family composition, were performed on the six intervening variables and the overall score. A test of proportions was performed to determine the differences between the treatment and comparison groups in transition rates for virgins at the pre-test into non-virgin status at the 12 month follow-up. The level of significance was set at .05 for all analyses.

### **Results**

Overall we were able to match 318 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade students who were virgin at pre with 12 month survey data the same students had completed 12 months before. There were several major reasons why all students could not have been matched to surveys taken 12 months before. Because of the nature of the study and the unpredictability of the timing of when students would have an opportunity to complete a follow-up survey (based on what semester they initially took the class and what semester they chose to take the following class), there is not a good way of adequately addressing a linkage rate or attrition rate for this group. However, because the comparison and treatment groups were not random samples of larger populations nor were they randomly assigned to treatment status to begin with, the issue of attrition from some larger group is not as important as the comparability between groups. A central factor for the present study is that the treatment and comparison students we have in the present study seem to have been comparable on many relevant variables at baseline, post and follow-up. The results of the tests of differences between proportions revealed there were no statistically significant differences

between the comparison and program groups on gender, grade, ethnicity, and family composition (Table 1).

### **Instrument**

Test-retest reliability estimates were calculated using the pre-post test administrations of the comparison group. The range of estimates was from .68 - .87 indicating high stability reliability for the instrument. Internal consistency was calculated to provide estimates of intervening variables validity. The entire sample at the pre-test was used in the calculations. All estimates indicated high internal consistency for the scale measures, in the range from .59 - .92. All results are presented in Table 2.

### **Comparison Group Versus Treatment Group**

The series of Repeated Measures Anovas on the six intervening variables reveal numerous significant time by program interactions (Table 3). For all six intervening variables, there was an increase in scores between the pre and post-test by the CTB group; at the same time the scores for the comparison group decreased slightly on five intervening variables, *affirmation*, *love justifies*, *peer independence*, *future orientation*, and *behavioral intentions*. Five of the increases for the treatment group were statistically significant whereas the one increase in the comparison group (*personal efficacy*) was non-significant. The drop in scores between the pre and post-test for the comparison group for *love justifies* and *peer independence* was statistically significant. All six time by program interactions between the pre and post-test were statistically significant.

For both the comparison and treatment groups there were decreases in scores between the post-test and the 12 month follow-up for all 6 intervening variables. All of the decreases were statistically significant for both groups with the exception of *peer independence*. However, in every instance, the CTB group remained higher than the comparison group at the 12 month follow-up. The time by program interaction differences were statistically significant for *affirmation*, *personal efficacy*, and *future orientation*.

Comparisons between the pre to post-post follow-up reveal similar findings. For the treatment group, there were increases in scores for *love justifies* and *peer independence*. For the comparison group, there were large decreases in scores on five intervening variables (*future orientation*, *love justifies*, *personal efficacy*, *affirmation*, and *behavioral intentions*) and a small decrease for *peer independence*. The pre to post-post follow-up revealed five statistically significant time by program interactions. *Affirmation* did not show a significant time by program interaction.

Lastly, transition rates from virgins to non-virgins were compared between the groups to determine whether CTB has an impact on behavior. Overall, there was a 9.8% difference between the treatment and comparison group on transition rates in favor of the treatment group. This difference was statistically significant. This difference translates into a statistically significant decrease in initiation of sexual activity of 47% for the CTB group. (Table 4)

In an effort to determine whether any positive results were achieved by sub-groups, transition rates were also compared by gender and ethnicity. For example there were 17% in the treatment group and 26% in the comparison group who transitioned into non-virgin status among non-

whites. This represents a 36% difference. The level of power for this analysis was .14 indicating a low level of power to detect a statistically significant difference. For males, the percent transitioning was 13% in the treatment group and 25% in the comparison group, indicating a 48% decrease in transitions into non-virgin status. For females, the percent transitioning was 10% in the treatment group and 18% in the comparison group, indicating a 47% decrease into non-virgin status. The power levels were .46 and .38 respectively.

## **Discussion**

Since the increase in funding for abstinence education, a number of new abstinence programs have emerged that use new modes of presentation, have more interactive and engaging learning exercises, deliver more adequate dosage, and focus on the teacher as a key element of success. These programs also focus on the emotional and physical consequences of teen sex, future and present incentives and rewards for being abstinent, education on mature relationships, the role of alcohol and sex, peer pressure, refusal skills, developing positive character, self-esteem and self-worth, and parent involvement. One of these new abstinence programs is Choosing the Best.

