



***A Closer Look at the Evidence:
Abstinence Education and Comprehensive Sex Education in America's Schools***

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Adolescents in the United States continue to experience high rates of teen pregnancy and sexually transmitted diseases (STDs). With 1 in 4 teen girls now infected with an STD,¹ there is clearly a need for more effective sex education programs. Comprehensive sex education (CSE) programs teach both sexual abstinence and condom use as a central part of the curriculum, whereas abstinence education (AE) teaches youth to avoid sexual activity and does not teach condom use. Some policymakers have proposed eliminating abstinence education in the schools in favor of comprehensive sex education, based on the common perception that the CSE strategy is effective while the AE strategy is not. However, before a program can be called effective it is necessary to clarify what “effective” means. After 20 years evaluating school-based sex education programs, the *Institute for Research & Evaluation* has determined that there are several key criteria for measuring program effectiveness. These criteria are consistent with standards of effectiveness recommended by the broader field of prevention research.² This paper reviews and summarizes the research on sex education effectiveness using those criteria. The focus is on school-based³ sex education programs—programs in school/classroom settings for school populations (e.g., excluding programs in STD clinics or community centers)—since this is where most youth in the U.S. receive sex education.

A. Criteria for Effectiveness. In order to merit widespread dissemination, sex education programs should produce:

1. **Real Protection**—The program should impact outcomes that constitute real protection: increased rates of *sexual abstinence* or *consistent condom use* (i.e., using a condom with every act of sexual intercourse) and/or decreased STD or pregnancy rates. *Consistent* condom use is necessary because STD transmission can occur in one sexual contact and some studies have found that *non-consistent* use provided inadequate STD protection or resulted in higher rates of STDs.⁴ (Even consistent condom use does not provide 100% protection from STDs⁵ or prevent the increased emotional harm and sexual violence associated with teen sex.⁶ Note: Measuring rates of condom use at last intercourse does not constitute a measure of consistent condom use.)
2. **Sustained Results**—The program’s impact should last for a substantial period of time, at least 12 months following program participation, i.e., from one school year to the next.⁷
3. **Broad-based Impacts**—Program effects should occur for the intended/target population of program participants and not just for a subgroup of the target population. While subgroup effects can be important indicators of promising programs, they are not sufficient to justify a program’s dissemination.

B. Evidence of Effectiveness for School-based Comprehensive Sex Education. Four national reviews of sex education research revealed a lack of evidence of success for CSE programs delivered in classrooms to school-based populations of teens.

1. ***Emerging Answers 2007***,⁸ a review of 115 studies covering 20 years of sex education research, provided little evidence of CSE effectiveness in school settings. Of the 32 school-based CSE studies:
 - a. No school-based CSE program demonstrated a decrease in teen pregnancy or STDs for any time period.⁹
 - b. No school-based CSE programs were shown to increase the number of teens who used condoms *consistently* (i.e., every time) for even 6 months after the program ended.¹⁰ (*Consistent condom use* is necessary to achieve the partial protection from STDs that condoms can provide.^{4,5})
 - c. Only 3 school-based CSE programs increased *frequency* of teen condom use (not *consistent condom use*) for at least one year for the target population.¹¹

- d. Two programs delayed sexual debut (loss of virginity) for 1 year for the teen population.¹²
 - e. No school-based CSE program demonstrated that it had both delayed sexual debut *and* increased condom use (by the sexually active) for the intended teen population for any time period.¹³
2. ***What Works 2010: Curriculum-based Programs That Help Prevent Teen Pregnancy*¹⁴ also showed little evidence of school-based CSE effectiveness.** The National Campaign to Prevent Teen and Unplanned Pregnancy published a list of 30 programs it designated as “effective.” Of the 9 programs that were school-based CSE:
 - a. None of the 9 school-based CSE programs demonstrated a reduction in teen pregnancy or STDs.
 - b. None of these 9 programs showed an increase in *consistent* condom use by teens for even 6 months.¹⁵ (Two of these programs increased *frequency* of condom use for the target population for at least 1 year.¹⁶)
 - c. Two of these programs showed a delay in sexual debut (i.e., increased teen abstinence) for the target population for at least 1 year.¹⁷
 - d. None of the school-based CSE programs increased both teen abstinence and condom use (by the sexually active) for the target population.
 3. **The 2010 federal *Teen Pregnancy Prevention (TPP)* initiative found little evidence of CSE success in schools.**¹⁸

After an extensive review of research, 28 programs “proven” to be effective were identified and funded. Only 3 of these were school-based CSE programs that showed long-term behavioral effects on the target population:

 - Two school-based CSE programs showed a significant long-term (1 year) increase in the intended population (not a subgroup) for rates of teen abstinence¹⁷ and 1 for *frequency* of teen condom use.¹⁹
 4. **A CDC meta-analysis of sex education outcome studies found a lack of significant effects by CSE in schools.**
 - a. For the school-based CSE programs in the meta-analysis, the average effects on the outcomes of teen condom use, pregnancy, and STDs were not significant, and the effect on teen pregnancy was in the wrong direction.²⁰
 - b. The CSE programs in school settings did produce a statistically significant average reduction in teen sexual activity of about 12%. But without also showing a significant increase in teen condom use, the purported dual benefit of CSE¹³ was not demonstrated.²⁰

C. Evidence of Effectiveness for School-based Abstinence Education. Abstinence education (AE) emphasizes avoiding sexual activity and adopting healthy lifestyles. It does not include condom instruction or promotion. Scientific evaluation is relatively new to abstinence education, so the number of good studies is limited. However, when judged by the above 3 criteria, there is a pattern of evidence that indicates well-designed abstinence programs can be effective:

1. **Five peer-reviewed studies found abstinence education delayed teen sex for the target population of teens, 1 to 2 years after program participation.** Two of the programs, *Heritage Keepers*²¹ and *Reasons of the Heart*,²² reduced the number of teens who became sexually active by about one-half, 12 months after the program. *Heritage Keepers* has been included on the TPP list of approved programs. The third study of a school-based abstinence program, *Sex Can Wait*, found a significant delay in the onset of teen sexual intercourse for the target population of middle school students, 18 months after the program.²³ And a fourth school-based program, *Promoting Health Among Teens! Abstinence-only Intervention*, produced significant reductions in teen sexual debut 24 months after the program.²⁴ A fifth program, *Choosing the Best*, showed a 60% reduction in sexual debut for the teen population after 12 months.²⁵ This study met the criteria for inclusion in a federally sponsored study of sex education outcomes after under-going a peer review process.²⁶
2. **Contrary to a common criticism of abstinence education, several studies have found that these programs do not decrease condom use for teens who later become sexually active.**^{27,28} And one school-based AE program, *Making A Difference*, showed an *increase* in teen condom use (not consistent use) after 12 months.¹⁹

3. Like many evaluations of abstinence education, the 5 peer-reviewed studies above did not measure impact on pregnancy or STDs. While it is apparent that abstinent behavior would eliminate these consequences, to date there is not research evidence of those effects for school-based abstinence education.

D. Comparative Effectiveness. One reason for the perception that the CSE strategy is more effective than AE may be that CSE has often been held to different and lower standards or criteria of effectiveness (e.g., improvement on less protective behaviors, for any subgroup, or for a short time period—see Kirby, 2007⁸ for examples). However, using the recommended criteria above as indicators of effectiveness reveals a lack of evidence that school-based CSE is more effective than AE:

1. Three school-based CSE programs and 5 AE programs produced a long-term/sustained increase in rates of abstinence (delay of sexual debut) for the intended population of teens. Neither school-based CSE nor AE programs have demonstrated sustained reductions in teen pregnancy or STDs.
2. Neither CSE nor AE in classrooms have demonstrated effectiveness at increasing consistent condom use by teens (this is not an objective for AE programs); 3 CSE and one AE programs have increased less-protective behaviors—*frequency* of condom use or use at last intercourse—for at least a year for a school-based population of teens.
3. To date, school-based CSE programs have not shown evidence of effectiveness at increasing both rates of abstinence and frequency of condom use *within the same program for the same target population of teens* (the “dual effect” that CSE advocates say makes it preferable to AE). Because of this, end-users looking for an effective school-based CSE program are left to choose between a few programs that have shown success at one or the other—a) increasing the rate of teen abstinence or b) increasing the number of teens who use condoms, albeit inconsistently. Programs that do the latter do not offer a benefit that is superior to an effective abstinence program, since abstinence provides better protection for teens (100%) than condom use (even if consistent).

