

Re-Examining the Evidence for Comprehensive Sex Education in Schools 2019



Part One: Research Findings in the United States

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THE INSTITUTE FOR
RESEARCH & EVALUATION



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The Institute for Research and Evaluation (IRE) is a nonprofit research organization noted for its work evaluating sex education programs over the past 25 years. IRE has conducted program evaluations for federal Title V, CBAE, and Title XX projects in 30 states, and has evaluated sex education in three foreign countries, in total collecting data from more than 900,000 teens, and conducting over 100 evaluation studies. IRE staff members have published articles in professional journals and presented at professional conferences and workshops. Irene H. Ericksen has served on a national panel of consultants to the CDC-supported Community Preventive Services Task Force meta-analysis on sex education effectiveness and as a secondary author for the published study on the same topic (2012). Dr. Stan E. Weed, Founder and Director of IRE, has served as a national consultant for federal Title XX and CBAE projects, and was a charter member of the National Campaign to Prevent Teen and Unplanned Pregnancy. He has been invited to provide expert testimony about sex education to state legislative bodies, the U.S. Senate, the U.S. House of Representatives, and the White House.

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ABSTRACT

PURPOSE

To evaluate the research evidence for U.S. school-based comprehensive sex education (CSE)—programs that promote condom use and may also teach abstinence—according to standards derived from the field of prevention research, in order to identify evidence of real effectiveness.

METHODS

We surveyed the studies contained in three authoritative research reviews of U.S. sex education effectiveness: two sponsored by the U.S. federal government (the *Teen Pregnancy Prevention* evidence review and a meta-analysis study supported by the *Centers for Disease Control and Prevention*), and one conducted for the *United Nations*. These reviews have screened several hundred sex education studies for research quality and reported results for the studies of adequate rigor. For the 77 studies of U.S. school-based sex education which met that test, we evaluated their outcomes according to credible criteria of effectiveness derived from the field of prevention research: sustained effects (detected at least 12 months after the program), on protective indicators (abstinence, condom use, pregnancy, and STDs), for the main (intended) teen population, without producing other negative effects, and based on the preponderance of research evidence.

RESULTS

Out of 60 school-based CSE studies, we found no evidence of effectiveness at producing sustained reductions in teen pregnancy (0 programs) or STDs (0 programs). One study showed evidence of effectiveness, as defined above, at delaying sexual initiation but evidence from multiple replication studies was not confirmatory. There was no evidence of effectiveness at increasing consistent condom use—the behavior required to provide meaningful protection from STDs—and only two studies (by the programs' developers) reported effectiveness at increasing condom use frequency (a less-protective measure), findings that have not been replicated. We found no evidence of effectiveness for CSE's purported dual benefit—there were no sustained increases in both teen abstinence and condom use (by sexually active teens) within the same target population. CSE failure rates at producing sustained effects on targeted outcomes included 88% failure to delay teen sexual initiation and 94% failure to reduce unprotected sex. And seven out of 60 studies (or 12%) of school-based CSE programs found

significant negative effects on adolescent sexual health and/or risk behavior. Out of 17 studies of school-based abstinence education (AE)—which does not promote condom use—seven programs produced sustained delays in teen sexual initiation and only one found a negative effect. In addition, nine studies tested AE impact on condom use and none found a negative impact, providing strong evidence that AE does not reduce teen condom use.

CONCLUSIONS AND RECOMMENDATIONS

When considering programs in U.S. school settings, measured by credible standards of effectiveness, the claims that CSE has been proven effective and AE is ineffective were not supported by this combined database containing some of the strongest and most current outcome studies of U.S. sex education, as identified by three authoritative sources. The research evidence indicates that CSE has shown far more evidence of failure than success in U.S. school classrooms and has produced a concerning number of negative outcomes. The evidence for AE, though limited, looks more promising, enough to justify additional research. We recommend policymakers abandon plans for implementation of CSE in U.S. schools and pursue alternative strategies to reduce teen pregnancy and STDs.

FULL REPORT

I. INTRODUCTION

In spite of 30 years of prevention efforts, the negative consequences of teenage sexual activity continue to be a blight on adolescent populations worldwide. In the United States, the *Centers for Disease Control and Prevention* (CDC) refers to sexually transmitted diseases (STDs) as a “hidden epidemic,” reporting that “1 in 4 sexually active adolescent females has an STD,” and that the STD rates for adolescents in the U.S. are rising.¹ Worldwide, the AIDS epidemic continues, with “young people aged 15–24 account[ing] for 45% of all new HIV infections.”² Although the U.S. teen pregnancy and birth rates were at an all-time low in 2013, they remain among the highest of the developed countries.³ In addition, early onset of sexual activity has been associated with a decrease in mental/emotional health and an increased likelihood of experiencing sexual violence for adolescents, especially among females and younger teens.⁴ Given these continuing harms, a high priority for many public policymakers continues to be 1) to reduce teen pregnancies, 2) to reduce STD and HIV infections contracted by youth, and 3) to influence adolescents to postpone sexual activity.

Efforts to achieve these goals typically focus on 1) promoting abstinence: the delay of sexual initiation (i.e., the onset of sexual activity) for sexually inexperienced (virgin) teens and the return to abstinence by sexually experienced (non-virgin) teens, and/or 2) promoting condom use and other forms of birth control (e.g., birth control pills, Long-Acting Reversible Contraceptives or LARCs⁵) by those teens who choose to be sexually active. Sexuality education programs that encourage these behaviors in youth populations are viewed by many as a key preventive mechanism through which the negative consequences of teenage sexual activity can be minimized or avoided.

Sex education programs vary widely in their content, methods, and effectiveness, so the fundamental question becomes: Is there a type of program that is more effective than others at achieving these desired results? Some advocacy groups, health professionals, and government officials have endorsed a strategy that is commonly called “comprehensive sex/sexuality education,” or CSE (sometimes called “comprehensive sexual and reproductive health education”). It is referred to as a “sexual risk reduction” (SRR) approach to teen sexual health, as contrasted with the “sexual risk avoidance” approach (SRA) that is foundational to the abstinence education (AE) strategy.

The CSE strategy is typically based on the assumption that a sizable proportion of the teenage population cannot be

dissuaded from sexual activity. So CSE proponents advocate that the best protection for these youth will be to teach and promote the use of condoms—which can reduce but not eliminate the risk of both pregnancy and STDs—while at the same time encouraging continued abstinence for virgin teens and a return to abstinence for those non-virgins who are willing to do so. Thus, the “comprehensive” rationale for CSE is that it is supposed to protect the full spectrum of teens. In other words, there is a hypothesized “dual benefit” provided by CSE programs: they simultaneously increase risk avoidance (by promoting teen abstinence or a return to abstinence) and risk reduction (by promoting teen condom use) within the same population of youth. This constitutes the central rationale for CSE and its purported advantage over other strategies, such as the abstinence-only approach to sex education, which does not contain condom/contraception instruction or promotion.

It should be noted that while promoting sexual abstinence is a nominal goal for CSE, the amount of attention it receives in specific CSE curricula varies widely; it is often given little emphasis, or may be defined very narrowly, as meaning abstinence from vaginal intercourse but allowing other forms of genital contact. In fact, some organizations that develop and support CSE programs are known to teach that sexual activity is healthy and positive for adolescents as long as they are “ready” for it and it is “consensual” and “protected.”⁶ This would appear to conflict with the inclusion of an abstinence message as a component of CSE programs.

A prominent youth advocacy organization, *Advocates for Youth*, declares that CSE “has been proven effective” and that “young people need comprehensive sex education.” The International Technical Guidance on Sexuality Education (2009), produced by the *United Nations Educational, Scientific and Cultural Organization* (UNESCO), asserts that programs which emphasize “both abstinence and use of condoms and contraception [are] effective in changing behavior when implemented in school, clinic and community settings” and that such “comprehensive sexuality education” should “become part of the formal school curriculum.” An updated 2018 edition reaffirms the original conclusions and contends that the evidence base for the effectiveness of school-based CSE “continues to grow and strengthen.” And a CDC-supported meta-analysis asserts that CSE programs are effective “across a range of populations and settings ... [including] both ... school and community settings.”⁷

Does research evidence support these claims? Given such broad-based endorsement of CSE and the focus on school classrooms as a key mechanism for its widespread delivery, the question of school-based CSE effectiveness is crucial. However, weak definitions of “effectiveness” employed by many research reviews to evaluate CSE program outcomes raise serious questions about the real extent of CSE success. Such concerns and the gravity of their consequences for the health of young people and for sound public policy was the impetus for our institute’s examination of the best avail-

able sex education outcome research, as identified by three reputed scientific agencies, with the purpose of addressing the critical questions: How effective are school-based CSE programs? Does the research support claims of their effectiveness? That is the subject of the following analysis.

The present report will cover school-based CSE programs implemented and evaluated within the United States. A second report, forthcoming, will review evidence for CSE school-based programs outside the United States.

II. WHAT IS SUFFICIENT EVIDENCE OF PROGRAM EFFECTIVENESS?

Referring to CSE programs as “effective” or “scientifically grounded”⁸ suggests that such interventions have produced scientifically valid evidence of real success or effectiveness at lowering teen pregnancy, HIV, or STD rates, or at least at increasing the protective behaviors—abstinence and condom use—that prevent or reduce these problems. This raises the critical question of how program “effectiveness” is defined and measured.

Most reviews of comprehensive sex education research set a high standard for the quality of the research *methods* used by the studies included in their database. This is important, since well-designed and well-implemented studies are necessary to produce findings that are an accurate representation of reality. But many of these same reviews have been less careful or clear about their standards for the *outcomes* they have used to define CSE program success. This is problematic since it is the program outcomes—the effects on adolescent behaviors and health—that are the real world impacts by which an intervention’s usefulness must be judged. For example, authors of some research reviews may refer to “evidence of effectiveness”⁹ without being clear that they consider a reduction in teenage risk behavior that was detected immediately after the program, but disappeared 10 months after the program, to constitute evidence of program success. And some reviews are not adequately transparent about the totality of the evidence of program effectiveness versus ineffectiveness, basing a designation of program effectiveness on one significant effect from a single study by the program’s developer while ignoring strong evidence from other studies showing that the same program had no impact or even some negative effects. Such lenient standards for CSE effectiveness and lack of transparency about the totality of evidence raise questions about the true impact of CSE programs. It is for these reasons that we turned to the field of prevention program research to identify criteria for measuring CSE program effectiveness.

Assuming that scientific standards for study methodolo-

gy are met (to give confidence in the study findings), the broader field of prevention research recommends measuring program effectiveness using certain standards for critical program outcomes.¹⁰ These standards include a requirement of sustained long-term effects as well as a concern about “main effects” (impact on the full target population versus only subgroup effects) and about including the preponderance of evidence. For example, “sustained impact,” defined as “at least one year beyond treatment” is required by *Blueprints for Healthy Youth Development* in order for an intervention to be designated as an effective or model program.¹¹ The *Society for Prevention Research* (SPR) articulates the distinction between program “efficacy” and “effectiveness.” The latter requires higher standards than the former. SPR defines *efficacy* as the ability of a program to provide some “beneficial effects ... under optimal conditions of delivery,” and *effectiveness* as the repeated demonstration of positive effects under “real-world conditions.”¹² However, to meet even the lower standard of *efficacy*, SPR requires evidence from at least two good studies, “a consistent pattern of non-chance findings in the desired direction ... there must be no serious negative (iatrogenic) effects on important outcomes,” and at least one study showing long-term outcomes measured “at an appropriate interval beyond the end of the intervention.”¹³ According to SPR, *effective* programs must meet these standards for *efficacy* as well as show repeated replication of long-term effects in real-world conditions. Moreover, they consider evidence of effectiveness a prerequisite for a prevention program’s dissemination.¹⁴

Influenced by these entities and their standards, and more than 25 years of experience evaluating school-based sex education programs, the *Institute for Research & Evaluation* has identified five key criteria for evidence of program effectiveness. The first three pertain to the strength of a program’s outcomes. The latter two have to do with the *quantity and objectivity of the research evidence* about those outcomes. We contend that meeting these credible and recommended standards would establish sufficient empiri-

cal grounds for evidence of program effectiveness.

A. Impact on at least one Key Protective Indicator without concurrent negative effects.

Key protective indicators are: delay of sexual initiation/debut, increased condom use—especially consistent condom use, or decreased pregnancy or STDs rates. A positive impact must be found for one of these outcomes, without the finding of negative program effects within the same study or another study of the same program.¹⁵ A note about consistent condom use (CCU): Given the worldwide STDs epidemic among young people, sex education programs should not be deemed “effective” unless they increase protection from HIV and STDs, not just from pregnancy alone. Consistent condom use (i.e., using a condom with every act of sexual intercourse) is required for effective protection by condoms. According to the *Centers for Disease Control and Prevention*, “Consistent and correct use of male latex condoms can reduce (though not eliminate) the risk of STD transmission. To achieve the maximum protective effect, condoms must be used both consistently and correctly. Inconsistent use can lead to STD acquisition because transmission can occur with a single act of intercourse with an infected partner.”¹⁶ (Even consistent condom use does not provide the 100% protection from STDs afforded by abstinence,¹⁷ nor prevent the increased emotional harm and sexual violence associated with teen sex.¹⁸)

However, most CSE studies do not measure CCU but instead track less-protective indicators—frequency of condom use or use at last intercourse. Our review distinguished between measures of “consistent condom use” (CCU) and “less-protective measures of condom use,” and reported research findings for both. However, where both were measured in the same study, the CCU outcome was considered the key indicator, with failure on this outcome not outweighed by success on a less-protective measure of condom use. On the other hand, where CCU was not measured, we report a less-protective measure of condom use as a surrogate indicator of program effectiveness, lacking data about the more-protective indicator. It should be noted that the term “condom use” is used in this report to include both types of measures unless otherwise indicated.

B. Post-Program Results Sustained at least 12 Months.

In keeping with standards from the field of prevention research, a program’s behavioral impact should last for a sustained period after the end of the intervention. Consistent with several reputable prevention agencies, we define a sustained or long-term effect as at least 12 months following program participation.¹⁹ This is especially meaningful

for school-based programs, where another “dose” of the program may not be delivered until a year later, during the following school year, if at all. Thus, a school-based program that produces positive behavior change three or six months afterward, but not when measured at the 12-month follow-up should not be considered effective, and a research study that does not measure this sustained long-term effect has not produced sufficient evidence of a school-based program’s effectiveness.

C. Main Effects: Impacts for the Target Population, not just a Subgroup.

The program should produce “main effects”—positive results for the intended/targeted population as a whole and not just for a segment or subgroup of that population (e.g., should affect both boys *and* girls, if both are participating in the program). In addition, a program that has produced significant negative effects for a substantial subgroup of the intended population (such as boys, or those already sexually active), should not remain on a list of “effective” programs.²⁰

D. Based on the Totality of Evidence.

According to the scientific field of program effectiveness, the designation of a prevention program as “effective” should take into account the preponderance of evidence about that program’s impact. The program should produce “consistent positive effects ... [and] no serious negative (iatrogenic) effects on important outcomes”²¹ both within the same study and across multiple evaluation studies. Some evidence reviews will report a program to be effective if they can find one positive effect within a single study while ignoring null effects on other more important outcomes in the same study, or evidence from replication studies that have found no effect or even negative effects. For example, the U.S. government’s signature list of pregnancy prevention programs has included an intervention that produced positive main effects in one impact study but no effects in three other rigorous replication studies, and a negative effect in a fourth study.²² Yet the field of prevention research recommends that positive evidence from multiple studies be produced before a program is considered effective and that negative effects on important outcomes are disqualifying.²³

E. Data from Independent Evaluators.

The *Society for Prevention Research* (SPR) reports that, on average, the findings of prevention program studies are more positive if the study is conducted by the program developer than by an independent evaluator not affiliated with the program.²⁴ This suggests that an automatic bias

or conflict of interest may often occur. Even with rigorous study quality, research results may not be free of this built-in bias that can affect the study findings in subtle ways. When such a study constitutes the sole source of evidence of effectiveness, it can call into question designation of a program as “effective.”²⁵ SPR recommends that program effectiveness should not be founded on evidence produced solely by program developers.²⁶

It is not difficult to find sex education programs that have only produced results on less-protective outcomes, or for

short durations, or only for subgroups of the intended population. While such outcomes can identify programs that may have potential, they do not constitute sufficient evidence of effectiveness to justify widespread dissemination in school classrooms nor financial support using public tax dollars. In fact, when the totality of evidence for a specific program is examined in detail, such positive outcomes may be offset by countervailing evidence of null or negative effects that would warrant its elimination from lists of “effective” programs.

III. WHY FOCUS ON “SCHOOL-BASED” COMPREHENSIVE SEX EDUCATION?

A high school, middle school/junior high, or elementary school is the setting in which many CSE interventions occur. It is a venue where sex education programs can reach large numbers of their target audience in relatively convenient and cost-effective ways. By contrast, clinic or community-based CSE programs often serve unique populations and use methods not easily replicable in schools. Perhaps for these reasons, schools tend to be the venue of choice (as in the UNESCO recommendation quoted above) and the focus of the public policy debate about prevention. Our review of sex education effectiveness was conducted with the aim of informing public policy, therefore we focused solely on studies of CSE programs that are implemented in school settings.

We define “school-based” sex education as programs that serve a typical school population or recruit participants from such, are held at a school in a classroom-type setting (including after school or on Saturdays), use a curriculum delivered by teachers or facilitators, and can be imple-

mented at most schools. Not included in our school-based category are service-learning programs that occur *primarily* in community agencies and settings, and multi-component after-school youth development programs with community and/or summertime components that cannot be implemented mostly within a school classroom setting and methodology. (A prominent example of youth development programs is the *Children’s Aid Society/CAS Carrera* program.) Within the school-based category, however, there is still some variation in the types of programs, most notably: interventions presented in school classrooms and/or assemblies during the regular school day, aimed at a school-wide population (i.e., not a recruited or self-selected subgroup) versus interventions that recruit participants from within the school (thus different from the general student population) and are held after school or on Saturdays (usually in small groups of six to eight participants), with recruits often paid to participate. Our review examines studies of both types of school-based programs and distinguishes between them in our data tables.