The CTB curriculum focuses on these key areas in a multi-year design that reinforces the message as adolescents advance in grade levels. This study was developed to provide an in-depth look at the impact of CTB and to help fill the void regarding evaluation of abstinence education. The results of this study indicate that the CTB program does have a positive effect on adolescents on the key intervening variables associated with initiating sexual activity and in reducing the number of students who transition from virgin to non-virgin status. In all cases, the comparison group was lower than the experimental group at the post-test and the post follow-up test. Including the comparison group was essential for this study because at the 12 month follow-up, both groups had decreased scores on the intervening variables from the post-test. Without the comparison group, the magnitude of the effects from post-test to the 12 month follow-up would not have been apparent.

The results found for the comparison group in this study in and of itself have implications for research on abstinence education. This comparison group actually did receive abstinence instruction; however, it was low dosage, one modal lecture-style in its delivery, and contained no specific teacher training on abstinence prior to its delivery.

## **Limitations**

There were several limitations to this study based upon study design and implementation. First, the assignments to treatment and comparison groups in 7<sup>th</sup> and 8<sup>th</sup> grades were based upon which PE class students chose. Even though treatment and comparison groups were comparable on the common demographics we measured (see Table 1), this still opens up the possibility that other factors, such as attitudinal and personality, could be involved in differences between the treatment and comparison groups. Future studies using random assignment between treatment and comparison groups should be conducted to minimize the possibility of selection bias. Second, because of constraints within the school system of when students would have an opportunity to complete a follow-up survey (based upon what semester they initially took the class and what semester they chose to take the following class), there was not a practical way of carefully following the total population over time or adequately addressing a linkage or attrition rate. In addition, higher risk students are more difficult to locate and follow over time and less

likely to be in the final sample, making it more difficult to generalize the study findings to broader populations. Future studies utilizing random assignments of students and better controlling the follow up survey schedule would strengthen the study and resulting conclusions. Third, since dosage information was not gathered on individual students but was based upon school absenteeism rates there is not a good way to ensure that adequate dosage was achieved. Future studies should include a way to measure and evaluate the effect of dosage in the program.

Fourth, as is the problem with most school-based studies, the lack of random assignment introduces threats to internal and external validity. However, in this study, the main threat of differential selection of subjects was decreased because the same schools were used for the treatment and comparison groups and the same types of classes were assigned to the groups. Interestingly, the comparison group received a standard health textbook with an abstinence focused sex education component and had the opportunity to interact with the treatment group during the remainder of the school days and year. Both of these issues could have decreased the difference in outcomes between the two groups. To that end the issue of contamination, as presented in the introduction using the Carrera example (Philliber, et. al., 2002) was also an issue in this study. Fifth, the pattern of results reported here held up in the non-white and gender sub-groups, but because these cell sizes were so small, power to detect statistically significant differences was low. Nevertheless, these findings are encouraging especially among non-whites. Future studies need to ensure adequate sample sizes in the break-downs to achieve higher levels of power.

In summary, one of the new abstinence programs, CTB, appears to show positive effects on adolescents' attitudes, intentions, and behaviors pertaining to sexual abstinence. While this program is implemented across the county to 6<sup>th</sup> – 9<sup>th</sup> graders in an effort to help adolescents make wise decisions during their teen years, there are many other abstinence education programs being implemented also. More research needs to be conducted on CTB to deal with the limitations listed above as well as other abstinence programs to build a base of literature from which educators, policy makers, and program planners can draw when deciding on what to teach their adolescents. The comparison group, who received a more typical classroom exposure to sex education including some attention to abstinence, had less favorable outcomes. This could mean that simply giving information at low dosages, even if it addresses abstinence, will not likely produce the best outcomes. Successful abstinence education programs will be more likely to provide sufficient dosage and reinforcement, engage students actively in the learning process, target multiple intervening factors or variables, address related risk behaviors, and pay careful attention to teacher factors.