E. Summary of Evidence

1. Five school-based AE programs have produced broad-based and sustained increases in the percentage of youth who remain sexually abstinent, compared to 3 school-based CSE programs.
2. School-based CSE programs have shown no evidence of effectiveness at increasing *consistent condom use*, the behavior necessary for the partial protection offered by condoms. (Only a few school-based CSE programs have increased other measures of condom use—frequency, use at first/last intercourse—for a sustained time period.)
3. Comprehensive sex education purports to offer a dual benefit, that is, to be able to increase *both* rates of teen abstinence *and* condom use. However, while a few programs have achieved one or the other of these outcomes, there appears to be no evidence that any school-based CSE program has been effective at improving both of these behaviors.
4. When judged by recommended criteria of effectiveness—increased teen abstinence or *consistent* condom use or decreased pregnancy or STDs for the target population for at least 12 months—there is somewhat more evidence for school-based AE (5 programs increased abstinence) than CSE (3 programs increased abstinence).²⁹

F. Conclusions. The common perception that research evidence has proven comprehensive sex education in the schools to be more effective than abstinence education is not accurate. There is not evidence that the comprehensive strategy—combining abstinence and condom instruction in the same classroom—has been successful. In fact, for school-based programs there is somewhat more evidence of effectiveness for abstinence education than comprehensive sex education. **In conclusion, the research does not support abandoning abstinence education in the schools in favor of comprehensive sex education, which has produced little evidence of success in school settings.**

Notes & References

1. Centers for Disease Control and Prevention. (2008). *Nationally Representative CDC Study Finds 1 in 4 Teenage Girls Has a Sexually Transmitted Disease*. Press Release 11 March – 2008 National STD Prevention Conference. Available at www.cdc.gov/stdconference/2008/media/release-11march2008.htm.

2. The development of standards for scientific evidence of program effectiveness has been undertaken by national entities like *The Society for Prevention Research (SPR)*, *The What Works Clearinghouse*, 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" (Society for Prevention Research, 2004; also Flay, et al., 2005). These standards include criteria for long-term, sustained effects and concerns about main effects vs. subgroup effects.
3. The school is the setting in which many CSE interventions and most abstinence education programs occur. It is the setting most people think of when they hear the term *sex education*; in addition, programs in schools tend to be the focus of the public policy debate about sex education. We define "school-based" sex education as programs that serve a school population, are held at a school in a classroom-type setting (including after school or Saturdays) use a sex ed curriculum, & can be used at most schools. By contrast, clinic or community-based programs often serve unique populations & use methods not workable in schools. Not included in the school-based category are service-learning programs that occur primarily in community agencies & settings, multi-component youth development programs that are not compatible with a classroom setting & methodology, and programs that are not sex education.
4. 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*. National Center for HIV, STD, and TB Prevention. Atlanta, GA: U.S. Department of Health and Human Services (paragraph 4). Retrieved October 31, 2003 from www.cdc.gov/nchstp/od/latex.htm). 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" (p.2171 in 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):2171–9.) 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." (p.528 in Shlay JC, McCung MW, Patnaik JL et al., 2004. Comparison of sexually transmitted disease prevalence by reported level of condom use among patients attending an urban sexually transmitted disease clinic. *Sex Transm Dis*; 31(3):154–60.) See also Crosby RA, DiClemente RJ, Wingood GM, Lang D, Harrington KF. (2003). Value of consistent condom use: A study of sexually transmitted disease prevention among African American adolescent females. *American Journal of Public Health*; 93: 901–2.; and 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, 72–80.
5. Consistent condom use is the behavior upon which most estimates of condom effectiveness 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 ET, Krantz E, Gottlieb SL, Magaret AS, Langenberg A, et al. (2009). A Pooled Analysis of the Effect of Condoms in Preventing HSV-2 Acquisition. *ARCH INTERN MED*, 169 (13):1233-1240; Weller S & Davis K. (2002). Condom effectiveness in reducing heterosexual HIV transmission. *Cochrane Database Syst Rev*, 1. [Abstract].; 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*, 30:273–9.; Holmes KK, Levine R, Weaver M. (2004). Effectiveness of condoms in preventing sexually transmitted infections. *Bull World Health Organ*, 82(6):454–461.
6. See Hallfors DD, Waller MW, Ford CA et al. (2004). Adolescent depression and suicide risk: association with sex and drug behaviors. *Am J Prev Med*. 27:224–230.; Sabia JJ & Rees DI. (2008). The effect of adolescent virginity status on psychological well-being. *Journal of Health Economics*, 27:1368–1381.; Silverman JG, Raj A, Clements K. (2004). Dating violence and associated risk and pregnancy among adolescent girls in the United States. *Pediatrics*, 114(2), 220–225.
7. This standard is commonly used by researchers evaluating youth programs. For example, "Sustained impact," defined as "at least one year beyond treatment" is required by the "Blueprints Programs" of the Center for the Study and Prevention of Violence, for the designation of an intervention as an effective or model program (see <http://www.colorado.edu/cspv/blueprints/criteria.html>) and long-term impact is 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 & Human Services.
8. Kirby D. (2007). *Emerging Answers 2007*. Washington DC: National Campaign to Prevent Teen and Unplanned Pregnancy. For details on the specific studies reviewed, listed by author, see Laris BA & Kirby D. (2007). *One Page Summaries of the Evaluations Referenced in Emerging Answers 2007*. Washington DC: National Campaign to Prevent Teen and Unplanned Pregnancy.
9. Seven non-school classroom-based prevention programs in *Emerging Answers 2007* reported reduction in pregnancy rates for the full program group at least 9 months after the program. One was an abstinence program (Doniger et al., 2001), two were service learning programs (Allen et al., 1997 & Philliber et al., 1992), one was the Seattle Social Development program (SSD) for elementary school children and their parents that included no sex education (Lonczak et al., 2002), one was a multi-component youth development program, including clinic services (Philliber et al., 2002), one was an in-home parent training