IV. THE DATABASE: THREE SCIENTIFIC RESEARCH REVIEWS

Several hundred studies of sex education effectiveness have been conducted in the United States since about 1990. This pool of studies has been reviewed and sifted by many reputable scientific entities, which have then summarized the results of the studies that met their standards for acceptable research quality. Among such entities are three authoritative governmental agencies: the *U.S. Teen Pregnancy Prevention* program (TPP), the *U.S. Centers for Disease Control & Prevention* (CDC), and the *United Nations Educational, Scientific, and Cultural Organization* (UNESCO). Each of these agencies has conducted an extensive review of all the credible studies of CSE conducted in the U.S. during that time frame. Moreover, each has claimed that CSE has shown evidence of effectiveness sufficient to recommend

it as a prevention strategy. Because of the prominence of these three entities, and because the included studies met their standards for adequate research quality, we chose these reviews as the database for our analysis, in order to evaluate some of the best evidence upon which statements of CSE effectiveness have been based. Since our focus was school-based programs (for reasons stated previously), we identified and examined the studies of school-based CSE found in these three reviews.

A. U.S. Department of HHS Teen Pregnancy Prevention Evidence Review.

As part of the U.S. government’s *Teen Pregnancy Prevention* (TPP) program, authorized in 2009 by the *Office of*

Adolescent Health (OAH) within the *Department of Health and Human Services* (DHHS), a review of the existing sex education research was conducted. That review, overseen by *Mathematic Policy Research*, constitutes one of the most rigorous and current aggregations of research evidence on sex education outcomes extant today. The initial TPP Evidence Review examined the sex education research from the prior 25 years, canvassing approximately 600 studies, using standards of research quality to identify the best evidence for program effectiveness available to date. Out of these hundreds of studies, their original review identified only 28 prevention programs described as showing “evidence of effectiveness in reducing teen pregnancy, sexually transmitted infections, and associated sexual risk behaviors” as defined by TPP reviewers.²⁷ It should be noted that to qualify for this designation, a program merely had to show at least one statistically significant favorable effect—even of short duration or for only a subgroup of the target population—on sexual risk behavior, pregnancy, or STDs, without regard for other unfavorable study findings. (Not represented on that list are an unknown number of studies, out of the original 600, which met the standards for research quality but did not have any positive outcomes. Thus the picture presented by the TPP list is skewed in this sense. It does not reveal the very low success-to-failure ratio overall for the many sex education programs reviewed.) The initial review was updated in 2015–2018, when the originally selected body of studies was supplemented with a subsequent round of outcome studies, including replication studies of some programs identified in the initial round and several new programs being tested for evidence of success.²⁸ This combined TPP database contains 36 studies of 18 school-based CSE programs. Included are the original evaluation studies for each school-based CSE program on the original TPP list,²⁹ as well as studies of the school-based CSE programs evaluated in the 2015–2018 TPP evidence review (some of which did not qualify for inclusion on the TPP list). We have examined this evidence study by study, evaluating the data according to the standards of effectiveness in Section II above.

B. CDC-Supported Meta-Analysis of Group-Based Teen Pregnancy, HIV, & STD Prevention Programs in the U.S.

The *Community Preventive Services Task Force* operates under the auspices of the *U.S. Department of Health and Human Services* (DHHS) through support from the *Centers for Disease Control and Prevention* (CDC). In 2008, the

Task Force initiated a study of “The Effectiveness of Group-Based Comprehensive Risk Reduction and Abstinence Education Interventions to Prevent or Reduce the Risk of Adolescent Pregnancy, HIV, and STIs.” The database included outcome studies from the prior 20 years that met the *Task Force’s* standards for research quality, and included 24 studies of school-based CSE interventions. These studies were selected without regard to the finding of positive program impact, so they give a more realistic picture of the general success-to-failure ratio for sex education programs.³⁰

C. UNESCO International Technical Guidance on Sexuality Education, 2009/2018.

In 2009, the *United Nations Educational, Scientific, and Cultural Organization* (UNESCO) published an international review of the impact of sexuality education programs on the sexual risk behavior of young people. It surveyed outcome studies in the United States, “other developed countries,” and “developing countries,” screened them for research quality, and summarized the results. An updated review was published in 2018 which included “22 rigorous systematic reviews and 77 randomized controlled trials ... in a broad range of countries and contexts.” The combined UNESCO database contains 23 studies of U.S. school-based CSE.³¹

Because there was considerable overlap in the studies included in each of these three reviews, the net result was a set of 60 studies of adequate scientific rigor, evaluating 40 different school-based CSE programs in the U.S. Table 4 presents the individual results for each of these 60 studies, listed alphabetically by program, and indicates for each study which of the three entities included it in their review (TPP, CDC, UNESCO, or a combination of the three). Using the five criteria described in Section II to assess each study’s results, it was possible to determine which and how many of the 40 school-based CSE programs met these credible and recommended criteria for effectiveness. It should be noted that the facts and conclusions reported here are derived from our close examination of the individual research studies, not by reading the summaries or conclusions of other reviewers. Our findings are summarized in Section V and Tables 1 – 3, and shown study by study in Tables 4 – 6.³² The key at the bottom of Table 4 will provide the reader a color map or visual representation of the evidence of CSE effectiveness relative to lack of evidence or evidence of failure.

V. RESULTS FOR U.S. SCHOOL-BASED COMPREHENSIVE SEX EDUCATION

A. Evidence of Effectiveness: U.S. School-Based Comprehensive Sex Education

Only three out of 60 studies of 40 school-based CSE programs found evidence of program effectiveness at producing sustained effects (12-months after the program) on protective outcomes (increased teen abstinence or condom use, or decreased teen pregnancy or STDs) for the targeted adolescent populations, without other negative effects. One program increased abstinence and two increased condom use frequency or recent use (less-protective than consistent condom use). None of the studies were by independent evaluators and none of the effects have been replicated. If counting only the most-protective outcomes—either abstinence, *consistent condom use* (not frequent or recent use), pregnancy, or STDs—just one out of 60 U.S. school-based CSE studies showed evidence of effectiveness on any of these outcomes, by increasing teen abstinence—results that were not confirmed in multiple replication studies.

1. Teen Abstinence

One out of the 60 studies of school-based CSE showed evidence of effectiveness at delaying teen sexual initiation. However, the effect was not confirmed in multiple replication studies and five studies found school-based CSE programs produced increases in teenage sexual activity.

a. Sustained (12-month) delay of teen sexual initiation/onset (the most protective behavior)

- Of the 32 school-based CSE studies that measured this outcome 12 months after the intervention, one program showed some initial evidence of a sustained delay in sexual initiation for the intended population, without other negative effects: *Postponing Sexual Involvement*.³³
- However, the results of two replication studies did not support those initial positive results (see Section A5, Evidence from Replication Studies of School-Based CSE Programs).

b. Negative program effects

- Five school-based CSE studies found negative program effects (either short- or long-term) on sexual activity rates by four CSE programs: *¡Cuídate!*, *Healthy for Life—Version 2*, *It's Your Game: Keep It Real*, and

Reducing the Risk. Harmful effects included increased rates of sexual initiation, frequency of sex, recent sex, oral sex, or number of sex partners for the intended population or a substantial subgroup (e.g., sexually experienced, White, or male teens).

- Two of the programs—*¡Cuídate!* and *It's Your Game: Keep It Real*—produced multiple harmful effects on teenage sexual risk behavior.³⁴

c. Shorter-term effects on teen sexual initiation

Two school-based CSE programs produced delays in teen sexual initiation lasting more than six months but less than 12 months, post-program, without other negative effects:

- *Get Real* produced modest but significant delays in sexual initiation (a 15%-16% reduction) six to nine months after a program that spanned sixth to eighth grade, but the study did not measure whether effects lasted until ninth grade.³⁵
- Healthy Oakland Teens delayed sexual initiation for a period that ranged from 8 to 11 months after the program.³⁶

d. Other less-protective measures of reduced sexual activity

- Seventeen of the 60 school-based CSE studies measured 12-month reductions in “sex in the past 3 months” or frequency of sex (this is a move in the direction of abstinence vis-à-vis reduced sexual activity). However, 12 months after the program, only two studies found a positive result, and both of these programs produced negative effects on sexual activity in subsequent studies.³⁷
- One school-based CSE program produced a sustained reduction in “number of sex partners”, but did not increase teen abstinence or condom use.³⁸ (Decreasing the number of partners is a less-protective outcome that still leaves teens exposed to STDs and pregnancy, and requires consistent and correct condom use to reduce risk.³⁹) The study was conducted by the program developers.

2. Condom Use by Sexually Active Teens

No school-based CSE programs demonstrated effectiveness at improving consistent condom use (CCU) by teens. Two programs that did not measure CCU produced a 12-month increase in frequent or recent condom use (a less-protective behavior) in studies by the program devel-

opers, but the findings have not been replicated.

- a. Consistent Condom Use (the most-protective condom behavior)
 - Of the six studies that measured consistent condom use (CCU) 12 months after the intervention, only one school-based CSE program, *¡Cuídate!*, produced a sustained increase for the target population of teens, in a study by the program's developers.⁴⁰ Notably, this finding of a 12-month improvement in CCU seemed to be undermined by data from the same study. (See Section A5, *Evidence from Replication Studies of School-Based CSE Programs*.)
 - However, an independent replication study of *¡Cuídate!* found no positive effects on teen condom use and significant negative effects—increases in sexual activity and oral sex—for important subgroups. (See Section A6, *Negative Program Effects by School-Based CSE*.) These harmful program effects disqualify *¡Cuídate!* as an effective program.⁴¹
- b. Other Measures of Condom Use (frequency, use at last intercourse, etc.)
 - Of the 11 school-based CSE studies that only measured a sustained (12-month) effect on less-protective measures of condom use, such as *frequency* or *use at last intercourse*, two programs found significant improvement 12 months after the program in studies by the program's developers (*HIV Prevention Interventions* and *Safer Choices*). A third program (*Making Proud Choices*) measured CCU and condom use frequency, finding a sustained effect on the latter but not the former. Because the program failed on the more protective measure targeted by the program (CCU), the effect on condom use frequency was not considered evidence of program effectiveness.⁴²
 - Replication studies to test the initial positive results of the two programs are not available.
- c. Unprotected Sex

Some CSE studies report on the outcome “unprotected sex,” a measure usually obtained by asking teens if they have had sex without a condom or effective means of birth control. This outcome is usually not a clear indicator of teen risk behavior or level of protection. (See Section II, Item A, “Impact on Protective Indicators” And Endnote #15.) However, it can serve as a kind of surrogate indicator for program impact on teen condom use.

- Sixteen school-based CSE studies measured a reduction in unprotected sex 12 months after the program and only one, *¡Cuídate!*, found a significant effect. However, a replication study of the same program by an independent evaluator found it increased teen sexual activity for major subgroups of the program participants.⁴³
- Another program (*It's Your Game: Keep It Real*) found a decrease in unprotected sex 10 months after the program, but the effect had dissipated at the 24-month follow-up, at which point there was an increase in number of sex partners.⁴⁴ The 2012 study also produced evidence suggesting the program increased sexual initiation for its male participants after 10 months. (See Section A5, *Evidence from Replication Studies of School-Based CSE Programs*.) And a subsequent study by independent evaluators showed a statistically significant increase in sexual initiation for program participants after 12 months.⁴⁵

3. Biological Outcomes: Teen Pregnancy and STDs

Few school-based CSE programs measured teen pregnancy or STDs, and none demonstrated effectiveness at reducing these outcomes.

- a. Teen Pregnancy
 - Ten of the 60 CSE school-based studies measured the outcome of pregnancy (six measured 12-month effects): none showed reductions 12 months after the program.
 - One program (*Teen Outreach Program* or *TOP*) showed a main effect at the end of a nine-month program, but the effect dissipated 10 months after the program and another study of TOP found a negative effect—an increase in teen pregnancy for the girls in the program.⁴⁶
 - b. STDs
 - Only two of the 60 school-based studies measured program impact (of any duration) on STD infection and neither found any significant effect.
- ### 4. The Intended “Dual Benefit” of CSE: Impact on Both Abstinence and Condom Use

The school-based programs in this database did not demonstrate effectiveness at achieving the purported dual benefit of CSE, that is, increasing teen abstinence

while simultaneously increasing teen condom use for sexually active teens within the same program. No program produced sustained effects on both outcomes.

In theory (according to CSE proponents), there is a dual benefit that constitutes the advantage of CSE programs over AE programs: that they simultaneously increase risk avoidance (by delaying sexual initiation for sexually inexperienced teens and promoting a return to abstinence for the sexually experienced) and reduce sexual risk for teens who remain sexually active (by increasing condom use), all within the same population of youth.

- a. Twenty-three of the 60 school-based CSE studies measured sustained (12-month) effects on *both* sexual initiation and condom use (whether consistency of use, frequency of use, or use at last sex), and none produced significant effects on both outcomes simultaneously in the same target population.
- b. Five school-based CSE programs (in six studies) achieved this “dual” benefit if counting less-protective indicators, or effects on subgroups of the population, and/or for a shorter duration (e.g., three months).⁴⁷ However, two of these programs were found in replication studies by independent evaluators to produce significant negative effects on program participants (*¡Cuidate!* and *It’s Your Game: Keep It Real*—see Section A6, *Negative Program Effects by School-Based CSE*).

5. Evidence from Replication Studies of School-Based CSE Programs

The pattern of evidence from replication studies of school-based CSE programs in this database was not favorable when measured by meaningful criteria and including studies by independent evaluators.

The results for the school-based CSE programs with multiple outcome studies are summarized below.

- a. Reducing the Risk
Out of eight different studies, there appeared to be more evidence of failure—findings of no effect or negative effects—than evidence of success for *Reducing the Risk* in school settings.

This database contained eight studies of *Reducing the Risk (RTR)* in school classrooms. All of these measured teen abstinence and condom or contraceptive use as potential program outcomes. (See Table 1 for detailed findings.)

- Out of eight school-based *RTR* studies, only one (a modified version of *RTR*) produced credible evidence of sustained main effects on any protective outcomes: a reduction in teen sexual initiation and in number of sex partners. The study found no positive effects on teen condom use.⁴⁸
- Three other *RTR* studies reported sustained effects on teen abstinence that were based on questionable scientific evidence:
 - An initial study by program developers reported a long-term (18-month) reduction in teen sexual initiation but no effect on contraceptive use.⁴⁹ However, the abstinence effect did not hold up in the more rigorous logistic regression analysis and was not recognized by the U.S. *TPP* review as a significant finding.⁵⁰
 - Another *RTR* study found a long-term reduction in teen sexual initiation but no overall effect on contraceptive use. However, this study had serious methodological problems (58% attrition, small sample, no statistical control for existing pretest differences) that call into question the validity of the findings.⁵¹ But we accept them on the basis of the study’s acceptance by the CDC and UNESCO.
 - A third study, actually two studies in one, tested two different versions of *RTR* against each other and a control group.⁵² There were no program effects for either of the two versions of *RTR* compared to the controls, but the authors combined the samples of the two different *RTR* programs and reported a significant program effect on sexual initiation compared to the control group. However, this “combined” effect appears to be an artifact since it did not occur in the real world (no adolescent received both versions of *RTR*). Moreover, since the two *RTR* programs were different enough to test against each other (apples and oranges) it does not seem appropriate to combine them and count this as evidence of an *RTR* effect. (The *TPP* website reports a null effect for this outcome in one data table and a positive effect in a different data table.⁵³)
- Among eight school-based *RTR* studies, there were no sustained 12-month main effects on any other important indicators, including condom/contraceptive use, unprotected sex, or pregnancy.
- Four of the *RTR* studies found no main effects at all, even of short-term duration, and one of these found multiple harmful effects—increases in sexual risk behavior—for substantial subgroups of program participants, disqualifying *RTR* from designation as an effective program.⁵⁴
- There was no evidence that *RTR* produced the intended “dual” CSE benefit of increasing both teen abstinence and condom use by sexually active teens within the same study population.

b. *It's Your Game: Keep It Real*

There is more evidence of program failure for *It's Your Game: Keep It Real* (IYG)—findings of no impact or negative impact—than evidence of program success. In fact, given the evidence for negative impact, IYG appears as likely to harm as to benefit adolescents in school populations.

- The initial study by the program's developers reported a main effect on teen sexual initiation (defined in this study as the combined onset of anal, oral, and vaginal sex) 12 months after the program, but the effect was not statistically significant for males or for vaginal sex measured separately, and there were no significant program effects on condom or contraceptive use.⁵⁵
- A second set of two studies by the program's developers reported a significant impact on teen sexual initiation and on a combined measure of condom use and abstinence, both at the 10-month follow-up but not the 24-month follow-up. (Effects were found for anal sex but not overall sexual initiation at 24 months.) However, like the first study, the 10-month effect on abstinence was not statistically significant for males, and in this case it was in the negative direction, *suggesting an increase in sexual initiation for male participants* (AOR= 1.33). This, along with the over-representation of females in the analysis (64%), casts doubt on the finding of a significant overall improvement in teen abstinence.⁵⁶ Of greater concern, after 24 months, IYG participants reported a significantly higher number of recent sex partners.
- Another replication study of It's Your Game by an independent evaluator, found a negative effect on the main population—a substantial and significant increase in teen sexual initiation 12 months after the program for the full sample of participants and no positive impact on consistent condom use or other contraceptive use.⁵⁷
- And another independent replication study found no significant program effects at all for IYG after 12 months.⁵⁸

c. *¡Cuídate!*

There is as much evidence of failure—showing no impact or negative impact—as evidence of success for *¡Cuídate!*. The presence of significant negative effects from an independent replication study would seem to outweigh the positive effect on consistent condom use reported in the study by program developers.