## References

1. Grunbaum JA, Kann L, Kinchen S, et al. Youth risk behavior surveillance – United States 2003. In: Surveillance Summaries, *MMWR*. 2004;53(No. SS-2):73.
2. US Department of Health and Human Services. President's budget increases abstinence program funding. Thursday, Jan. 31, 2002.
3. Health Resources and Services Administration, Department of Health and Human Services Title V of the SSA, 42 USC 701, Section 510, (2), (A through H), 1997.
4. Thomas MH. Abstinence-based programs for prevention of adolescent pregnancies. *J Adolesc Health*. 2000; 26:5-17.
5. Doniger AS, Adams E, Utter CA, Riley JS. (2001). Impact evaluation of the "Not Me, Not Now" abstinence-oriented, adolescent pregnancy prevention communications program, Monroe County, New York. *J Health Communications*. 2001;6:45-60.
6. Philliber S, Kaye JW, Herrling S, West E. Preventing pregnancy and improving health care access among teenagers: An evaluation of the Children's Aid Society-Carrera Program. *Perspectives on Sexual and Reproductive Health*. 2002;34:244-251.
7. Denny, G., Young, M., Rausch, S., & Spear, C. (2002). An evaluation of an abstinence education curriculum series: Sex Can Wait. *American Journal of Health Behavior*, 26(5):366-377.
8. Kirby, D., Barth, R.P., Leland, N., & Fetro, J.V. (1991). Reducing the Risk: Impact of a new curriculum on sexual risk-taking. *Family Planning Perspectives*, 23, 253-263.
9. St. Lawrence, J.S., Brasfield, T.L., Jefferson, K.W., et al. (1995). Cognitive-behavioral intervention to reduce African-American adolescents' risk for HIV infection. *Journal of Consulting and Clinical Psychology*, 63, 221-237.
10. Armitage, C., & Conner, M. (2000). Social cognition models and health behavior: A structured review. *Psychology and Health*, 15, 173-189.
11. Godin, G. & Kok, G. (1996). The theory of planned behavior: A review of its application to health-related behaviors. *American Journal of Health Promotion*, 11, 87-89.
12. Floyd, D.L., Prentice-Dunn, S., & Rogers, R.W. (2000). A meta-analysis of research on protection motivation theory. *Journal of Applied Social Psychology*, 30(2), 407-429.
13. Strecher, V.J., DeVellis, B., M., Becker, M.H., & Rosenstock, I.M. (1986). The role of self-efficacy in achieving health behavior change. *Health Education Quarterly* 13(1), 73-92.
14. Miller, B. C. & Moore, K. A. (1990). Adolescent sexual behavior, pregnancy, & parenting: Research through the 1980s. *Journal of Marriage & the Family*, 52, 1025-1044.
15. Plotnik, R.D. (1992). The effect of attitudes on teenage premarital pregnancy and its resolution. *American Sociological Review*, 57, 800-811.
16. Resnick, M.D., Bearman, P.S., Blum, R.W., Bauman, K.E., Harris, K.M., Jones, J., et al. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association*, 278, 823-832.
17. Kirby, D. (2001). *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
18. Kirby, D. (2002). Antecedents of adolescent initiation of sex, contraceptive use, and pregnancy. *American Journal of Health Behavior*, 26, 473-485
19. Blinn-Pike L, Berger TJ, Hewett J, Oleson, J. Sexually abstinent adolescents: An 18-month follow-up. *J Adolesc Res*. 2004;19:495-511.
20. Bearman P, Bruckner H. Promising the future: Virginity pledges and first intercourse. *Am J Sociology*. 2001;106: 859

21. Resnick MD, Bearman PS, Blum RW, et. al. Protecting adolescents from harm. *JAMA*. 1997;278: 823-832.
22. Miller BC. Family influences on adolescent sexual and contraceptive behavior. *J Sex Res*. 2002;39:22-26.
23. Lammers C, Ireland M, Resnick M, Blum R. Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13-18 years. *J Adolesc Health*. 1999;26:42-48.
24. Dittus P, Jaccard J, Gordon VV. The impact of African American fathers on adolescent sexual behavior. *J Youth Adolesc*. 1997;26:445-465.
25. Sieving RE, McNeely CS, Blum RW. Maternal expectations, mother-child connectedness, and adolescent sexual debut. *Arch Pediatr Adolesc Med*. 2000;154: 809-816.
26. Dittus P, Jaccard J. Adolescents' perceptions of maternal disapproval of sex: Relationship to sexual outcomes. *J Adolesc Health*. 2000;26:268-278.
27. Jaccard J, Dittus P, Gordon V. Maternal correlates of adolescent sexual and contraceptive behavior. *Fam Plann Perspect*. 1996;28:159-185.
28. Silva M. The effectiveness of school-based sex education programs in the promotion of abstinent behavior: a meta-analysis. *Health Educ Res*. 2002;17:471-481.
29. Blake SM, Simkin L, Ledsky R, Perkins C, Calabrese JM. Effects of a parent-child communications intervention on young adolescents' risk for early onset of sexual intercourse. *Family Planning Perspectives*. 2001;33:52-61.
30. Santelli JS, Kaiser J, Hirsch L, Radosh A, Simkin L, Middlestadt S. Initiation of sexual intercourse among middle school adolescents: The influence of psychosocial factors. *J Adolesc Med*. 2004;34:200-208.