program (Stanton et al., 2004) and the last was a clinic-based program (Winter et al., 1991). Only 3 prevention programs in *Emerging Answers 2007* reported reducing STD rates for more than 6 months after the program. Two were clinic-based programs for high-risk teens (DiClemente et al., 2004 & Jemmott et al., 2005, both 12-month effects) and the third was a time-intensive parent training program that had a 24-month effect on reducing teen STDs (Prado et al., 2007). A later study showed the SSD program also reduced STD rates (Hawkins, et al., 2008).

10. Only 10 CSE studies in *Emerging Answers 2007* measured this outcome and only 3 programs reported significant program impact on consistent condom use that lasted more than 3 months; all were 12-month effects. One was a community-based parent training program for fathers of teen boys (Dilorio et al., 2007), one was a clinic-based program for high-risk girls (DiClemente et al., 2004), and the third was a school-based program that did not *increase* consistent condom use for the participants, but reported a significant effect because the control group *declined* somewhat more substantially on this outcome than the treatment group. However, this difference existed at baseline and was not controlled for in the outcome analysis (Villarruel et al., 2006). Two school-based programs increased consistent condom use for 3 months (Jemmott et al., 1998 & Walter & Vaughn, 1993).

11. See Coyle et al., 2004, Fisher et al., 2002, and Jemmott et al., 1998, in *Emerging Answers 2007*. Six other school-based programs are reported in that review which increased condom use (but not *consistent* use) for 3 or 6 months or for a subgroup of program participants.

12. Three different evaluations of *Reducing the Risk* (Hubbard et al., 1998, Kirby et al., 1991, Zimmerman et al., 2008) found reductions in teen sexual initiation after at least one year for the target population, as reported in *Emerging Answers 2007*. The Hubbard study also reported increased condom use, but only for the subgroup of students not sexually experienced at the pretest. Another school-based CSE program, *Postponing Sexual Involvement*, showed a one-year delay in teen sex for the target population (see Howard M. & McCabe JB. (1990). Helping teenagers postpone sexual involvement. *Family Planning Perspectives*, 22: 21–26). However, a subsequent evaluation of this program showed only a subgroup effect (see Aarons, et al., 2000). Four studies of non-school-based CSE programs in *Emerging Answers 2007* reported reduced rates of sexual initiation for the full program group for at least 12 months: a clinic-based CSE program and a CSE program at a drug treatment center (St. Lawrence, 1995 & 2002, respectively), a community-based CSE program within public housing (Sikkema et al., 2005), and a social skills program in schools, which was not a sex education program (Lonczak et al., 2002).

13. This dual effect is the benefit CSE claims over AE—that a CSE program will decrease sexual risk for both virgin teens (by delaying sexual debut) and non-virgin teens (by increasing condom use) within the same population of youth. Two school-based CSE programs reported an increase in both abstinence and condom use but in each case one of the effects was not for the target population but only a subgroup: an evaluation of *Reducing the Risk* showed a delay in sexual initiation for the full target population and an increase at the same time point (18-month follow-up) in teen condom use for the subgroup that was not sexually initiated at the pretest; a study of *Safer Choices* found an increase in condom use by the target population and a delay in sexual initiation for a Hispanic subgroup (comprising 25% of the population) 18 months after the program. (See Hubbard et al., 1998 & Coyle et al., 2001/2004, in *Emerging Answers 2007*.)