- The original study of *¡Cuídate!* (by the program developers) found no effect on teen abstinence, but reported a 12-month improvement in rates of consistent condom use (CCU) and a reduction in the number of sex partners (a less-protective effect).⁵⁹
- This claim of a 12-month program impact on CCU is called into question by data from the same study, wherein a pretest difference, not controlled for, appeared to account for nearly all of the 12-month difference between groups that was attributed to a program effect.
- A replication study by independent evaluators looked at the impact of *¡Cuídate!* in a school classroom setting and found no positive results and significant negative effects on major subgroups of program participants. (See Section A6, *Negative Program Effects by School-Based CSE.*).⁶⁰

d. *Teen Outreach Program (TOP)*

When looking at the five evaluation studies of *Teen Outreach Program (TOP)* in schools, there is more evidence of program failure—findings of no impact or negative impact—than evidence of sustained positive impact. *TOP* has produced no evidence of long-term post-program benefits and has shown potential to do harm in adolescent school populations.

The *TOP* is a school-based youth development and service-learning program with a sexuality education component that includes a CSE approach to pregnancy prevention.

- The initial study of the *TOP* measured teen pregnancy at the end of the nine-month program and found a significant reduction for female program participants. However, no follow-up measure was taken to test for the duration of this effect beyond the end of the program.⁶¹
- A recent replication study in Florida schools found positive *TOP* effects on teen abstinence and pregnancy at the end of the program, but these were not sustained 10 months later.⁶²
- A recent study of *TOP* in Minnesota schools found no significant effects at three or 15 months after the program on any outcomes—teen sexual initiation, recent sex, or unprotected sex.⁶³
- Another recent replication of the *TOP* in Chicago found no effect on consistent condom use (the only

outcome measured).⁶⁴

- And a recent large multi-site evaluation of the *TOP* in the Northwestern U.S. found a significant *increase* in the rate of pregnancy for females, and no positive program effects.⁶⁵
 - A sixth *TOP* study occurred in community settings but recruited participants from schools, occurred after school, and only ran during the school year. It also found no positive effects.
- e. *Postponing Sexual Involvement (PSI)*
Three studies (two by independent evaluators) showed little evidence of success for *Postponing Sexual Involvement* in school settings.
- The initial study found a 12-month delay in teen sexual initiation, but it was rated as “a weak design with many problems” by reputable reviewers.⁶⁶
 - A subsequent replication study of *PSI* found no sustained effects for the intended population (only short-term subgroup effects).⁶⁷
 - A third *PSI* study found no effects on sexual initiation, recent sex, or number of partners, even short-term.⁶⁸
- f. *Be Proud Be Responsible (BPBR)*
Three studies (two by independent evaluators) showed no evidence of sustained program effects for *Be Proud Be Responsible* in school settings.
- An initial study by the program developer found a reduction in unprotected sex and anal sex (but not vaginal sex) six months after the program.⁶⁹
 - A replication study measured 12-month outcomes for sexual initiation, consistent condom use, and unprotected sex and found no effects.⁷⁰
 - An adaptation of *BPBR* found a reduction in unprotected sex at six months but not 12 months after the program, and no impact on teen pregnancy.⁷¹
- g. *The Children's Aid Society (CAS) Carrera Program*
The evidence from six studies of the *CAS Carrera* program is not favorable: no sustained post-program effects were measured, and there appears to be more evidence of program failure—both null effects and negative effects—than program success.
- This multi-component positive youth development program is in a different category than the school

classroom type CSE programs that are the subject of this report. However, because the program draws its participants from school populations, emphasizes both abstinence and contraception, is on the *TPP* list of evidence-based programs that *can* be implemented in schools, costs nearly \$5,000 per student, and has been the subject of multiple replication studies, the outcome evidence is reviewed here. Given that the *CAS Carrera* program is a departure from the school-based typology in this report, the data are not included in Table 1, nor counted in the aggregations of school-based CSE findings.

Five U.S. studies of *CAS Carrera* effectiveness have been conducted, four with a randomized design:

- The first study did find some results for girls but not for boys at the end of the three-year program—reductions in sexual initiation and pregnancy. But it found no effect on condom use, and girls in the program were more than twice as likely as those in the control group to use Depo-Provera—a hormonal contraceptive injection—at last intercourse. No measures were taken to determine if these immediate post-program sub-group effects lasted beyond the end of the program.⁷²
- A 2009 published review by Douglas Kirby of the cumulative outcome evidence for the *CAS Carrera* program reported on two studies. One found no positive effects and a *higher pregnancy rate for program participants* (Kirby, et al., 2005). The second study (reported in Scher and Maynard, 2006) found no positive effects.⁷³
- Two recent replication studies of *CAS Carrera* (2015 and 2016) found no significant effects at the end of the three-year program on rates of teen sexual initiation or unprotected sex (the effect on pregnancy was not measured).⁷⁴

6. *Negative Program Effects by School-Based CSE*

Six of the 40 school-based CSE programs evaluated by the 60 studies in this database produced 10 significant negative effects (as documented in seven studies) for the targeted youth population or substantial subgroups. This was 15% of programs or 12% of studies. Four of these programs are currently on the U.S. government's TPP list of evidence-based programs, eligible for federal funding. The field of prevention research stipulates that “serious negative effects on important outcomes” should disqualify a prevention program from being designated as “effective.”⁷⁵

a. *¡Cuidate!*

A rigorous replication study of this program in a school classroom setting by an *independent evaluator* (not the program developers) found no positive results and significant negative effects for substantial subgroups: program participants who were sexually active at baseline were more likely to have had recent sex six months after the program, and White participants were more likely to have had oral sex and oral sex without a condom at the six-month follow-up. The study abstract seemed to downplay these negative impacts on important subgroups by stating, “Exploratory subgroup analyses suggest potentially problematic effects for some groups.”⁷⁶

b. *It’s Your Game: Keep It Real (IYG)*

A study by the program’s developers found a negative main effect—an increase in number of recent sex partners for program participants. A rigorous replication study of IYG by an independent evaluator also found a negative effect on the target population—a significant increase in teen sexual initiation 12 months after the program, and no positive impact on consistent condom use or other contraceptive use.⁷⁷

c. *Teen Outreach Program (TOP)*

A replication study of this program by an independent evaluator found no positive effects on rates of sexual activity and an increase in the pregnancy rate for female participants at the end of the nine-month program.⁷⁸

d. *Healthy for Life*

Program participants were significantly more likely to report having sex recently, 24 months after the program.⁷⁹

e. *Project SNAPP*

Participants had significantly lower levels of contraceptive use, 17 months after the program.⁸⁰

f. *Reducing the Risk*

A replication study funded by the *Teen Pregnancy Prevention* program and conducted across multiple sites found after 24 months there were no positive effects for the total population of program participants, but there were multiple negative effects found for major subgroups: the population of Hispanics in the program (n=1,270) were more likely to participate in vaginal and oral sex and the population of program participants at one of the sites (n=894) was more likely to participate in recent vaginal sex and oral sex.⁸¹

B. Evidence of CSE Failure in School Settings

There was much more evidence of program failure than success for school-based CSE. Failure rates for sustained effects on protective outcomes ranged from 76% to 100%, with an overall failure rate of 85%.

Empirical evidence about a sex education program’s impact can fit into one of four categories: 1) *evidence of positive program impact*—the desired outcome was measured, and the result was statistically significant in the positive direction, 2) *lack of evidence of program impact*—evidence does not exist about program outcomes because they were not measured or were measured, and the results were deemed inconclusive, 3) *null effects*—outcomes were measured and the results were *not* statistically significant (i.e., there was no detectable effect), or 4) *negative effects*—outcomes were measured, and there were statistically significant results in the wrong direction, indicating an unfavorable or harmful effect. These latter two categories constitute *evidence of program failure*. A sex education program can be said to *not show evidence of effectiveness* because evidence does not exist (the second category) or because evidence exists but it is *evidence of failure* (the third and/or fourth category). *Evidence of program failure*—due to null or negative effects—is a more serious matter than *lack of evidence* about a program’s impact. In the previous sections, we focused on the *evidence of program success*. In this section, we report the *rate of program failure* for CSE in U.S. schools—the studies that measured and found no sustained, positive effect on a protective outcome. (These failure rates were calculated using as the denominator of the ratio only those studies that *measured* sustained effects on these outcomes.) It should be noted that the TPP’s initial evidence review rejected hundreds of CSE studies, many of which were school based, that met TPP standards for research quality but found no positive program effects at all. Thus, the “failure rates” reported here provide a conservative estimate because *they do not reflect the very low success-to-failure ratio overall for the many school-based CSE programs the TPP reviewed and rejected*.

1. *CSE’s Intended “Dual Benefit:” Sustained effects=100% Failure*

- a. Twenty-three school-based CSE studies measured 12-month changes in both teen abstinence *and* condom use, and none found significant improvements for both. Thus, a 100% failure rate.
- b. Thirty-six CSE studies measured *any* type of dual program effect—reduction of any sexual activity and increased condom use of any duration, and six studies found significant effects. However, two of these programs (representing three of the six studies) also

increased some type of sexual activity, nullifying a dual benefit, since a net decrease in teen sex is one of the desired benefits. Thus, the net failure rate at producing any dual benefit was 33/36 studies or 92% for school-based CSE.

Looking at these dual benefits—abstinence and condom use—separately, gives the following results:

2. Teen Abstinence: 88% CSE Failure

- a. Among school-based CSE programs, 32 of the 60 studies measured program impact on teen sexual initiation for at least 12 months after the program. Only four of these 32 studies, representing three CSE programs, found a significant effect, for an 88% failure rate.
- b. Stated another way, 12% of school-based CSE studies that measured this outcome demonstrated success.
- c. Seventeen of the 60 school-based CSE studies measured reduced “sex in the past three months,” or reduced “frequency of sex,” movement in the direction of abstinence, 12 months after the program, with only two positive results and one negative outcome, an 88% failure rate.

3. Teen Condom Use: Consistent Use=No Success; Increased Frequency=76% Failure

- a. Only six of the 60 school-based CSE studies measured a 12-month effect on consistent condom use (CCU), and only one reported a significant effect. This appears to be a high failure rate, but too few studies exist to estimate a numerical value.
- b. Seventeen of the 60 studies measured a 12-month effect on any indicator of condom use (including CCU, frequency of use, etc.), and four reported a significant effect. This is an overall 76% failure to achieve a sustained improvement in any measure of teen condom use.

4. Unprotected Sex by Teens: 94% Failure

- a. Sixteen of the 60 studies measured a 12-month effect on unprotected sex, and only one showed a significant reduction, a 94% failure rate.

5. Teen Pregnancy & STDs: No Success

- a. Only six of the 60 CSE studies measured a 12-month effect on teen pregnancy, none found a positive effect,

and one found a negative short-term effect. Thus, there was a general failure on this outcome, but too few studies exist to estimate a numerical value.

- b. Four of the 60 CSE studies measured program effects on teen pregnancy of shorter duration; two studies (both of the *Teen Outreach Program*) found reduced pregnancy immediately following a nine-month program, which in one case dissipated at the 10-month follow-up measure, in the other it was not measured beyond program end. In another study, the same program *increased* teen pregnancy.
- c. Only two studies measured STD effects of any duration, and neither found a significant impact. Thus, there was no evidence of school-based CSE success on this outcome.
- d. There is simply a substantial *lack of evidence* about school-based CSE impact on teen pregnancy or STDs.

C. School-Based CSE and Abstinence Education (AE): Relative Evidence

Although AE studies are relatively few in number, there appears to be somewhat better evidence for protecting youth through school-based AE than CSE.

The sex education strategy most often mentioned as a counterpoint or alternative to comprehensive sex education is what proponents refer to as “sexual risk avoidance” or “abstinence education” (hereafter “AE”), also referred to by some as “abstinence-only” programs. In contrast to CSE, the AE approach typically teaches youth to abstain from overtly sexual behavior with another person (including vaginal intercourse, oral and anal sex, mutual masturbation, and heavy petting) until they can form a mutually monogamous relationship in adulthood (preferably marriage), as the only way to eliminate risk (rather than merely reduce it) and avoid all the negative consequences of teen sex. Condom use is sometimes addressed in AE programs, but often in terms of its limitations and failure rates; AE does not promote or demonstrate condom or contraceptive use.

A comparison of the empirical evidence for CSE and AE is hindered by a fundamental limitation: the number of studies that have been conducted and published to date is much larger for CSE than AE programs. (Federal funding for independent outcome studies of AE was cancelled in 2010, ending an opportunity to substantially expand the AE evidence base.) In the present database there are 60 studies of 40 school-based CSE programs and 17 studies of 16 school-based AE programs. In addition to the

small number of adequate studies, another issue with the AE evidence base has to do with six ostensibly rigorous studies that have serious methodological limitations such that the research design would tend to underrepresent the impact of the AE programs they evaluated. None of the six studies found significant program effects and they are often cited as evidence of AE ineffectiveness. In fact, their null findings combine to form a faulty evidence base that has weighed heavily in most reviews of AE effectiveness and inappropriately undermined the case for AE efficacy.⁸² For these reasons, we have not produced a detailed summary of the AE research evidence here. While there are important positive findings, the evidence is not of sufficient quantity to draw firm conclusions from the data.⁸³ However, we will report several trends from the most current research findings on AE.

First, there appears to be somewhat better evidence in this database for promoting teen abstinence through school-based AE than CSE. As already stated, one school-based CSE program showed a sustained 12-month main effect on teen abstinence (delayed initiation) without other negative effects, but multiple replication studies did not confirm the original positive results. Among the 17 school-based AE studies that were of sufficient quality for inclusion in this database, seven programs (in seven studies⁸⁴) showed sustained main effects on teen abstinence. Five of the seven were by independent evaluators. Two replication studies have been conducted, one showed promising but inconclusive results, and the other finding a short-term effect.⁸⁵ More replication studies should be done to verify the initial positive results of these seven studies.

Second, the findings in this database appear to contradict the claim of critics that AE reduces the use of “protection” by sexually active teens. Of the nine rigorous AE studies that measured condom use as an outcome, eight found no significant effects, and one showed a significant 12-month improvement.⁸⁶ This is strong evidence that AE does not *reduce* teen condom use.

Third, there is not adequate evidence about AE impact on pregnancy or STDs—very few studies measured these outcomes, and those that did had some methodological problems. However, the increases in teen abstinence documented in other AE studies would be expected to produce reductions in these outcomes, though unmeasured. By comparison, among the CSE studies that measured at least a 12-month post-program impact on pregnancy or STDs, there were no positive effects and one found a negative effect.

Finally, one out of 17 AE studies (6%) found a harmful impact (number of sex partners)⁸⁷ compared to seven out of

60 CSE studies (12%) or six out of 40 school-based CSE studies (15%).

D. The U.S. Teen Pregnancy Prevention List of “Evidence-Based” Programs

The 18 school-based CSE programs designated by the *Teen Pregnancy Prevention* program as showing “evidence of effectiveness in reducing teen pregnancy, sexually transmitted infections, and associated sexual risk behaviors,”⁸⁸ provide very little evidence of sustained effects on these outcomes for the intended teenage population. Overall, there is far more evidence of failure than success for these CSE programs. Despite the fewer number of studies, there appears to be promising evidence for the AE programs on the TPP list.

As a service to U.S. federal policymakers, in this section we summarize the scientific evidence of effectiveness for the school-based CSE and AE programs that met the United States *Teen Pregnancy Prevention* (TPP) program’s criteria for inclusion on its list of evidence-based interventions. The outcome studies that evaluated these school-based programs constitute a subset of the database for the research review presented in this paper.

It should be noted that while the TPP evidence review placed a high priority on the quality of study *methodology*, it had less rigorous standards for the program *outcomes* it used to define effectiveness. These criteria were: to show at least one statistically significant favorable effect—of short duration or for only a subgroup of the target population—on sexual risk behavior, pregnancy, or STDs. Thus, a program could make the TPP’s list of programs with “evidence of effectiveness”:

- by virtue of just one positive study by the program’s developer (for the original 28 programs, only two of the studies were by independent evaluators), while independent studies found null or negative effects,
- by showing only one significant effect on a less-protective outcome (such as reduced number of sex partners) while showing failure to impact the most-protective outcomes like abstinence or condom use,
- without achieving any “main effect” (i.e., impacting only a subgroup of the intended population), or
- without showing a sustained (12-month) effect on any outcome.

Table 5 presents the research results for the school-based CSE programs and Table 6 for the AE programs designat-

ed by the TPP website as showing “evidence of effectiveness” (as defined above).

1. **Outcomes for the 35 studies of the 18 school-based CSE programs on the TPP list:**

- a. **Teen Pregnancy:** None of the 18 school-based CSE programs showed effectiveness at reducing teen pregnancy. While one study of *Teen Outreach Program* reported a reduction in teen pregnancy for the intended population, it was at the end of the program and not sustained at the 10-month follow-up. The three studies that measured a sustained post-program effect found none, and one found a negative effect—an increase in pregnancy rates for female teens.
- b. **STDs:** None of the school-based CSE studies demonstrated a reduction in teen STDs, in fact, none measured it.
- c. **Teen Abstinence:** There was no evidence of effectiveness. Two programs (*Reducing the Risk* and *It's Your Game: Keep It Real*), in studies by the program developers, reported a 12-month increase in teen abstinence for the intended population but independent replication studies found multiple harmful effects, negating these programs' claims of effectiveness.
- d. **Consistent Condom Use:** None of the 18 school-based CSE programs showed effectiveness at increasing consistent condom use (CCU) by teens. (*Consistent* use is necessary to provide meaningful protection from STDs.) Although there was one program that reported a long-term effect (*¡Cuídate!*), a subsequent replication study conducted by independent evaluators—not the program's developer—found that the program actually *increased* other sexual risk behaviors, negating the program's claim to being effective.
- e. **Recent or Frequent Condom Use (a less protective factor):** One study reported a 12-month increase in *condom use at last sex* for the intended population, but the results have not been replicated. Another program measured CCU and condom use *frequency*, finding a sustained effect on the latter but not the former. Because the program failed on the more-protective measure it targeted (CCU), we did not consider the effect on condom use frequency to be evidence of program effectiveness.⁸⁹
- f. **CSE's Intended Dual Benefit:** None of the school-based CSE programs showed effectiveness at achiev-

ing the purported dual benefit of the “comprehensive” strategy—increasing both teen abstinence and condom use within the same adolescent population. No program produced sustained effects on both outcomes and the two programs that produced effects of shorter duration or effects on lesser outcomes also produced *negative* effects on other important teen risk behaviors (*¡Cuídate!* and *It's Your Game: Keep It Real*).