**Table 1**

## Demographic Items

---

Variable	Treatment		Comparison	
	N	Percent	N	Percent
<hr/>				
Race				
Black	19	10%	13	10%
White	159	84%	103	82%
Other	11	6%	10	8%
Gender				
Male	84	44%	56	43%
Female	105	56%	73	57%
Grade				
7 <sup>th</sup>	91	48%	72	55%
8 <sup>th</sup>	52	27%	19	15%
9 <sup>th</sup>	46	24%	38	30%
Family Composition				
Intact	106	58%	70	58%
Reconstituted	37	20%	23	19%
Single Parent	31	17%	22	17%
Other	8	4%	7	6%

---

**Table 2**

Reliability Estimates of the Instrument

Scale	Test-Retest (r) <sup>1</sup>	Internal Consistency ( $\alpha$ ) <sup>2</sup>
Affirmation	.87	.92
Personal Self-Efficacy	.79	.87
Peer Independence	.68	.59
Future Orientation	.80	.83
Love Justifies	.81	.82
Behavioral Intention	.82	.86

---

(n =445)<sup>1</sup>; (n = 1129)<sup>2</sup>

**Table 3**

Intervening Variables Means, Standard Deviations, and Repeated Measures Program by Time

Interactions

		Pre Mean (stn.dev.)	Post Mean (stn. dev.)	Follow-up Mean (stn. dev.)	Pre-Post by time F (p-value)	Post- 12- mo. by time F (p-value)	Pre-12 mo. by time F (p-value)
Affirmation	Treatment	3.95 (.91)	4.15 (.89)	3.72 (1.02)	23.70 (.00)	4.30 (.04)	1.94 (.17)
	Comparison	3.94 (.87)	3.88 (.94)	3.60 (1.04)			
Personal Efficacy	Treatment	3.80 (1.0)	3.94 (.98)	3.64 (1.1)	5.81 (.02)	4.16 (.04)	6.28 (.01)
	Comparison	3.90 (.98)	3.95 (.99)	3.39 (1.2)			
Peer Independence	Treatment	3.82 (.71)	3.91 (.65)	3.87 (.75)	10.05 (.00)	.08 (.77)	4.23 (.04)
	Comparison	3.93 (.72)	3.78 (.73)	3.77 (.80)			
Future Orientation	Treatment	3.37 (1.2)	3.98 (1.1)	3.21 (1.3)	34.13 (.00)	8.13 (.01)	6.14 (.01)
	Comparison	3.65 (1.1)	3.63 (1.1)	3.19 (1.3)			
Love Justifies	Treatment	3.99 (.81)	4.25 (.80)	3.85 (.98)	37.87 (.00)	2.15 (.14)	16.08 (.00)
	Comparison	4.12 (.75)	4.02 (.88)	3.47 (1.2)			
Behavioral Intent	Treatment	3.87 (1.1)	4.05 (.98)	3.78 (1.1)	12.17 (.00)	.38 (.54)	10.97 (.00)
	Comparison	3.94 (1.0)	3.90 (1.1)	3.48 (1.2)			
Scale Composite	Treatment	3.81 (.75)	4.04 (.73)	3.69 (.83)	46.70 (.00)	.00 (.94)	16.06 (.00)
	Comparison	3.91 (.72)	3.85 (.78)	3.46 (.83)			

Treatment n=189; Comparison n=129

**Table 4**

Comparisons on transition to non-virgin status

Group	Total <sup>1</sup>	1 <sup>st</sup> Year <sup>2</sup>	2 <sup>nd</sup> Year <sup>3</sup>
Treatment	11.1%	12.0%	9.6%
Comparison	20.9%	18.8%	23.0%
P-value	.03	.20	.05
% Reduction	47%	36%	58%

(n=189 treatment, 129 comparison )<sup>1</sup>, (n=116 treatment, 64 comparison)<sup>2</sup>, (n=73 treatment, 65 comparison)<sup>3</sup>