14. See Suellentrop K. (2010). *What Works 2010: Curriculum-Based Programs That Help Prevent Teen Pregnancy*, National Campaign to Prevent Teen and Unplanned Pregnancy: Washington DC., and Ericksen IE, Weed SW, Osario A. (2010), “Demonstrating Credible Evidence of Effectiveness for Abstinence Education,” a poster presentation at the 2010 Annual Conference of *The Center for Research & Evaluation of Abstinence Education*, sponsored by the Family & Youth Services Bureau of the U.S. Department of Health & Human Services, April 19-20, 2010, Arlington, VA. Available at instituteresearch.com

15. See notes on Villarruel, et.al., (2006) and **consistent condom use** in Note #10 above.

16. See Coyle et al., and Jemmott et al., 1998, in Laris BA & Kirby D. (2007). *One Page Summaries of the Evaluations Referenced in Emerging Answers*

2007. Washington DC: National Campaign to Prevent Teen and Unplanned Pregnancy.

17. See *Reducing the Risk* in Note #12 above, and *It's Your Game: Keep It Real*, in Tortolero, et al., (2010). *It's Your Game: Keep It Real: Delaying Sexual Behavior with an Effective Middle School Program. Journal of Adolescent Health, 46: 169–179.*

18. See *Teenage Pregnancy Prevention: Programs for Replication—Intervention Implementation Reports*. Office of Public Health and Science, U.S. Department of Health and Human Services. Available at:

<http://www.hhs.gov/ophs/oah/prevention/research/programs/index.html>.

19. Jemmott III JB, Jemmott LS, Fong GT. (1998). Abstinence and safer sex HIV risk reduction interventions for African American adolescents. *Journal of American Medical Association, 279(19): p1529-1536.*

20. See Weed SE (in press). Sex Education Programs for Schools Still in Question: A Commentary on the CDC Meta-Analysis, *American Journal of Preventive Medicine*; Community Guide Staff. (2009). *Univariate Analysis_CRR_031909*. Guide to Community Preventive Services, Centers for Disease Control & Prevention; and Chin HB, Sipe TA, Elder R, Mercer SL, et al. (in press). 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*.

21. Weed SE, Ericksen IH, Birch PJ. (2005). An evaluation of the *Heritage Keepers Abstinence Education* program. In Golden A (ed.) *Evaluating Abstinence Education Programs: Improving Implementation and Assessing Impact*. Washington DC: Office

- of Population Affairs and the Administration for Children and Families, Department of Health & Human Services 2005:88–103.
22. Weed SE, Ericksen IE, Lewis A. (2008). An Abstinence Program’s Impact on Cognitive Mediators and Sexual Initiation. *Am J Health Behav*; 32(1):60–73.
 23. Denny G & Young M. (2006). An evaluation of an abstinence-only sex education curriculum: An 18-month follow-up. *Jrnl Sch Health*, 76(8): 414–422.
 24. Jemmott III JB, Jemmott LS, Fong GT. (2010). Efficacy of an abstinence-only intervention over 24 months: a randomized controlled trial with young adolescents. *Arch Pediatr Adolesc Med*. 2010;164(2):152-159.
 25. Weed SE, Anderson NA, Ericksen IE. (2008). What kind of abstinence education works? Comparing outcomes of two approaches. Salt Lake City: Institute for Research & Evaluation. March 25, 2008.
 26. Chin HB, Sipe TA, Elder R, Mercer SL, et al. (in press). 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*. In press.
 27. See Jemmott et al., 2010 (Note #24 above) and 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, Inc. April 2007.
 28. One study has reported that teens who took a virginity pledge were less likely to use condoms the first time they had intercourse. However, there was no indication as to whether these teens had received an abstinence education program, and they were not less likely to use condoms at last intercourse or over a 12-month period than non-pledging teens. See Bruckner H & Bearman P. (2005). After the promise: The STD consequences of adolescent virginity pledges. *The Journal of Adolescent Health*, 36(4):271–278.
 29. There are several studies of school-based comprehensive sex education which have shown statistically significant effects on various lesser measures of sexual activity or condom or contraceptive use, or have effects that were of shorter duration than 12 months. The same can be said of abstinence education. These studies may have identified some promising programs. However, the more stringent criteria for effectiveness that were employed in this review were proposed as a way to identify programs that show evidence of success that is sufficient to justify their widespread dissemination and financial support. It is our view that the small number of CSE programs which have met these criteria does not constitute sufficient evidence to support systematic implementation of the comprehensive sex education strategy in the American school system, notwithstanding the higher number of studies/programs that produced lesser outcomes for shorter time periods.

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