- g. **Negative Effects:** Five of the 18 school-based CSE programs (in six studies) produced significant negative effects (i.e., increases in sexual initiation, recent sex, oral sex, number of partners, or pregnancy) for the target population or a substantial subgroup of teens: *CAS Carrera*, *¡Cuídate!*, *It's Your Game: Keep It Real*, *Reducing the Risk*, and *Teen Outreach Program*.

(See Section A5, *Evidence from Replication Studies of School-Based CSE Programs* for above study details. It should be noted that while the *CAS Carrera* program does not fit the school classroom-based typology of the present report—it is usually considered a youth development program—it is included in this summary of TPP programs because of its CSE content and the fact that TPP reviewers classified it as either school- or community-based.)

2. **Outcomes for the five studies of the five school-based AE programs on the TPP list:**

- a. **Teen Abstinence:** Four of the five AE studies (three by independent evaluators) produced a 12-month increase in teen abstinence. Studies should be done to replicate these initial results.⁹⁰
- b. **Condom Use:** Although improving teen condom use is not a goal of AE, three of the five AE studies on the TPP list measured this outcome. One found a 12-month increase in frequency of condom use and the other two found no significant effects, positive or negative. Thus, of the three studies that measured AE impact on condom use, none found a negative effect.⁹¹ This evidence contradicts the claim that AE reduces teen condom use.
- c. **Teen Pregnancy & STDs:** None of the AE studies measured these outcomes, however, programs that increase teen abstinence increase the protective behavior by which teens avoid these problems.

VI. DISCUSSION

These results paint a markedly different picture than the one depicted in the UNESCO report (CSE programs have been “effective in changing behaviour when implemented in school, clinic, and community settings,”⁹²), reported by the CDC meta-analysis (CSE is effective in “both ... school and community settings”) or on the TPP website (“programs with evidence of effectiveness”),⁹³ or claimed by some CSE advocates (for example, see *Advocates for Youth*, “Comprehensive sex education has been proven effective ... [to] delay onset of sexual activity ... and increase condom use”⁹⁴). For U.S. school-based CSE programs, we found just three initial findings of sustained improvement in teen abstinence or condom use in studies by the programs’ developers—findings that have not been replicated. There was virtually no evidence of success at reducing teen pregnancy or STDs. (Our findings echo the results of a 2019 meta-analysis of the most recent round of TPP outcome studies, the large majority of which were studies of CSE programs. Combining the results of these 44 studies produced no statistically significant program effects on *any* of the targeted outcomes, including rates of teen sexual activity, contraceptive use, pregnancy, or STDs.⁹⁵)

Of particular concern is the dearth of findings of real success by school-based CSE programs at producing sustained improvement on any measure of condom use. None showed effectiveness at increasing *consistent condom use* and only two showed effectiveness at increasing *frequency of use* or *use at last intercourse*, less-protective outcomes, in single studies by program developers. This is striking since it is a central purpose of CSE, is one of its main distinctions from AE, and is important for providing even partial protection from STDs for sexually active teens.

Also concerning is the fact that while more than half (36/60) of these CSE studies employed measures that tested CSE’s intended dual benefit—simultaneous increases in rates of teen abstinence and condom use (by the sexually active)—there was a startling scarcity of any positive results on both outcomes within the same population. There was no long-term success and only five programs with short-term or lesser effects, two of which also produced other negative outcomes. This dual effect is the signature rationale for CSE—that it will effectively increase risk avoidance by promoting abstinence and at the same time reduce risk for teens who decline to be abstinent—and is the advantage it claims over AE. However, these findings provide strong evidence that this is not occurring for CSE programs in school settings and populations.

Worth noting is the evidence for AE found in this credible database. Seven programs produced sustained delays

in sexual initiation for the target population (not just a subgroup), without other negative effects, and five of the studies were by independent evaluators. This appears to be more and better evidence of success than the school-based CSE programs produced (seven out of 17 AE studies versus three out of 60 CSE studies). And only one AE program, or 6%, produced any negative effects, compared to 15% of school-based CSE programs. Moreover, there was strong evidence countering the charge that AE does harm by reducing teen condom use. However, more research should be done to expand the relatively small AE evidence base.

Perhaps of most importance, the oft-repeated assertion that CSE programs have done no harm to adolescents is not born out by these research findings. Evaluations of six out of 40, or 15% of CSE programs in schools (as documented in seven studies) found they produced 10 significant *negative* effects, including: increased rates of sexual initiation, frequent sex, recent sex, oral sex, or pregnancy, and reduced contraceptive or condom use. Four of these programs are popular school-based CSE programs on the *U.S. Department of Health and Human Services Teen Pregnancy Prevention* list of “evidence-based” programs: ¡Cuídate!, *It’s Your Game: Keep It Real*, *Reducing the Risk*, and *Teen Outreach Program* (along with the *CAS Carrera* program for communities or schools, a fifth TPP program showing negative effects).

Questions Raised by the Findings

- A. One of the first questions raised by these findings is why they differ so dramatically from the common perception that CSE has been proven effective and AE shown to be ineffective and harmful. We suggest several possibilities:
 1. Many research reviews by otherwise credible entities have not assessed CSE program *outcomes* by meaningful criteria for program effectiveness. Instead, they have tended to overplay the evidence and accept much lower benchmarks of success, wherein any statistically significant positive change on any indicator for any subgroup or of any short-term duration is called “evidence of effectiveness” for that program, meanwhile ignoring other studies showing null or negative effects. This contradicts principles of program effectiveness from the field of prevention research. At the same time, AE programs have had a higher bar to meet by virtue of measuring sexual initiation—a one-time, all-or-nothing behavior—as the critical outcome, rather than merely measuring sliding scale reductions in frequency of sex or increases in condom use. Furthermore, most AE studies have measured at least a

12-month duration of effect, which is longer and more difficult to achieve than what has been required of many CSE programs. Thus, this higher bar likely has made it more difficult for AE studies than CSE studies to show statistically significant positive effects, and when held to the same higher standards, the evidence of CSE *ineffectiveness* becomes more clear. As seen in the above analysis, the “low bar” for CSE effectiveness has not been adequate to produce reductions in teen risk behaviors that are sufficient to reduce pregnancy or STDs for program participants. The more stringent effectiveness standards recommended in this report are more likely to identify and/or generate programs that provide real protection for adolescents.

2. Methodological weaknesses in six key AE studies (five conducted by researchers at *Mathematica Policy Research, Inc.*) appear likely to have underestimated AE program effects, thereby producing questionable study results.⁹⁶ However, because these studies have been included in most research reviews and meta-analyses of AE, their null findings have made a large quantitative contribution to the conclusion reached repeatedly by such reviews that AE programs are categorically ineffective. Thus, these questionable studies have played a major role in creating the pervasive perception of AE ineffectiveness that is refuted by the findings of the credible and more current database reviewed here.
3. Program setting and population are relevant. We have observed that there is a pattern in the sex education outcome research wherein *school-based* CSE programs overall tend to have less positive results than CSE programs in *clinic or community settings*, and that most research reviews tend to blur this distinction by combining these settings and results. The fact that our review was limited to school-based CSE programs (in the U.S.) has brought this poorer performance into focus. This is important information since the public school classroom appears to be the mechanism preferred by many public policymakers for the delivery of sex education prevention programs.
4. Sometimes reviews of sex education effectiveness or advocates for CSE make statements that contradict the actual research evidence. For example:
 - A recent report by *Advocates for Youth* states that “No abstinence-only program has yet been proven through rigorous evaluation to help youth delay sex for a significant period of time ...”⁹⁷ Yet studies of two self-identified “abstinence-only” programs have produced sustained delays in teen sexual initiation—one at the 12-month follow-up, and the other 24 months

after the program. The studies of both programs were accepted as “evidence of effectiveness” by the TPP’s rigorous evidence review. Studies of two other AE programs—studies that also met the TPP’s more-rigorous standards—found sustained delays in teen sex.⁹⁸

- A recent research review by the CDC-supported *Community Preventive Services Task Force* concluded that comprehensive risk reduction programs (meaning CSE) were generally effective “across a range of populations and settings...both...school and community settings.”⁹⁹ However, the detailed results of this meta-analysis study, shared in public settings but not reported in the published research article (they are published in a companion piece in the same journal¹⁰⁰), showed significantly poorer results for school-based CSE on key outcomes. And the effects of school-based programs were not statistically significant for increasing teen condom use or use of protection, or for decreasing teen pregnancy or STIs. In addition, the effect on pregnancy was in the negative direction, suggesting these programs in schools may have *increased* teen pregnancy. Moreover, nearly one-half (47%) of the 15 school-based CSE studies produced findings suggesting some negative effects on teen condom use.¹⁰¹ These data present a very different picture than the one depicted by the published report of the study.
- One review of sex education in schools reported its findings on the effects of “Comprehensive Interventions” as: “Whilst positive changes in reported behaviour were observed in some studies, findings were not consistent enough to draw firm conclusions (Jones et al., 2009a; Kim & Free, 2008; Kirby, 2005, 2007; Underhill et al., 2008; Yamada et al., 1999). Indeed, some studies found improvements while others reported negative or null effects for the same outcome. Health-related outcomes were rarely reported, and when they were, few positive changes were observed (DiCenso et al., 1999; Jones et al., 2009a; Kirby, 2005, 2007; Underhill et al., 2008). One review presented evidence that, in some instances, comprehensive programmes may increase sexual intercourse (Kirby, 2005)” and “It was often not possible to identify ... change that could be attributed to exposure to an intervention ... positive changes were inconsistent.” In spite of these findings, the study’s abstract asserts that “comprehensive interventions ... were found to be effective.”¹⁰²
- B. A second question worth asking is why are these school-based CSE programs so ineffective, especially compared to programs in other settings? We offer

several factors for consideration:

1. First, interventions in clinics and community settings often have a higher-risk population than school-based programs; such teens may be more motivated to learn about and utilize protective measures. In addition, these programs are often able to use methods—such as individual clinical services (e.g., injections of contraceptive hormones), one-on-one counseling and instruction, and regular follow-up phone calls—that are not as easily implemented in school settings and populations and produce somewhat better outcomes.
 2. Many CSE programs in schools are developed around social learning theories like “The Theory of Reasoned Action” or “The Theory of Planned Behavior.” The assumption is that adolescents will plan ahead and apply their new condom knowledge and refusal skills in rational ways when they find themselves in highly intense romantic interactions. Yet this does not fit the biological reality of the teenage brain. Brain researchers have found that important regions and functions of the human brain are not fully developed until *after* early adulthood. These include the executive functions of the frontal lobes (governing impulse control, anticipation of consequences, judgment, planning, goal-setting, and prioritizing) and the hippocampal formation and amygdala (areas that mediate motivation, memory, attention, and emotional/affective behavior).¹⁰³ According to experts, this means the adolescent brain is physiologically geared for impulsiveness and “risk-taking behavior,”¹⁰⁴ immature processing of information, and failure to anticipate the future impact of behavior, making it “difficult for them to understand and use contraceptive methods effectively and consistently.”¹⁰⁵ Thus, teens aren’t neurologically equipped for “reasoned action.”
 3. Related to this is a seldom-mentioned but crucial issue: condom use error and failure can significantly compromise the protective benefits of condom use, and error/failure rates are surprisingly high, even among experienced and motivated *adult* condom users. For example, among 1,973 adults at an urban STD clinic *who were consistent condom users*, 57% of women and 48% of men reported at least one incident of condom use error or failure over a four-month period with condom breakage being the most frequent problem and condom error associated with higher STD levels for men.¹⁰⁶ And in a sample of 102 college women who put condoms on their male partner(s), 30% to 50% (depending on the type of error) reported they had committed a common condom use error at least once in the past three months and 28% reported condom breakage, slippage, or both occurring during sex over the same time frame.¹⁰⁷ We would expect such problems with condom use to be exacerbated in adolescent populations and this may have contributed to the lack of program effects on pregnancy and STDs for the studies that measured these outcomes.
 4. Finally, one possible reason for the inability of these CSE programs to increase teenage abstinence is the contradictory message many of them send. Some programs teach teens as young as 13 years old that they can decide when they are ready to have sex,¹⁰⁸ or that “non-penetrative sexual behaviours [are lower risk] and can be pleasurable,”¹⁰⁹ or teach them “ways to make condoms pleasurable.”¹¹⁰ This tends to normalize teenage sexual activity and negate the typical abstinence message that sexual behavior should be reserved for long-term committed adult relationships and that it is always risky for teens even if “protection” is used.
- C. A third set of questions has to do with the concerning rate of negative effects (15% of programs, 12% of studies—more than one in seven programs) found for school-based CSE programs: Why have these harms not been widely reported? What may be their causes? Both questions are beyond the scope of this paper, but we offer several observations. First, as mentioned above, four of these programs are included on the U.S. TPP website’s list of effective programs, where their well-documented harmful effects are not mentioned in the TPP’s program descriptions and are not readily apparent on the TPP website. This raises serious questions about this government agency’s ethical obligation to inform the public of harms caused by programs it brands as showing “evidence of effectiveness.” Second, for those interested in identifying potential causes of harmful CSE impact, one place to start may be to examine the content of these programs. For example, the TPP program that increased both sexual initiation and number of partners, *It’s Your Game: Keep It Real*, asks seventh and eighth grade mixed-gender classes to engage in role plays that include the following phrases:
- “She is really hot and I’ve been thinking that maybe it will be OK to mess around a little more than just kissing.”
 - “I think we should do more than just kissing and touching.”
 - “I just feel so close to you. That’s why I want to have sex with you.”

- “If we use a condom, it will spoil the mood.”
- “You just need to do it, and then you’ll realize sex is no big deal.”¹¹¹

Even though these statements are presented as “pressure lines” to be refuted, their mere discussion may suggest to seventh graders that these behaviors are within the normal and accepted range of matters to be negotiated between 12-year-old boys and girls. And this curriculum seems to normalize intimate “touching,” which many parents consider sexual foreplay that is inappropriate for young teens. Another CSE program that produced negative effects, *¡Cuidate!* (also on the TPP list), uses this prompt for discussions with teens as young as 13 years old:

- “What are some of the things that you should consider to help you decide if you are ‘ready’ for sex?”
- “Possible Answers: If you know this is the right decision for you—now and in the future; if you can talk to your partner about sex; before you have sex, if you know how to protect yourself and your partner; if you can deal with the consequences of having sex—like getting pregnant, an STD or HIV...You shouldn’t have sex until you are ready—and until you decide.”¹¹²

It may be hard for parents to imagine their 13-year-old daughter making a mature decision about whether she is “ready” for sex, especially in the face of pressure from an older boyfriend. All of this suggests that school boards, administrators, and parents would be wise to

investigate whether any negative effects have been caused by sex education programs they are considering and to look into the actual content of the program’s curriculum, rather than relying on the endorsement of a federal agency or the program’s developers.

- D. A fourth question raised by these findings is about terminology. The sex education strategy examined by this report is typically referred to as “comprehensive sex education” (CSE), “sexual risk reduction” (SRR), or “comprehensive risk reduction” (CRR). Yet the evidence from this database indicates that in U.S. schools these programs have not been effective at achieving the dual benefit from which the term “comprehensive” was originally derived—increasing both teen abstinence and condom use. Similarly, the evidence indicates that these programs have not succeeded at “reducing risk” among adolescents in schools. Thus, the current labels for this strategy appear to contradict the research findings and mislead the public about the actual impact of CSE programs implemented in school settings.

Finally, these findings demonstrate that using a meaningful definition of effectiveness and examining the evidence for school-based settings separately (excluding community and clinic-based programs) are crucial elements in the assessment of sex education success. This is especially true if that assessment intends to be of practical use to stakeholders such as school administrators, parents, and policymakers, as they look for solutions that will diminish the negative consequences of adolescent sexual activity.

VII. CONCLUSIONS

An examination of 60 studies vetted by three authoritative agencies, and employing credible outcome criteria (12-month post-program effects for the intended population, net of negative effects), found no effectiveness by U.S. school-based comprehensive sex education (CSE) at decreasing teen pregnancy or STD rates. It also found insufficient evidence of effectiveness at increasing teen abstinence or condom use. There was far more evidence of CSE failure than success and a concerning number of negative effects. The limited evidence for school-based abstinence education appeared more promising, enough to justify additional research.

VIII. RECOMMENDATIONS

Given the compelling lack of evidence of program effectiveness as measured by standards derived from the field of prevention research, and the concerning rate of harmful effects, we do not recommend comprehensive sex education as a viable public health strategy in U.S. school classrooms. The evidence indicates that a different paradigm is needed to prevent the negative consequences of teenage sexual activity. Further studies should be done of the positive findings for school-based abstinence education, in order to inform the development of such a paradigm.

ENDNOTES

1. U.S. Centers for Disease Control and Prevention. (2016). *Sexually Transmitted Disease Surveillance 2015*. Retrieved from <https://www.cdc.gov/std/stats15/STD-Surveillance-2015-print.pdf>
2. United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*. Retrieved from <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>
3. Office of Adolescent Health, Trends in Teen Pregnancy and Childbearing, U.S. Department of Health & Human Services, June 2, 2016. Retrieved from <https://www.hhs.gov/ash/oah/adolescent-development/reproductive-health-and-teen-pregnancy/teen-pregnancy-and-childbearing/trends/index.html>; Hamilton, B., Martin, J., Ventura, S. (2010). Births: Preliminary Data for 2009. *National Vital Statistics Reports* 59(3), 1–19; United Nations Statistics Division. (2008). *Demographic Yearbook 2006*. Retrieved from <http://unstats.un.org/unsd/demographic/products/dyb/dyb2006.htm>
4. Hallfors, D. D., Waller, M. W., Ford, C. A., et al. (2004). Adolescent depression and suicide risk: association with sex and drug behaviors. *American Journal of Preventive Medicine* 27(3), 224–231; Sabia, J. J., Rees, D. I. (2008). The effect of adolescent virginity status on psychological well-being. *Journal of Health Economics*, 27(5), 1368–1381; Meier, A. M. (2007). Adolescent First Sex and Subsequent Mental Health. *American Journal of Sociology*, 112(6), 1811–1847; Else-Quest, N. M., Hyde, J. S., DeLamater, J. D. (2005). Context counts: Long-term sequelae of premarital intercourse or abstinence. *Journal of Sex Research*, 42, 102e12; Kramar, A. (2014). Virgin Territory: What Young Adults Say About Sex, Love, Relationships, and the First Time. *The National Campaign to Prevent Teen and Unplanned Pregnancy*. Retrieved from <https://thenationalcampaign.org/sites/default/files/resource-primary-download/virgin-territory-final.pdf>; Silverman, J. G., Raj, A., Clements, K. (2004). Dating violence and associated risk and pregnancy among adolescent girls in the United States. *Pediatrics*, 114(2), 220–225.
5. Long-acting reversible contraceptives (LARC) are methods of birth control that provide effective contraception for an extended period without requiring user action. They include injections, intrauterine devices (IUDs) and subdermal contraceptive implants. See https://en.wikipedia.org/wiki/Long-acting_reversible_contraception
6. For example, the *Planned Parenthood* organization is self-described as “the number one provider of sex education in the [United States]” including both “abstinence” and “safer sex” (another term for condom-based education) programming. (See <https://www.plannedparenthood.org/get-care/our-services/patient-education>.) Yet the “For Teens” section of the *Planned Parenthood* website contains the following messaging: “There’s a lot to think about when it comes to sex: figuring out if you’re ready, learning about orgasms, protecting yourself from pregnancy and STDs, how to know if someone wants to have sex with you, and much more ... Stressing about whether you’re a virgin is way less important than how you feel about your sexual experiences. Ask yourself: are you happy with the sexual experiences you’ve had or decided not to [have]? ... Sexually transmitted infections are super common—most people get one at some point in their life. Some STDs can be serious, but the good news is they can usually be cured or treated.” (See <https://www.plannedparenthood.org/learn/teens/sex>; <https://www.plannedparenthood.org/learn/teens/sex/virginity>; <https://www.plannedparenthood.org/learn/teens/preventing-pregnancy-stds>.) These messages illustrate a lack of priority given to teen abstinence as a goal of prevention efforts, even though this organization purports to provide abstinence education.
7. Advocates for Youth. (2009). Comprehensive Sex Education: Research and Results. *The Facts, September 2009*. Retrieved from <https://www.advocatesforyouth.org/wp-content/uploads/storage/advfy/documents/fscse.pdf>; United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*. Retrieved from <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>; United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*. Revised Edition, see pp.28–29. Available at: <http://unesdoc.unesco.org/images/0026/002607/260770e.pdf>; Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine*, 42(3), 304–307. doi: <https://doi.org/10.1016/j.amepre.2011.11.003>, see p.305.
8. United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*. Retrieved from <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>
9. See <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>
10. The development of standards for scientific evidence of program effectiveness has been undertaken by national entities like *The Society for Prevention Research (SPR)* and *Blueprints for Violence Prevention*. A consensus has been proposed by SPR’s Standards of Evidence Committee in their publication, “Standards of Evidence: Criteria for Efficacy, Effectiveness, and Dissemination” (Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D. (2005). Standards of Evidence: Criteria for Efficacy, Effectiveness and Dissemination. *Prevention Science*, 6(3), 151–175), and recently updated (Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16 (7), 893–926. doi: 10.1007/s11121-015-0555-x. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf). These standards include a requirement of long-term sustained effects as well as a concern about main effects vs. subgroup effects.
11. See <http://www.colorado.edu/cspv/blueprints/criteria.html>
12. Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16 (7), 893–926. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf; Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D. (2005). Standards of Evidence: Criteria for Efficacy, Effectiveness and Dissemination. *Prevention Science*, 6(3), 151–175.
13. Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16 (7), 893–926. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf, p. 910.
14. Ibid.
15. Notes on Protective Indicators: See Endnote #13 regarding the disqualifying nature of negative program impacts. In the body of evidence reviewed here, some studies did not measure condom use, or they only measured “contraception,” which can mean *either* condom use *or* other birth control methods (birth control pills, LARCs, etc.). Unfortunately, these latter pregnancy prevention methods provide no protection from STDs or HIV, and some may even cause harm. A recent meta-analysis involving 12 studies in Sub-Saharan Africa concluded that women taking Depo-Provera (DMPA) had a somewhat elevated risk of contracting HIV. See Ralph, L. J., et al. (2015). Hormonal contraceptive use and women’s risk of HIV acquisition: a meta-analysis of observational studies. *The Lancet Infectious Diseases*, 15, 181–189. Another study found that use of DMPA more than doubled the risk of developing breast cancer in recipients. See Li, C. I., et al. (2012). Effect of Depo-Medroxyprogesterone Acetate on Breast Cancer Risk among Women 20 to 44 Years of Age. *Cancer Research*, 72, 2028–2035. Retrieved from <http://cancerres.aacrjournals.org/content/72/8/2028>. Another commonly used program outcome measure is to ask teens if they have had “unprotected sex,” where a “no” response means they have either used any one of many contraceptive methods *or* have been abstinent, without specifying whether the protective behavior employed was abstinence, use of condoms, or use of other types of contraception. Combining these three very different behaviors into one measure by asking students if they have had unprotected sex obscures what the program’s protective effect really was, especially whether it protected teens from STDs and HIV through increased abstinence or consistent condom use. For this reason, neither the outcome “increased contraception,” nor the outcome “[reduction in] unprotected sex” are considered by this review to be adequate indicators of program effectiveness. In spite of this inadequacy, we reported on “unprotected sex” when it appeared to be a type of surrogate measure for condom use. With regard to measures of sexual activity/abstinence, the primary goal for programs targeting

youth populations should be to delay the initiation or onset of sexual activity; thus, this measure was considered a key indicator of program effectiveness. Some studies also measured recent sexual activity (usually for the past three months), indicating a possible return to abstinence. However, if there was no program impact on sexual initiation, then an effect on recent sex—especially for such a brief time span—while certainly desirable, was not considered sufficient evidence of program effectiveness. The same argument was applied to measures of frequency of sex or number of sex partners, both of which—while they may *reduce* risk—still leave youth at substantial risk for STDs and pregnancy.

16. Centers for Disease Control and Prevention. *Condoms and STDs: Fact Sheet for Public Health Personnel*. Retrieved from <https://www.cdc.gov/condomeffectiveness/latex.html>. This point is illustrated by three peer-reviewed studies that found *STD rates were higher for inconsistent condom users than non-users*. A study in the journal *AIDS* ($N=17,264$) found “Irregular condom use was not protective against HIV or STD and was associated with increased gonorrhea/Chlamydia risk” as compared to non-use (Ahmed, S., Lutalo, T., Wawer, M., et al. (2001). HIV incidence and sexually transmitted disease prevalence associated with condom use: a population study in Rakai, Uganda. *AIDS*, 15(16), 2171–2179). A Denver study ($N=26,291$) reported that “Among the total population, rates of STD were higher among inconsistent [condom] users than nonusers ... However, STD rates were significantly lower among consistent than inconsistent users” (Shlay, J. C., McCung, M. W., Patnaik, J. L., et al. (2004). Comparison of sexually transmitted disease prevalence by reported level of condom use among patients attending an urban sexually transmitted disease clinic. *Sexually Transmitted Diseases*, 31(3), 154–160). And a study in Brazil found that condom use at last intercourse was independently and positively related to infection with a high-risk HPV type as compared to non-use (OR 1.3, $p<.05$) (see: Grinsztejn, B., Veloso, V., Levi, J., Velasque, L., Luz, P., et al. (2009). Factors associated with increased prevalence of human papillomavirus infection in a cohort of HIV-infected Brazilian women. *International Journal of Infectious Diseases*, 13(1), 72–80).

17. Consistent condom use is the behavior upon which most estimates of the condom’s protective capacity are based. The level of STD protection provided by consistent condom use ranges from a 30% risk reduction for genital herpes to 80% risk reduction for HIV transmission. See Martin, E. T., Krantz, E., Gottlieb, S. L., Magaret, A. S., Langenberg, A., et al. (2009). A Pooled Analysis of the Effect of Condoms in Preventing HSV-2 Acquisition. *Archives of Internal Medicine*, 169(13), 1233–1240; Weller, S., Davis, K. (2002). Condom effectiveness in reducing heterosexual HIV transmission. *The Cochrane Database of Systemic Reviews*, 1; Sanchez, J., Campos, P., Courtois, B., Gutierrez, L., Carrillo, C., Alarcon, J., et al. (2003). Prevention of sexually transmitted diseases (STDs) in female sex workers: Prospective evaluation of condom promotion and strengthened STD services. *Sexually Transmitted Diseases*, 30(4), 273–279; Holmes, K. K., Levine, R., Weaver, M. (2004). Effectiveness of condoms in preventing sexually transmitted infections. *Bulletin of the World Health Organization*, 82(6), 454–461. A study of African American teenage girls that found 17.8% of those who used condoms consistently acquired an STD, but the number was 30% for those who used condoms inconsistently (see Crosby, R. A., DiClemente, R. J., Wingood, G. M., Lang, D., Harrington, K. F. (2003). Value of consistent condom use: A study of sexually transmitted disease prevention among African American adolescent females. *American Journal of Public Health*; 93(6), 901–902).

18. See Endnote #4.

19. An interval that has been frequently used by researchers evaluating youth programs is 12 months or one year after the program. For example, “sustained impact,” defined as “at least 12 months after the intervention ends” is required by *Blueprints for Healthy Youth Development*, a non-partisan national registry of evidence-based prevention programs, in order for an intervention to be designated as an effective or model program (see <https://www.blueprintsprograms.org/criteria>). And long-term impact was defined by the federal 2010 *Teenage Pregnancy Prevention* initiative as an effect that is sustained for at least one year after program participation (see Office of Adolescent Health. (2010). *Teenage Pregnancy Prevention: Replication of Evidence-based Programs (Tier 1)—Funding Opportunity Announcement and Application Instructions*. Office of Public Health & Science, U.S. Department of Health and Human Services). The *Society for Prevention Research* cites a six-month follow-up as the *minimum* to demonstrate that program effects “do not dissipate immediately” and suggests a longer time-frame with multiple intervals during adolescence to assess behavioral effects in a teen population. (Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16 (7), 893–926. doi:

10.1007/s11121-015-0555-x. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf)

20. Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16(7), 893–926. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf

21. Ibid.

22. See “Teen Outreach Program (TOP)” in Farb, A., Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. *American Journal of Public Health*, v. 106 (Suppl 1); Philliber, A. E., Philliber, S., Brown, S. (2015). Evaluation of the Teen Outreach Program® in The Pacific Northwest. Available at <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>

23. Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16(7), 893–926, p.910. Available at http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf

24. For example, *SPR* reports that “the past decade has ... witnessed a disturbingly high rate of failures to replicate when independent evaluation teams conduct studies of prevention interventions” and that “effect sizes from trials conducted by program developers/creators were more than twice the size of effect sizes from trials conducted by others.” See Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16 (7), 893–926. Available at http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf

25. This concern was raised by the review team for the U.S. Department of Health and Human Services Teen Pregnancy Prevention (TPP) Program: “[a]ll but one of the [original] program models meeting the standards of research quality demonstrated evidence of effectiveness through a single study, often conducted by the developer of the program. The review team noted the lack of replication studies as a gap in the evidence base and called for subsequent, independent evaluations to determine the effectiveness of the programs” (Farb, A. & Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. *American Journal of Public Health*, v. 106 (Suppl 1)).

26. Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16(7), 893–926. doi: 10.1007/s11121-015-0555-x. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf.

27. They produced one statistically significant effect, of any duration for at least a major subgroup, on any desired outcome. (Farb, A., Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. *American Journal of Public Health*, v. 106 (Suppl 1).)

28. See Farb, A., Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. *American Journal of Public Health*, v. 106 (Suppl 1); https://tppevidencereview.aspe.hhs.gov/pdfs/Summary_of_findings_2016-2017.pdf; <https://www.hhs.gov/ash/oah/evaluation-and-research/grantee-led-evaluation/2010-2014-grantees/index.html>; and summaries of each study available at: <https://www.hhs.gov/ash/oah/sites/default/files/ash/oah/oah-initiatives/evaluation/grantee-led-evaluation/summary-cbps.pdf>, and <https://www.hhs.gov/ash/oah/sites/default/files/ash/oah/oah-initiatives/evaluation/grantee-led-evaluation/summary-researchdemonstration.pdf>

29. The original list of 28 prevention programs with “evidence of effectiveness” has been expanded to 48 currently. See: <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>. A subset of these are school-based CSE programs.

30. The *Community Preventive Services Task Force* was established by the U.S. Department of Health and Human Services (DHHS) in 1996 and operates under its auspices with support from the Centers for Disease Control and Prevention

- (CDC). For a report of the study findings, see Chin H. B., Sipe, T. A., Elder, R., Mercer, S. L., Chattopadhyay, S., et al. (2012). The Effectiveness of Group-Based Comprehensive Risk Reduction and Abstinence Education Interventions to Prevent or Reduce the Risk of Adolescent Pregnancy, HIV, and STIs: Two Systematic Reviews for the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, 42(3), 272–294; Weed, S. E. (2012). Sex Education Programs for Schools Still in Question: A Commentary on Meta-Analysis, *American Journal of Preventive Medicine*, 42(3), 313–315; Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine*, 42(3), 304–307, see p.305.
31. United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*, see pp.15–17, available at <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>; United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*. Revised Edition, see pp.28–29, 129. Available at: <http://unesdoc.unesco.org/images/0026/002607/260770e.pdf>
32. See: <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>
33. Respectively: Howard, M., McCabe, J. (1990). Helping teenagers postpone sexual involvement. *Family Planning Perspectives*, 22(1), 21–26;
34. Respectively: Tortolero, S., Markham, C., Flescher, M., Shegog, R., Addy, R., et al. (2010). It's Your Game: Keep It Real: Delaying Sexual Behavior with an Effective Middle School Program. *Journal of Adolescent Health*, 46(2), 169–179; Potter, S., Coyle, K., Glassman, J., Kershner, S., & Prince, M. (2016). It's Your Game ...Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*, 106(S1), S60–S69. See Endnote #13 regarding the disqualifying nature of negative program effects.
35. Grossman, J. M., Tracy, A. J., Charmaraman, L., Ceder, I., Erkut, S. (2014). Protective Effects of Middle School Comprehensive Sex Education with Family Involvement. *Journal of School Health*, 84(11), 739–747.
36. Ekstrand, M. L., Siegel, D. S., Nido, V., Faigles, B., Cummings, G. A., Battle, R., et al. (1996). Peer-led AIDS prevention delays onset of sexual activity and changes peer norms among urban junior high school students. *Paper presented at XI International Conference on AIDS*. Vancouver, British Columbia, Canada.
37. Tortolero, S., Markham, C., Flescher, M., Shegog, R., Addy, R., et al. (2010). It's Your Game: Keep It Real: Delaying Sexual Behavior with an Effective Middle School Program. *Journal of Adolescent Health*, 46(2), 169–179; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*, 54(2), 151–159; Potter, S., Coyle, K., Glassman, J., Kershner, S., Prince, M. (2016). It's Your Game ...Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*, 106(S1), S60–S69; Villarruel, A. M., Jemmott, J. B., Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine*, 160(8), 772–777; Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et al. (2016). Replicating ¡Cuídate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health*, 106(S1), S70–S77; Abt Associates. ¡Cuídate!: Interim Impact Report, Teen Pregnancy Prevention Replication Study, Report prepared for the Office of Adolescent Health and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, September 2015. See Endnote #13 regarding the disqualifying nature of negative program effects..
38. Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159.
39. According to the CDC, “inconsistent use (e.g., failure to use condoms with every act of intercourse), can lead to STD transmission because transmission can occur with a single act of intercourse” (Centers for Disease Control and Prevention. (2003). *Fact Sheet for Public Health Personnel—Male Latex Condoms and Sexually Transmitted Diseases*. Retrieved from www.cdc.gov/nchstp/od/latex.htm); see also Crosby, R. A., DiClemente, R. J., Wingood, G. M., Lang, D., Harrington, K. F. (2003). Value of consistent condom use: A study of sexually transmitted disease prevention among African American adolescent females. *American Journal of Public Health*, 93(6), 901–902.
40. Villarruel, A. M., Jemmott, J. B., Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine*, 160(8), 772–777.
41. Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et al. (2016). Replicating ¡Cuídate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health*, 106(S1), S70–S77; Abt Associates. ¡Cuídate!: Interim Impact Report, Teen Pregnancy Prevention Replication Study, Report prepared for the Office of Adolescent Health and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, September 2015. See Endnote #13 regarding the disqualifying nature of negative program effects.
42. Respectively: Fisher, J., Fisher, W., Bryan, A., Misovich, S. (2002). Information-motivation-behavioural skills model-based HIV risk behaviour change intervention for inner-city high school youth. *Health Psychology*, 21(2), 177–186; Coyle, K. K., Basen-Enquist, K. M., Kirby, D. B., Parcel, G. S., Banspach, S. W., Collins, J. L., et al. (2001). Safer Choices: Reducing Teen Pregnancy, HIV and STDs. *Public Health Reports*, 1(16), 82–93; Jemmott, J. B. III, Jemmott, L. S., Fong, G. T. (1998). Abstinence and safer sex HIV risk reduction interventions for African American adolescents. *Journal of American Medical Association*, 279(19), 1529–1536.
43. Respectively, Villarruel, A. M., Jemmott, J. B., Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine*, 160(8), 772–777; Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et al. (2016). Replicating ¡Cuídate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health*, 106(S1), S70–S77; Abt Associates. ¡Cuídate!: Interim Impact Report, Teen Pregnancy Prevention Replication Study, Report prepared for the Office of Adolescent Health and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, September 2015.
44. Markham, C. M., Tortolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R., Addy, R. C., Escobar-Chaves, S. L., Reininger, B., Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health*, 50(3), 279–288; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*, 54(2), 151–159.
45. Potter, S., Coyle, K., Glassman, J., Kershner, S., Prince, M. (2016). It's Your Game ...Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*, 106(S1), S60–S69.
46. Respectively, Daley, E. M., Buhi, E. R., Wang, W., Singleton, A., Debate, R., Marhefka, S., et al. (2015). Evaluation of Wyman's Teen Outreach Program® in Florida: Final Impact Report for Florida Department of Health. Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program; Philliber, A. E., Philliber, S., & Brown, S. (2015). Evaluation of the Teen Outreach Program® in The Pacific Northwest. Available at <https://www.hhs.gov/ash/oah/sites/default/files/ash/oah/oah-initiatives/evaluation/grantee-led-evaluation/reports/ppgnw-final-report.pdf>; Francis, K., Philliber, S., Walsh-Buhi, E., Philliber, A., Seshadri, R., and Daley, E. (2016). Scalability of an Evidence-Based Adolescent Pregnancy Prevention Program: New Evidence From 5 Cluster-Randomized Evaluations of the Teen Outreach Program. *Am Journal of Public Health*, 106, S32–S38.
47. Villarruel, A. M., Jemmott, J. B., Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine*, 160(8), 772–777; Markham, C. M., Tor-

- tolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R., Addy, R. C., Escobar-Chaves, S. L., Reininger, B., & Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health, 50*(3), 279–288; Main, D. S., Iverson, D. C., McGloin, J., Banspach, S. W., Collins, J., Rugg, D., et al. (1994). Preventing HIV infection among adolescents: Evaluation of a school-based education programme. *Preventive Medicine, 23*(4), 409–417; Walter, H. J., & Vaughan, R. D. (1993). AIDS risk reduction among a multi-ethnic sample of urban high school students. *Journal of the American Medical Association, 270*(6), 725–730; Coyle, K. K., Kirby, D. B., Robin, L. E., Banspach, S. W., Baumler, E. R., Glassman, J. R. (2006). All4You! A randomized trial of an HIV, other STDs and pregnancy prevention intervention for alternative school students. *AIDS Education and Prevention, 18*(3), 187–203.
48. Reyna, V. F., Mills, B. A. (2014). Theoretically Motivated Interventions for Reducing Sexual Risk Taking in Adolescence: A Randomized Controlled Experiment Applying Fuzzy-Trace Theory. *Journal of Experimental Psychology: General, 143*(4), 1627–1648. (See results for the modified RTR intervention.)
49. 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*(6), 253–263.
50. See: <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=182&mid=7>
51. Hubbard, B. M., Giese, M. L., Rainey, J. (1998). A replication of Reducing the Risk, a theory-based sexuality curriculum for adolescents. *Journal of School Health, 68*(6), 243–247; Also see: <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=182&mid>
52. Zimmerman, R. S., Cupp, P. K., Donohew, L., Sioneau, C. K., Feist-Price, S., Helme, D. (2008). Effects of a school-based, theory-driven HIV and pregnancy prevention curriculum. *Perspectives on Sexual and Reproductive Health, 40*(1), 42–51. (See results for the two separate trials of both versions of RTR.)
53. See: <https://tppevidencereview.aspe.hhs.gov/StudyDetails.aspx?id=21>; and <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=182&mid=7#outcomes>
54. For negative RTR effects see: Abt and Associates. (2018). Reducing the Risk: Impact findings from the Teen Pregnancy Prevention Replication Study (Research Brief and Impact Evaluation Findings), November 5, 2018. U.S. Department of Health and Human Services. Retrieved from <https://aspe.hhs.gov/pdf-report/reducing-risk-impacts-teen-pregnancy-prevention-replication-study-research-brief> (see Endnote #13 regarding the disqualifying nature of negative program effects); for lack of RTR effects see: Kelsey, M., Blocklin, M., Price, C., Juras, R., Freiman, L., et al. (2016). Replicating Reducing the Risk: 12-Month Impacts of a Cluster Randomized Controlled Trial. *American Journal of Public Health, 106*(S1), S45–S52; Reyna, V. F., & Mills, B. A. (2014). Theoretically Motivated Interventions for Reducing Sexual Risk Taking in Adolescence: A Randomized Controlled Experiment Applying Fuzzy-Trace Theory. *Journal of Experimental Psychology: General, 143*(4), 1627–1648. (Within this article, see the evaluation of the standard version of RTR); Zimmerman, R. S., Cupp, P. K., Donohew, L., Sioneau, C. K., Feist-Price, S., & Helme, D. (2008). Effects of a school-based, theory-driven HIV and pregnancy prevention curriculum. *Perspectives on Sexual and Reproductive Health, 40*(1), 42–51. (See results for the two separate trials of both versions of RTR.) Note: the Zimmerman study reported no effects for either of the two versions of RTR tested by the study, but reported a significant program effect on sexual initiation when the samples of the two different programs were combined. However, this “combined” effect appears to be an artifact since it did not occur in the real world—no adolescent received both versions of RTR. Moreover, since the programs were different enough to test against each other—apples and oranges—it does not seem appropriate to combine them and count this as evidence of an RTR effect. Also of note: Another study of RTR—one of the eight mentioned here—by program developers, found a short-term six-month increase in teen contraceptive use, a less-protective indicator. See Barth, R. P. (1992). Preventing adolescent pregnancy with social and cognitive skills. *Journal of Adolescent Research, 7*(2), 208–232;
55. Tortolero, S., Markham, C., Flescher, M., Shegog, R., Addy, R., et al. (2010). It's Your Game: Keep It Real: Delaying Sexual Behavior with an Effective Middle School Program. *Journal of Adolescent Health, 46*(2), 169–179.
56. Markham, C. M., Tortolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R., Addy, R. C., Escobar-Chaves, S. L., Reininger, B., Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health, 50*(3), 279–288; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health, 54*(2), 151–159. It should be noted that in both of these studies, the study write-up suggests that teens practicing abstinence were counted in the measure of consistent condom use by sexually active teens, conflating the two behaviors.
57. Potter, S., Coyle, K., Glassman, J., Kershner, S., Prince, M. (2016). It's Your Game ...Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health, 106*(S1), S60–S69.
58. Coyle, K., Anderson, P., Laris, B. A., Unti, T., Franks, H., Glassman, J. (2015). Evaluation of It's Your Game: Keep It Real in Houston, TX: Final report.
59. Villarruel, A. M., Jemmott, J. B., Jemmott, L. S. (2006). A randomized controlled trial testing an HIV prevention intervention for Latino youth. *Archives of Pediatrics & Adolescent Medicine, 160*(8), 772–777.
60. Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et al. (2016). Replicating ¡Cuidate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health, 106*(S1), S70–S77; Abt Associates. ¡Cuidate!: Interim Impact Report, Teen Pregnancy Prevention Replication Study, Report prepared for the Office of Adolescent Health and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, September 2015.
61. Allen, J. P., Philliber, S., Herrling, S., Kuperminc, G. P. (1997). Preventing teen pregnancy and academic failure: Experimental evaluation of a developmentally based approach. *Child Development, 68*(4), 729–742.
62. Daley, E. M., Buhi, E. R., Wang, W., Singleton, A., Debate, R., Marhefka, S., et al. (2015). Evaluation of Wyman's Teen Outreach Program® in Florida: Final Impact Report for Florida Department of Health. Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program.
63. Francis, K., Woodford, M., and Kelsey, M. (2015). Evaluation of the Teen Outreach Program in Hennepin County, MN: Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program.
64. Seshadri, R., Smithgall, C., Goerge, R., Ippolito, J., Dasgupta, D., Wiegand, E., Guiltinan, S., Wood, M. (2015). Evaluation of Teen Outreach Program in Chicago: Final Impact Report for Chicago Public Schools.
65. Philliber, A. E., Philliber, S., Brown, S. (2015). Evaluation of the Teen Outreach Program® in The Pacific Northwest.
66. Respectively, Howard, M., McCabe, J. (1990). Helping teenagers postpone sexual involvement. *Family Planning Perspectives, 22*(1), 21–26; Kirby, D., & Laris, B. A. (2007). Summaries of the Evaluations Referenced in Emerging Answers.
67. Aarons, S. J., Jenkins, R. R., Raine, T. R., El-Khorazaty, M. N., Woodward, K. M., Williams, R. L., et al. (2000). Postponing sexual intercourse among urban junior high school students: A randomized controlled evaluation. *Journal of Adolescent Health, 27*(4), 236–247.
68. Little, C. B., Rankin, A. (2001). *An evaluation of the Postponing Sexual Involvement curriculum among upstate New York eighth graders*. Unpublished manuscript, State University of New York, Cortland.
69. Jemmott, J. B., Jemmott, L. S., Fong, G. T., McCaffree, K. (1999). Reducing HIV risk-associated sexual behavior among African American adolescents: Testing the generality of intervention effects. *American Journal of Community Psychology, 27*(2), 161–187.
70. Borawski, E. A., Trapl, E. S., Adams-Tufts, K., Hayman, L. L., Goodwin, M. A., Lovegreen, L. D. (2009). Taking be proud! be responsible! to the suburbs: A

replication study. *Perspectives on Sexual and Reproductive Health*, 41(1), 12–22.

71. Slater, H. M., and Mitschke, D. B. (2015). Evaluation of the *Crossroads* Program in Arlington, TX: Findings from an Innovative Teen Pregnancy Prevention Program.

72. Philliber, S, Kaye, J.W., Herring, S., West, E. (2002). 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*, 34, 244–251.

73. Kirby, D. (2009). Reducing pregnancy and health risk behaviours in teenagers: Intensive, multicomponent programmes are not always effective. *BMJ*, 339, b2054. See also, respectively, Kirby, D. B., Rhodes, T., Campe, S. (2005). The implementation of multi-component youth programs to prevent teen pregnancy modeled after the Children's Aid Society Carrera Program. Scotts Valley, CA: ETR Associates; Scher, L. S., Maynard, R. (2006). Interventions intended to reduce pregnancy-related outcomes among adolescents. Campbell Collaboration Social Welfare Group. Retrieved from www.campbellcollaboration.org/social_welfare/index.php

74. Tucker, T. (2015). Evaluation of the Carrera Program: Findings from the replication of an evidence-based teen pregnancy prevention program. Atlanta, GA: Tressa Tucker & Associates, LLC; Herrling, S. (2016). Evaluation of the Children's Aid Society (CAS)—Carrera Adolescent Pregnancy Prevention Program in Chicago, IL: Findings from the Replication of an Evidence-Based Teen Pregnancy Prevention Program. Accord, NY: Philliber Research & Evaluation.

75. See ¡Cuidate!, *It's Your Game: Keep It Real, Reducing the Risk*, and *Teen Outreach Program*, under “Select a Program” at <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>; Gottfredson, D. C., Cook, T. D., Gardner, F. E. M., Gorman-Smith, D., Howe, G. W., et al. (2015). Standards of Evidence for Efficacy, Effectiveness, and Scale-up Research in Prevention Science: Next Generation. *Prevention Science*, 16(7), 893–926. doi: 10.1007/s11121-015-0555-x. Retrieved from http://www.preventionresearch.org/wp-content/uploads/2011/12/Standards-of-Evidence_2015.pdf

76. Kelsey, M., Layzer, C., Layzer, J., Price, C., Juras, R., et al. (2016). Replicating ¡Cuidate!: 6-Month Impact Findings of a Randomized Controlled Trial. *American Journal of Public Health*, 106(S1), S70–S77

77. Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*, 54(2), 151–159; Potter, S., Coyle, K., Glassman, J., Kershner, S., Prince, M. (2016). It's Your Game ...Keep It Real in South Carolina: A Group Randomized Trial Evaluating the Replication of an Evidence-Based Adolescent Pregnancy and Sexually Transmitted Infection Prevention Program. *American Journal of Public Health*, 106(S1), S60–S69.

78. Philliber, A. E., Philliber, S., Brown, S. (2015). Evaluation of the Teen Outreach Program® in The Pacific Northwest. Accord, NY: Philliber Research & Evaluation.

79. Moberg, D., Piper, D. L. (1998). The Healthy for Life Project: Sexual risk behavior outcomes. *AIDS Education and Prevention* 10(2):128–48.

80. Kirby, D., Korpi, M., Adivi, C., Weissman, J. (1997). An impact evaluation of SNAPP, a pregnancy-and-AIDS-prevention middle school curriculum. *AIDS Prevention and Education*, 9,(1 Suppl), 44–61.

81. Abt and Associates. (2018). Reducing the Risk: Impact findings from the Teen Pregnancy Prevention Replication Study (Research Brief and Impact Evaluation Findings), November 5, 2018. U.S. Department of Health and Human Services. Retrieved from <https://aspe.hhs.gov/pdf-report/reducing-risk-impacts-teen-pregnancy-prevention-replication-study-research-brief>

82. One major source of the perception that abstinence education is ineffective comes from the findings of six problematic AE studies: four produced in a 2007 evaluation by Mathematica Policy Research, Inc. (Trenholm, C., Devaney, B., Fortson, K., Quay, L., Wheeler, J., & Clark, M. (2007). *Impacts of four Title V, Section 510 abstinence education programs*. Princeton, NJ: Mathematica Policy Research) and two other studies erroneously treated as evaluations of AE (Clark, M. A., Trenholm,

C., Devaney, B., Wheeler, J., & Quay, L. (2007). *Impacts of the Heritage Keepers® Life Skills Education component*. Princeton, NJ: Mathematica Policy Research, Inc.; Blake, S. M., Simkin, L., Ledskey, R., Perkins, C., & Calabrese, J. M. (2001). Effects of a Parent-Child Communications Intervention on Young Adolescents' Risk for Early Onset of Sexual Intercourse. *Family Planning Perspectives*, 33(2), 52–61). These six studies have been cited by numerous reviewers as compelling evidence for AE failure. However, their design limitations raise concerns. For the Mathematica studies: 1) While touted as having a strong experimental (randomized) evaluation design, this methodology was weakened by randomizing the treatment and control groups *within* the same schools, disregarding the fact that cross contamination would likely occur between these two groups of youth—in the lunchroom, the locker room, and after-school programs, and within peer groups outside the school setting. Students tend to ignore their random group assignment and freely “share the medicine.” And if the abstinence program reduces sexual behavior in the treatment group, it will also likely diminish this in the control group by reducing the number of sexual partners available to them. Thus, a reduction in sexual activity would likely occur in both groups as a result of the program, minimizing between group differences and the measurement of a program effect. 2) This design problem was compounded in the four studies by another methodological issue—the very young age of the program participants (ages 10–11, 11–13, 8–13, and 13). Measuring sexual behavior in a population this young typically finds such low rates that cell sizes are too small to produce statistically significant differences between program and control groups, even a year later. This limitation might have been addressed by employing appropriately longer follow-up time periods. Instead, a third major shortcoming occurred: 3) The follow-up time frames were so long—three to five years *after* the program (four to six years post baseline) and without any additional program message reinforcement during the interim—that a post-program effect on behavior could not have reasonably been expected to persist at that point. Such unusually long follow-up times have not been employed in CSE studies. These three factors in combination—randomizing within schools, unusually young subject populations, and unrealistically long follow-up time frames—argue for viewing the findings of these four studies as “inconclusive” rather than as valid evidence of AE program failure. For the Clark and Blake studies: Each of these measured the *additive effect* of a secondary program component—one was a voluntary after-school “life skills” component (that did not have abstinence as its focus), and the other was a parent-communication component—compared to the impact of the program's mandatory AE classroom curriculum alone, which served as the counterfactual in the study. *In both cases, the AE curriculum was the control condition, and the study was an evaluation of the impact of the subsidiary program component (which was not an AE curriculum), not of the impact of the AE program. Yet these two studies have been treated as evaluations of AE classroom curricula in several important evidence reviews.* (For example, they, along with the four Mathematica studies, were included in the CDC-sponsored 2012 meta-analysis.) None of the six studies mentioned here found significant program effects, so their null findings combine to form a faulty evidence base that undermines the case for AE efficacy.

83. A similar conclusion was reached by the Guide to Community Preventive Services. See: Chin H. B., Sipe, T. A., Elder, R., Mercer, S. L., Chattopadhyay, S., et al. (2012). The Effectiveness of Group-Based Comprehensive Risk Reduction and Abstinence Education Interventions to Prevent or Reduce the Risk of Adolescent Pregnancy, HIV, and STIs: Two Systematic Reviews for the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, 42(3), 272–294; Manlove, J., Fish, H. and Moore, K. A. (2015). Programs to improve adolescent sexual and reproductive health in the US: A review of the evidence. *Adolescent Health, Medicine and Therapeutics*, 6, 47–79.

84. Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159; Erkut, S., Grossman, J. M., Frye, A. A., Ceder, I., Charamaraman, L., Tracy, A. J. (2013). Can sex education delay early sexual debut? *Journal of Early Adolescence*, 33(4), 482–497 (Note: This was an abstinence curriculum that comprised the first year of a three-year program that was a CSE curriculum for the remaining two years. See: <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=274&mid=2>); Weed, S. E., Erickson, I. H., Birch, P. J. (2005). An evaluation of the Heritage Keepers abstinence education program. In *Evaluating abstinence education programs: Improving implementation and assessing impact* (pp. 88–103). Washington, DC: Office of Population Affairs and the Administration for Children and Families, Department of Health & Human Services; Weed, S. E., Birch, P. J., Erickson, I. H., Olsen, J. A. (2011). Testing a predictive model of youth sexual intercourse initiation. Unpublished manuscript; Denny, G., & Young, M. (2006). An evaluation of an abstinence-only sex education curricu-

lum: An 18-month follow-up. *Journal of School Health*, 76(8), 414–422; Weed, S. E., Ericksen, I. E., Lewis, A., et al. (2008). An Abstinence Program's Impact on Cognitive Mediators and Sexual Initiation. *American Journal of Health Behavior*, 32(1), 60–73; Weed, S. E., Anderson, N. A., Ericksen, I. E. (2008). What kind of abstinence education works? Comparing outcomes of two approaches. Salt Lake City: *Institute for Research & Evaluation*; Piotrowski, Z., Hedeker, H., Hedeker, D. (2015). Evaluation of The Positive Potential Be The Exception Grade 6 Program in Predominantly Rural Communities: Findings from an Innovative Teen Pregnancy Prevention Program. Report to the Office of Adolescent Health, U.S. Department of Health & Human Services.

85. Walker, E. M., Inoa, R., Coppola, N. (2016). Evaluation of Promoting Health Among Teens Abstinence-Only Intervention in Yonkers, NY; Farb, A., Margolis, A. (2016). The Teen Pregnancy Prevention Program (2010–2015): Synthesis of Impact Findings. *American Journal of Public Health*, v. 106 (Suppl 1); Lieberman, L., & Su, H. (2012). Impact of the Choosing the Best Program in Communities Committed to Abstinence Education. *SAGE Open*, 2(1), 1–12.

86. Borawski, E. A., Trapl, E. S., Lovegreen, L. D., Colabianchi, N., Block, T. (2005). Effectiveness of abstinence-only intervention in middle school teens. *American Journal of Health Behavior*, 29(5), 423–434; Jemmott, J. B., III, Jemmott, L. S., & Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159; Kirby, D., Korpi, M., Barth, R. P., & Cagampang, H. H. (1997). The impact of the Postponing Sexual Involvement curriculum among youths in California. *Family Planning Perspectives*, 29(3), 100–108; Trenholm, C., Devaney, B., Fortson, K., Quay, L., Wheeler, J., Clark, M. (2007). Impacts of four Title V, Section 510 abstinence education programmes; Markham, C. M., Tortolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R., Addy, R. C., Escobar-Chaves, S. L., Reininger, B., Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health*, 50(3), 279–288; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *The Journal of Adolescent Health*, 54(2), 151–159; Jemmott, J. B., Jemmott, L. S., Fong, G. T. (1998). Abstinence and safer sex HIV risk-reduction interventions for African American adolescents: A randomized controlled trial. *Journal of the American Medical Association*, 279(19), 1529–1536. Piotrowski, Z., Hedeker, H., Hedeker, D. (2015). Evaluation of The Positive Potential Be The Exception Grade 6 Program in Predominantly Rural Communities: Findings from an Innovative Teen Pregnancy Prevention Program. Report to the Office of Adolescent Health, U.S. Department of Health & Human Services; Piotrowski, Z., Hedeker, H., Hedeker, D. (2015). Evaluation of The Positive Potential Be The Exception Grade 6 Program in Predominantly Rural Communities: Findings from an Innovative Teen Pregnancy Prevention Program. Report to the Office of Adolescent Health, U.S. Department of Health & Human Services.

87. See Markham, C. M., Tortolero, S. R., Peskin, M. F., Shegog, R., Thiel, M., Baumler, E. R., Addy, R. C., Escobar-Chaves, S. L., Reininger, B., Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health*, 50(3), 279–288; Markham, C. M., Peskin, M. F., Shegog, R., Baumler, E. R., Addy, R. C., Thiel, M., Escobar-Chaves, S. L., Robin, L., Tortolero, S. R. (2014). Behavioral and psychosocial effects of two middle school sexual health education programs at tenth-grade follow-up. *Journal of Adolescent Health*, 54(2), 151–159; and Endnotes #76 - #80.

88. See: <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>

89. Respectively, Coyle, K. K., Basen-Enquist, K. M., Kirby, D. B., Parcel, G. S., Banspach, S. W., Collins, J. L., et al. (2001). Safer Choices: Reducing Teen Pregnancy, HIV and STDs. *Public Health Reports*, 1(16), 82–93; Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (1998). Abstinence and safer sex HIV risk reduction interventions for African American adolescents. *Journal of American Medical Association*, 279(19), 1529–1536.

90. Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159; Erkut, S., Grossman, J. M., Frye, A. A., Ceder, I., Charmaraman, L., Tracy, A. J. (2013). Can sex education delay early sexual debut? *Journal of Early Adolescence*, 33(4), 482–497 (Note: This was an abstinence curriculum that

comprised the first year of a three-year program that was a CSE curriculum for the remaining two years. See: <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&csid=274&mid=2>; Weed, S. E., Ericksen, I. H., Birch, P. J. (2005). An evaluation of the Heritage Keepers abstinence education program. In *Evaluating abstinence education programs: Improving implementation and assessing impact* (pp. 88–103). Washington, DC: Office of Population Affairs and the Administration for Children and Families, Department of Health & Human Services; Weed, S. E., Birch, P. J., Ericksen, I. H., Olsen, J. A. (2011). Testing a predictive model of youth sexual intercourse initiation. Unpublished manuscript; Piotrowski, Z., Hedeker, H., Hedeker, D. (2015). Evaluation of The Positive Potential Be The Exception Grade 6 Program in Predominantly Rural Communities: Findings from an Innovative Teen Pregnancy Prevention Program. Report to the Office of Adolescent Health, U.S. Department of Health & Human Services.

91. Respectively: Jemmott, J. B., Jemmott, L. S., Fong, G. T. (1998). Abstinence and safer sex HIV risk-reduction interventions for African American adolescents: A randomized controlled trial. *Journal of the American Medical Association*, 279(19), 1529–1536.

Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159; Piotrowski, Z., Hedeker, H., Hedeker, D. (2015). Evaluation of The Positive Potential Be The Exception Grade 6 Program in Predominantly Rural Communities: Findings from an Innovative Teen Pregnancy Prevention Program. Report to the Office of Adolescent Health, U.S. Department of Health & Human Services.

92. United Nations Educational, Scientific and Cultural Organization. (2009). *International Technical Guidance on Sexuality Education, Volume 1*, p.15. Retrieved from <http://unesdoc.unesco.org/images/0018/001832/183281e.pdf>

93. Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine*, 42(3), 304–307, see p.305; <https://tppevidencereview.aspe.hhs.gov/EvidencePrograms.aspx>.

94. See: <http://www.advocatesforyouth.org/publications/1487>

95. Juras, R., Tanner-Smith, E., Kelsey, M., Lipsey, M., and Layzer, J. (2019). Adolescent Pregnancy Prevention: Meta-Analysis of Federally Funded Program Evaluations, *American Journal of Public Health*, 109(4), e1–e8.

96. The methodological issues and weaknesses pertaining to these six studies are explained in detail in Endnote 81.

97. See: <http://www.advocatesforyouth.org/publications/1487>

98. Jemmott, J. B., III, Jemmott, L. S., Fong, G. T. (2010). Efficacy of a theory-based abstinence-only intervention over 24 months: A randomized controlled trial with young adolescents. *Archives of Pediatrics & Adolescent Medicine*, 164(2), 152–159; Weed, S. E., Ericksen, I. H., Birch, P. J. (2005). An evaluation of the Heritage Keepers abstinence education program. In *Evaluating abstinence education programs: Improving implementation and assessing impact* (pp. 88–103). Washington DC: Office of Population Affairs and the Administration for Children and Families, Department of Health & Human Services; Weed, S. E., Birch, P. J., Ericksen, I. H., Olsen, J. A. (2011). Testing a predictive model of youth sexual intercourse initiation. Unpublished manuscript; Erkut, S., Grossman, J. M., Frye, A. A., Ceder, I., Charmaraman, L., Tracy, A. J. (2013). Can sex education delay early sexual debut? *Journal of Early Adolescence*, 33(4), 482–497; Piotrowski, Z., Hedeker, H., Hedeker, D. (2016). Evaluation of the *Be The Exception* Sixth-Grade program in rural communities to delay the onset of sexual behavior: Findings from an Innovative Teen Pregnancy Prevention Program. *American Journal of Public Health*, 106(S1), S132–S139.

99. Community Preventive Services Task Force. (2011). Recommendations for Group-Based Behavioral Interventions to Prevent Adolescent Pregnancy, Human Immunodeficiency Virus, and Other Sexually Transmitted Infections: Comprehensive Risk Reduction and Abstinence Education. *American Journal of Preventive Medicine*, 42(3): 304–307, see p.305.

100. Weed, S. E. (2012). Sex Education Programs for Schools Still in Question: A Commentary on Meta-Analysis. *American Journal of Preventive Medicine*, 42(3), 313–315.

101. Derived from: The Community Preventive Services Task Force. (2008-2010). *Meta-Analysis Results: Condoms for CRR Interventions (Forest Plot)*. Data made available to Task Force members and consultants (including Irene H. Ericksen, co-author on the present article).
102. Denford, S., Abraham, C., Campbell, R., et al. (2017). A comprehensive review of reviews of school-based interventions to improve sexual-health. *Health Psychology Review*, 11(1), 33–52., see pp.33, 39, 47.
103. See Benes, F. M. (1989). Myelination of cortical-hippocampal relays during late adolescence. *Schizophrenia Bulletin*, 15, 585–93; Benes, F. M. (1998). Brain development, VII. Human brain growth spans decades. *American Journal of Psychiatry*, 155, 1489; Frontline (Producer). (2002). *Inside the Teenage Brain: Interview with Dr. Deborah Yurgelun-Todd*. [Transcript from a television series episode]. Retrieved from <http://www.pbs.org/wgbh/pages/frontline/shows/teen-brain/interviews/todd.html>; Giedd, J., Blumenthal, J., Jeffries, N., Castellanos, F. X., Hong, L., Zijdenbos, A., et al. (1999). Brain development during childhood and adolescence: A longitudinal MRI study. *Nature Neuroscience*, 2, 861–863; Romanczyk, T. B., Weickert, C. S., Webster, M. J., Herman, M. M., Kleinman, J. E. (2002). Alterations in the human prefrontal cortex across the life span. *European Journal of Neuroscience*, 15, 269–280; Thompson, R. A. Nelson, C. A. (2001). Developmental science and the media: Early brain development. *American Psychologist*, 56, 5–15; Yurgelun-Todd, D. (2002). *Frontline* interview Inside the Teenage Brain. Full interview available at <http://www.pbs.org/wgbh/pages/frontline/shows/teen-brain/interviews/todd.html>.
104. Spinks, S. (2002). One reason teens respond differently to the world: Immature brain circuitry [Transcript from a television series episode]. In Frontline (Producer), *Inside the teenage brain*. Retrieved from <http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/work/onereason.html>, p. 2.
105. Thomas, M. (2000). Abstinence-based programs for prevention of adolescent pregnancies: A review. *Journal of Adolescent Health*, 26, 5–17.
106. Shlay, J. C., McClung, M. W., Patnaik, J. L., Douglas, J. M., Jr. (2004). Comparison of sexually transmitted disease prevalence by reported condom use: errors among consistent condom users seen at an urban sexually transmitted disease clinic. *Sexually Transmitted Diseases*, 31(9), 526–532; Grimley, D. M., Annang, L., Houser, S., Chen, H. (2004). Prevalence of Condom Use Errors Among STD Clinic Patients. *Sexually Transmitted Diseases*, 31(9), 526–532.
107. Sanders, S. A., Graham, C. A., Yarber, W. L., Crosby, R. A. (2003). Condom Use Errors and Problems Among Young Women Who Put Condoms on Their Male Partners, *Journal of the American Medical Women's Association*, 58(2), 95–98.
108. Villarruel, A. M., Jemmott, L. S., Jemmott, J. B. (n.d.). *Facilitator's Curriculum, Module 2: Building Knowledge About Pregnancy, STDs and HIV*.
109. United Nations Educational, Scientific and Cultural Organization. (2018). *International Technical Guidance on Sexuality Education: An Evidence-Informed Approach*, p. 72. Retrieved from http://www.unaids.org/sites/default/files/media_asset/ITGSE_en.pdf
110. See *Making Proud Choices!* Module 7, at: <https://tppevidencereview.aspe.hhs.gov/document.aspx?rid=3&sid=102&mid=2>
111. Tortolero, S. R., Markham, C. M., Shegog, R., Peskin, M. F. (2004). *It's Your Game: Keep it Real*. An HIV, STI, and Pregnancy, Curriculum for Middle Schools. *Center for Health Promotion and Prevention Research*, University of Texas-School of Public Health. Curriculum Manual, Level I Lessons, p.192, Level II Lessons.
112. Villarruel, A. M., Jemmott, L. S., Jemmott, J. B. (n.d.). *Facilitator's Curriculum, Module 2: Building Knowledge About Pregnancy, STDs and HIV*.

**Table 1. School-Based Sex Education in the United States, 1990-2018:
Number of Studies Finding Evidence of Effectiveness***

	School-Based Comprehensive Sex Education	School-Based Abstinence-only Sex Education
*Effectiveness Criteria: A protective effect for the intended population on sexual initiation, condom use, pregnancy, or STDs, at least 12 months post-program, without other negative outcomes	U.S. 60 studies (40 programs)	U.S. 17 studies (16 programs)
Reduced Pregnancy	0	0
Reduced STDs	0	0
Increased Abstinence (Delayed Sexual Initiation)	1	7
Increased Consistent Condom Use (CCU)	0	0
Increased Condom Use Frequency or Use at Last Sex (when CCU was not measured)	2	0
Dual Benefit (Increased Abstinence & Condom Use in the same population)	0	0
Total Number of Studies with Evidence of Effectiveness (includes less- protective measures of condom use)	3^a	7
Total Number of Studies with Evidence of Maximum Effectiveness (only counting most – protective measure of condom use, i.e., CCU)	1	7
Independent Evidence Studies finding evidence of effectiveness, that were not conducted by the program's developers	0	5

^aIncluded are two studies that did not measure consistent condom use (CCU) but found sustained impact on less-protective measures of condom use (*frequency or use at last intercourse*). These were not optimum indicators of program effectiveness, however, they were counted here as possible surrogate indicators of CCU, lacking a direct measure.

Table 2. School-Based Sex Education in the United States, 1990-2018: Number of Harmful Effects		
	School-Based Comprehensive Sex Education	School-Based Abstinence-only Sex Education
Negative Effects A worsening of sexual health or risk behaviors for the intended population or a substantial subgroup, for any duration after the program	U.S. 60 studies (40 programs)	U.S. 17 studies (16 programs)
Increased Pregnancy	1	0
Increased STDs	0	0
Increased Sexual Activity (Sexual Initiation, Frequent/Recent Sex)	4	0
Decreased Condom Use	2	0
Increased Oral Sex	2	0
Increased #Sex Partners	1	1
Increase in Forced or Coerced Sex	0	0
Increase in Paid Sex	0	0
Total Number of Negative Effects	10	1
Net Number of Studies and Programs with Negative Effects (for some studies or programs there was more than one harmful effect)	7 studies 12%	1 study 6%
	6 programs 15%	1 program 6%

Table 3. School-Based Sex Education in the United States, 1990-2018: Number of Studies Finding Success vs. Harm		
	School-Based Comprehensive Sex Education	School-Based Abstinence-only Sex Education
Effectiveness Criteria: <i>A protective effect for the intended population on sexual initiation, condom use, pregnancy, or STDs, at least 12 months post-program, without other negative outcomes</i>	U.S. 60 studies (40 programs)	U.S. 17 studies (16 programs)
Effectiveness/Success (includes less-protective measures of condom use: frequent or recent use)	3 studies	7 studies
Maximum Effectiveness/Success (only counting most-protective measure of condom use, i.e., only CCU)	1 study	7 studies
Negative/Harmful Effects Number of studies that found a worsening of sexual health or risk behavior for the intended population or a major sub-group, lasting any duration	7 studies	1 study

Table 4. U.S. School-based Comprehensive Sex Education (CSE): 60 Studies of 40 Programs.

PROGRAM AND STUDY			STUDY OUTCOMES										
PROGRAM NAME	STUDY 1st AUTHOR & YEAR	Database	Independent Evaluator?	Negative Effect	Post-Program Effects on Most-Protective Indicators			Post-Program Effects on Less-Protective Indicators			Dual Benefit		
					Sexual Initiation	Consistent Condom Use	Pregnancy	STDs	Condom Frequency	Freq/Recent Sex	Unpracticed Sex	# Sex Partners	12mo. Post-Program
Alan Aya (Classroom Version Only)	Flay, 2004	TPP	No	No	NM	NM	NM	NM	NS	NS	NM	NM	NM
AIDS Prevention Program	Siegel, 1995	CDC/UN	?	No	NM	NM	NM	NM	NS	NM	NM	NS	NM
AI4You	Coyle, 2006	TPP/CDC/UN	No	No	NS	NM	NS	NM	6 months Only	6 months Only	6 months Only	NS	NS
AI4You2	Coyle, 2013	TPP	No	No	NS	NM	NM	NM	NS	NM	NS	NM	NS
Be Proud Be Responsible (held on a school day)	Coyle, 2013	TPP/CDC/UN	No	No	NS	NM	NM	NM	NS	NM	4 months Only	NM	NS
Be Proud Be Responsible (held on Saturday)	Jennett, 1999	TPP	No	No	NS	NS	NM	NM	NM	NS	6 months	NS	NS
[Blake] HIV/STD Prevention Curriculum	Borawski, 2009	TPP	Yes	No	NS	NS	NM	NM	NM	NS	NS	NM	NM
[Blake] HIV/STD Prevention Curriculum	Blake, 2000 (unpub.)	UN	Yes	No	NS	NS	NM	NM	NM	NS	NM	NM	NM
[Boyer] HIV/STD Prevention Curriculum	Boyer, 1997	CDC/UN	No	No	NM	NM	NM	NM	NS	NS	NM	NS	NM
Crossroads Program (adaptation BPBR)	Slater & Mitschke, 2015	TPP	?	No	NM	NM	NS	NM	NM	NM	6 months Only	NM	NM
iCudate! (held on Saturday)	Villari, 2006	TPP/CDC/UN	No	No	NS	12 months	NS	NM	NS	12 months	12 months	12 months	NS
iCudate! (held on a school day)	Kelsey, 2016 (ABR Assoc 2015)	TPP	Yes	3 Negative Effects	Oral Sex-Subgroup 12 mo-Subgroup O	NM	NM	NS	NS	Recent Sex-Subgroup	Oral Sex-Subgroup	NS	NS
Draw the Line, Respect the Line	Coyle, 2004	TPP/CDC/UN	No	No	NM	NM	NM	NM	NS	NS	NM	NM	NS
Focus on Kids/West Virginia	Stanton, 2005	CDC/UN	No	No	NM	NM	NM	NM	NS	NS	NM	NM	NS
Gender Matters	Smith, Kim, et al, 2015	TPP	No	No	NS	NM	NM	NM	6 months	NS	NS	6 months	NM
Get Real About AIDS	Main, 1994	CDC/UN	?	No	NS	NM	NM	NM	NM	NS	NM	6 months	NM
Get Real - 7th & 8th Grade Only	Grossman, 2014	TPP	?	No	<9 months	NM	NM	NM	NM	NM	NM	NM	NM
H.A.R.T. (adaptation of B.A.R.T.)	Boston Medical Center	TPP	?	No	NS	NM	NM	NM	NM	NS	NS	NM	NM
Health Teacher	Mathematical Policy Research	TPP	No	No	NS	NM	NM	NM	NM	NS	NS	NM	NM
Healthy & Alive!	Middlestadt, [Unpub]	UN	No	No	NS	NS	NM	NM	NM	NS	NM	No	NM
Healthy for Life- Version 1 (Age-based)	Moberg, 1998/2000	CDC	?	No	NS	NS	NM	NM	NM	NS	NM	NM	NS
Healthy for Life- Version 2 (7th Gr. Intensive)	Moberg, 1998/2000	CDC	?	Recent Sex	NS	NS	NM	NM	NM	Recent Sex- Main Effect	NM	NM	NS
Healthy Oakland Teens	Ekstrand, 1998 (AIDS Conf)	UN	?	No	8 to 11 months	NM	NM	NM	NM	NM	NM	NM	NM
HIV Prevention Interventions	Fisher, 2002	CDC/UN	No	No	NS	NM	NM	NM	12 months	NS	NM	NM	NS
It's Your Game: Keep It Real/Risk Reduction	Tortolero, 2010	TPP	No	No	12 months	NM	NM	NM	NS	12 months	NM	NS	NS
IVG- Risk Reduction	Markham, 2012/2014	TPP	No	#Sex Partners Sexual Initiation	10 months Only Main Effect	10 months Only	NM	NM	NM	10 months O	10 months O	Main Effect	NS
IVG- Risk Reduction (South Carolina)	Potter, 2016a	TPP	Yes	No	NS	NM	NM	NM	NM	NS	NS	NM	NS
IVG- Risk Reduction (Texas)	Coyle, 2016b	TPP	Yes	No	NS	NM	NM	NM	NM	NS	NS	NM	NS
Making Proud Choices! (held on Saturday)	Jennett, 1998	TPP/CDC/UN	No	No	NS	3 months Only	NM	NM	3, 6, 12 months	12mo-Subgroup	12mo-Subgroup	NM	NS
Need To Know	Ueffrich & Sciscianantonio	TPP	?	No	NS	NM	NM	NM	NM	NS	NM	NM	NM
Positive Prevention	Lachausse, 2006	CDC/UN	Yes	No	6 months	NM	NM	NM	NS	6 months	6 months	NM	NM
Positive Prevention PLUS	Lachausse, 2015/2016	TPP	Yes	No	6 months	NM	NS	NM	NM	NS	NM	NM	NM
Postponing Sexual Involvement (PSI)	Howard & McCabe, 1990	UN	No	No	12 months	NM	NM	NM	NM	NS	NM	NM	NM
Postponing Sexual Involvement	Aarons, 2000	UN	Yes	No	NS	NM	NM	NM	NM	NS	NM	NM	NM
PSI & Human Sexuality-adapted	Little & Rankin, unpub.	UN	?	No	NS	NM	NM	NM	NM	NS	NM	NS	NM
Project IMPACT Inwood House	Lieberman, 2000	CDC/UN	No	No	NS	NM	NM	NM	NS	NS	NM	NM	NS
Project LIGHT	Lightfoot, 2007	CDC	No	No	NS	NM	NM	NM	NS	NS	NS	3 months	NM
Project SNAPP	Kirby, 1997	CDC/UN	Yes	Contraception	NS	NM	NS	NS	Contraception- Main Effect	3 months	NS	3 months	NM
Promoting Health Among Teens/ CSE (on Saturday)	Jennett, 2010	TPP	No	No	NS	NS	NM	NM	NM	NS	NS	NM	NS
Reach for Health	O'Donnell, 1999	CDC	?	No	NS	NM	NM	NM	NM	NS	NS	24 months	NS
Reducing the Risk (RTR)	Kirby, 1991	TPP/UN	No	No	NS	NM	NS	NM	NS	NS	NS	NM	NM
RTR	Barth, 1992	TPP/CDC	No	No	NS	NM	NS	NM	NS	NS	NM	NM	NM
RTR	Hubbard, 1998	CDC/UN	Yes	No	18months	NM	NM	NM	NM	NM	NM	NM	NM
RTR	Kelsey, 2016 (ABR Assoc 2018)	TPP	Yes	Recent & Oral Sex	Oral Sex-Subgroup	Oral Sex-Subgroup	NS	NS	NS	Recent Sex-Subgroup	NS	NM	NS
Reducing the Risk (RTR)-modified1	Zimmerman, 2008a	TPP/UN	No	No	NS	NM	NM	NM	NS	NM	NM	NM	NM
Reducing the Risk (RTR)-modified2	Zimmerman, 2008b	TPP/UN	No	No	NS	NM	NM	NM	NS	NM	NM	NM	NM
Reducing the Risk (RTR)-modified2	Reyna & Mills, 2014a	TPP	Yes	No	NS	NM	NM	NM	NS	NM	NS	NS	NS
Rochester AIDS Prevention Project (RAPPP)	Reyna & Mills, 2014b	TPP	No	No	12 months	NM	NM	NM	NS	NM	NS	12 months	NS
Rochester AIDS Prevention Project (RAPPP)	Siegel, 2001	CDC/UN	?	No	NS	NM	NM	NM	NM	NM	NM	NM	NM
Safer Choices	Coyle, 2001	CDC	?	No	NS	NM	NM	NM	NS	NS	NM	NS	NS
Teen Outreach Program (TOP)	Allen, 1997	TPP/CDC/UN	Yes	No	NM	NM	NM	NM	12 months	NM	NM	NS	NS
TOP (Florida)	Daley, 2015	TPP	Yes	No	at Prog. End, not 10mo	NM	NM	NM	NM	NM	NM	NM	NM
TOP (Hennepin, MN)	Daley, 2015	TPP	Yes	No	NS	NM	NM	NM	NM	NS	NS	NM	NM
TOP (Chicago)	Francis, 2015	TPP	Yes	No	NS	NM	NM	NM	NM	NS	NS	NM	NM
TOP (GNAPP)	Seshadri, 2015	TPP	Yes	No	NM	NM	NM	NM	NM	NS	NS	NM	NM
TOP (GNAPP)	Philliber, 2016	TPP	Yes	Pregnancy	Subgroup	NM	NM	NM	NM	NS	NS	NM	NM
[Waiter & Vaughn] AIDS Prevention	Robinson, 2016	TPP	Yes	No	NM	NM	NM	NM	NM	NS	NS	NM	NM
Wise Guys	Walter & Vaughn, 1993	CDC/UN	?	No	NS	3 months	NM	NS	NM	NM	NS	3 months	NM
Youth AIDS Prevention Project (YAPP)	Gottsegen, 2001	UN	No	No	NS	NM	NM	NM	NS	NS	NM	NS	NS

NS = Did not measure this outcome; NS = The study measured this outcome but the effect was not statistically significant at p<0.05; F = Females; M = Males; O = Only; at Prog. End = measured at the program's endpoint

Green = Evidence of Program Effectiveness; A significant effect on a key protective indicator, at least 12 months post-program, on the intended target population (not just a subgroup), without other negative effects.

Blue = Evidence of Program Potential; Brown = Evidence of Program Failure; Measured this outcome but failed to find a significant effect; Red = Evidence of Negative Program Impact; Grey = Program produced both positive and negative effects

TPP/CDC/UN = U.S. Teen Pregnancy Prevention program/ (U.S. Centers for Disease Control & Prevention)/ UNESCO

Table 5. U.S. Teen Pregnancy Prevention (TPP) School-based Comprehensive Sex Education (CSE): 35 Studies of 18 Programs*

PROGRAM & STUDY CHARACTERISTICS															STUDY OUTCOMES									
PROGRAM NAME	STUDY 1st AUTHOR & YEAR	Independent Evaluator?	PROGRAM TYPE	Post-Program Follow-up Time (in Months)	Negative Effects	Sexual Initiation	Consistent Condom Use	Pregnancy	STDs	Any Condom Use	Recent Sex	Unprotected Sex	# of Sex Partners	Dual Benefit: Abstinence-Condom Use										
1. <i>Aban Aya (Classroom Curriculum Only)</i>	May, 2004	No	CSE + Risk Behavior	<9 (at Year-1/YearProg)	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
2. <i>All4You</i>	Coyke, 2006	No	CSE + Service Learning	6, 12, 18	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
3. <i>Be Proud Be Responsible (School-recruited, held Saturday)</i>	Coyke, 2013	No	CSE	4, 16	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
4. <i>Be Proud Be Responsible (School Day Version)</i>	Jermott, 1999	No	CSE	3, 6	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
5. <i>CAS Carrera (School-recruited, After-school Community)</i>	Bowman, 2009	Yes	CSE	4, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
6. <i>CAS Carrera</i>	Phillips, 2002	Yes	YTHDev, CSE, RHC, CSE	at Prog. End, 12 (at Prog. End, 36)	No	at Prog. End (FO)	NS	at Prog. End (FO)	NS	NS	NS	NS	NS	NS										
7. <i>CAS Carrera</i>	Kelly, 2005**	Yes	YTHDev, CSE, RHC, CSE	13, 36 (at Prog. End)	Pregnancy	NS	NS	NS	NS	NS	NS	NS	NS	NS										
8. <i>CAS Carrera</i>	Schier, 2005**	Yes	YTHDev, CSE, RHC, CSE	at Prog. End, 12 (at Prog. End, 36)	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
9. <i>CAS Carrera</i>	Tucker, 2015	Yes	YTHDev, CSE, RHC, CSE	End of FY12/36 (at Prog. End)	No	End of FY12/36 (at Prog. End)	NS	NS	NS	NS	NS	NS	NS	NS										
10. <i>CAS Carrera</i>	Herrling, 2016	Yes	YTHDev, CSE, RHC, CSE	12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
11. <i>CAS Carrera (School-recruited, held on Saturday)</i>	Villanui, 2006	No	CSE	6	No	at Prog. End (FO)	NS	NS	NS	NS	NS	NS	NS	NS										
12. <i>CAS Carrera (School-recruited, held on Saturday)</i>	Kelly, 2016	Yes	CSE	12	3 Negative Effects	Oral Sex-Subgroup	12mo-Subgroup (MO)	NS	NS	NS	NS	NS	NS	NS										
13. <i>CAS Carrera</i>	Grossman, 2014	7	CSE	at Prog. End, 12	No	12mo-Subgroup (MO)	NS	NS	NS	NS	NS	NS	NS	NS										
14. <i>CAS Carrera</i>	Toribello, 2012 & 2014	No	CSE	<9	No	12mo-Subgroup (MO)	NS	NS	NS	NS	NS	NS	NS	NS										
15. <i>CAS Carrera</i>	Markham, 2012 & 2014	No	CSE	10, 24	No	12mo-Subgroup (MO)	NS	NS	NS	NS	NS	NS	NS	NS										
16. <i>CAS Carrera</i>	Potter, 2016 ("P" So. Cal)	Yes	CSE	12	No	10 months Only	NS	NS	NS	NS	NS	NS	NS	NS										
17. <i>CAS Carrera</i>	Coyke, 2016 ("P" Texas)	Yes	CSE	12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
18. <i>CAS Carrera</i>	Jermott, 1998	No	CSE	3, 6, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
19. <i>CAS Carrera</i>	LaChausse, 2015/2016	Yes	CSE	6	No	6 months	NS	NS	NS	NS	NS	NS	NS	NS										
20. <i>CAS Carrera</i>	Jermott, 2010	No	CSE	24	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
21. <i>CAS Carrera</i>	Kelly et al, 1991	No	CSE	18	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
22. <i>CAS Carrera</i>	Barth, 1992	No	CSE	6	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
23. <i>CAS Carrera</i>	Kelly, 2015/2016/2018	Yes	CSE	12, 24	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
24. <i>CAS Carrera</i>	Zimmerman, 2008	No	CSE	>12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
25. <i>CAS Carrera</i>	Zimmerman, 2008	No	CSE	>12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
26. <i>CAS Carrera</i>	Reyna & Mills, 2014	Yes	CSE	3, 6, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
27. <i>CAS Carrera</i>	Reyna & Mills, 2014	Yes	CSE	3, 6, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
28. <i>CAS Carrera</i>	Coyke, 2001	No	CSE	at Prog. End, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
29. <i>CAS Carrera</i>	Allen, 1997/Phillips, 1992	Yes	Service Learning-CSE	at Prog. End	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
30. <i>CAS Carrera</i>	Daley, 2015	Yes	Service Learning-CSE	at Prog. End, 10	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
31. <i>CAS Carrera</i>	Francis (AdAdoc), 2015	Yes	Service Learning-CSE	3, 15	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
32. <i>CAS Carrera</i>	Schmidt, 2015 (Chicago)	Yes	Service Learning-CSE	at Prog. End	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
33. <i>CAS Carrera</i>	Robinson, et al, 2016 (NY/LA)	Yes	Service Learning-CSE	at Prog. End	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										
34. <i>CAS Carrera</i>	Phillips, 2016 (GNWPP)	Yes	Service Learning-CSE	at Prog. End, 12	No	NS	NS	NS	NS	NS	NS	NS	NS	NS										

* These programs are listed on the TPP website as having shown "evidence of effectiveness in reducing teen pregnancy, sexually transmitted infections, and associated sexual risk behaviors." See <https://openview.org/evidence-prgrams.aspx>

** These studies are not in the TPP database, but were reviewed in a commentary by Douglas Kirby, Ph.D., published in the British Medical Journal (BMJ, 2009). In a summary of the evidence base for this program.

NS = Did not measure this outcome; NS = The study measured this outcome but the effect was not statistically significant at p<0.05; F = Females; M = Males; O = Only; at Prog. End = measured at the program's endpoint

Green = Evidence of Program Effectiveness; A significant effect on a key protective indicator, at least 12 months post-program, on the intended target population (not just a subgroup), without other negative effects.

Blue = Evidence of Program Potential; Brown = Evidence of Program Failure (measured this outcome but failed to find a significant effect); Red = Evidence of Negative Program Impact; Grey = Program produced both positive and negative effects

Table 6. U.S. Teen Pregnancy Prevention (TPP) School-based Abstinence Education (AE): 5 Studies of 5 Programs*															
PROGRAM & STUDY CHARACTERISTICS					PROGRAM OUTCOMES										
PROGRAM NAME	STUDY 1st AUTHOR & YEAR	Independent Evaluator?	PROGRAM TYPE	Post-Program Follow-up Time (in Months)	Negative Effects	Impact on Most-Protective Indicators for Intended Population				Less-Protective Indicators			Dual Benefit: Abstinence+Condom Use		
						Sexual Initiation	Consistent Condom Use	Pregnancy	STDs	Any Condom Use	Recent Sex	Unprotected Sex	# of Sex Partners	12mo After Program	Any Duration of Effect
Get Real-6th Grade Only**	Erkut, 2012	?	6th Grade Abstinence-based	12	No	12 months	NM	NM	NM	NM	NM	NM	NM	NM	NM
Heritage Keepers	Weed, 2011	Yes	Abstinence-only	12	No	12 months	NM	NM	NM	NM	NM	NM	NM	NM	NM
Making a Difference: An Abstinence Program	Jennett, 1998	No	Abstinence-only	3, 6, 12	No	3 months Only	NS	NM	NM	12 months	NM	NS	NM	NS	NS
Promoting Health Among Teens-6th Grade	Piotrowski, 2016	Yes	Youth Development+Abst	3, 12	No	12 months	No	NM	NM	NM	12 months	NM	NM	NS	NS
Promoting Health Among Teens/Abstinence Only	Jennett, 2010	No	Abstinence-only	24	No	24 months	NS	NM	NM	NM	24 months	NS	NS	NS	NS

* These programs are listed on the TPP website as having shown "evidence of effectiveness in reducing teen pregnancy, sexually transmitted infections, and associated sexual risk behaviors." See <https://evidencecenterreview.aspe.hhs.gov/EvidencePrograms.aspx>

** The 1st year of this program (the 6th grade component) met the description of an abstinence-only curriculum (no contraception content); in the 2nd & 3rd years (7th & 8th grade) it was comprehensive sex education (included contraception content). The 1st year was evaluated separately and the results are reported here.

NM = Did not measure this outcome; NS = The study measured this outcome but the effect was not statistically significant at p<0.05.

Green = Evidence of Program Effectiveness; A significant effect on a key protective indicator, at least 12 months post-program, on the intended target population (not just a subgroup), without other negative effects.

Blue = Evidence of Program Potential; Brown = Evidence of Program Failure (measured this outcome but failed to find a significant effect); Red = Evidence of Negative Program Impact; Grey = Program produced both positive and negative effects.