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ABSTINENCE EDUCATION IN CONTEXT: HISTORY, EVIDENCE, PREMISES, AND COMPARISON TO COMPREHENSIVE SEXUALITY EDUCATION

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ABSTRACT

This chapter provides a broad picture of the abstinence education movement in the U.S. and the historical, political, and theoretical context of its journey. It describes the problems it has targeted, the policies and programs it has designed to solve them, and the results of these various interventions. Solutions to the problems posed by adolescent sexual activity have fallen into three camps: risk reduction, risk avoidance, and a combination of those two approaches. This historical context permits a comparative analysis of the most common sex education strategies and provides a better understanding of what abstinence education actually looks like—what it is and what it is not. In addition to describing the outcomes of the different approaches to sex education, we examine their foundational premises and assumptions, with the intent to clarify not only what does or does not work but also the reasons for success or failure. As important as the effectiveness question is, the underlying rationale, theory, or premise on which any program strategy is based is equally important if we are to understand how to benefit from prior successes and failures. In addressing these issues, we propose and describe an empirical model that delineates key predictors of adolescent risk behavior and demonstrates important causal mechanisms that program developers can focus on for more effective interventions.

INTRODUCTION

I. Historical Context

Sex education in America has a fairly long and colorful history, influenced along the way by several identifiable events that are briefly summarized here. Preventing the spread of STIs, especially syphilis and gonorrhea, became a national concern during World War I and again during World War II. While the campaign against those infections did not occur in a public school setting, it can be seen as probably the first sex education initiative undertaken by the government. When sex education began in the early 1900s to gain a foothold in the public schools, the emphasis was on “social hygiene,” with sexual health problems being attributed primarily to ignorance, and education being seen as the solution. Sexual activity outside marriage was thus viewed as having significant medical implications, not just moral ones. Sex education emphasized premarital abstinence, and marriage was considered the best antidote to disease and moral turpitude. After the discovery and use of antibiotics, particularly penicillin, the national concern about STIs waned, at least temporarily.

In 1912 and 1914, the National Education Association (NEA) passed resolutions calling for the adoption of sex education in the schools (Bigelow, 1916), with Chicago being an early testing ground for implementation, and physicians being the educators (Moran, 1996). The instruction was intended to be preventive in nature, with an emphasis on physiology, disease, and abstinence until marriage. Opposition to such instruction came from parents, religious groups, and others, and for a variety of reasons. The Chicago experiment did not last long, but it did spawn other efforts elsewhere that made use of some of the hard lessons learned from it, particularly concerning the importance of creating greater public support. By 1920, 40% of all high schools responding to a survey said they implemented some form of sex education (Carter, 2001). The Public Health Service continued to fund programs designed to prevent and treat STIs, including teen girls and boys (Public Health Service, 1924). This effort suffered from budget constraints, but regained momentum in 1936 following a severe syphilis outbreak (Cutler, 1988). WWII soldiers were a major focus of this renewed campaign.

During the 1920s and 1930s, society experienced a noticeable shift towards permissive behaviors of all kinds, including sexual behavior (Tolson, 1999). In the 1920s, Margaret Sanger (1922), Maurice Parmelee (1920), and others promoted the recreational benefits of sex beyond its procreational function. Sanger is generally credited with founding the birth control movement in America, with the goal of making contraception easily accessible to women (Jensen, 2007). She argued that the primary purpose of birth control was to encourage fewer children from the “unfit” portions of American society, a common theme among eugenicists at the time. But she also wanted to free women from sexual constraints and inhibitions, and to counter the double standard of morality for men and women. Antonucci (1995) states that Sanger had an aversion to sexual abstinence, believing that it caused mental disorders and “nervousness,” and had a similar aversion to the constraints of the marriage bed as being a

“degenerating influence” in society. Sounding quite radical in her day, Sanger has influenced what we can see today in those sex education curricula that emphasize the pleasurable aspects of sex while refraining from any kind of negative judgment of sex outside of marriage.

In 1948, Sanger helped to fund Gregory Pincus, a research biologist, to develop an early birth control pill (Lawrence, 2008) which was introduced to the public in 1959 (Galvin, 1998). Sex education programs subsequently began advocating use of the pill as a priority message. Alfred Kinsey published his two famous books, *Sexual Behavior in the Human Male* (1948) and *Sexual Behavior in the Human Female* (1953), launching another challenge to the traditional sexual morality that espoused monogamy and premarital abstinence. Like Sanger before him, Kinsey believed that abstinence before marriage could lead to psychological or emotional harm (Turan, 2004). A critique by the American Statistical Association (Cochran, Mosteller, Tukey, & Jenkins, 1954), pointed out that Kinsey’s conclusions about Americans’ sexual behavior were based on unrepresentative samples (three-quarters of his subjects were volunteers; one quarter were inmates or ex-convicts), but such criticisms did not deter him from advocating “open marriage” and other forms of sexual experimentation.

Feldman (1969) chronicles the development of the sexual revolution of the ‘60s and early ‘70s, stating that it “may ultimately be seen as one of the most sweeping significant social developments in our history” (p.54). He describes the sexual ethos promoted by that revolution as characterized by immediate sexual gratification, exhibitionism, sex without emotional commitment or connection, and a general freedom to use one’s body “as he wishes, to give himself pleasure” (p. 55). Contributors to the sexual revolution included Hugh Hefner and the Playboy empire, Betty Friedan and the Women’s Liberation Movement, Mary Calderone and the Planned Parenthood organization, and the subsequent formation of the *Sexuality Education and Information Council of the United States* (SEICUS). SEICUS, along with Planned Parenthood, has been more directly involved in the sex education debate, whereas the other groups and individuals were contributing more generally to a cultural shift in sexual attitudes and values¹.

This brief overview provides a backdrop to our current state of affairs in the ongoing sex education debate. In that debate, national and state policy efforts have been centered on two major trends in our social, economic, and health arena: teen pregnancy and sexually transmitted diseases.

Teen pregnancy. The problem of adolescent pregnancy has a history of social and political attention that only partially corresponds with the data trends documenting its actual rise and fall. For example, in the 1950s and 1960s, teen pregnancy rates were almost double what they are today (Furstenburg, 2007; Vinoskis, 1981). As a social or policy issue, teen pregnancy received scant attention until around 1965 when Daniel Patrick Moynihan wrote a controversial report (*The Negro Family: The Case For National Action*) describing the

¹ A more detailed account of the early history of sex education can be found in Huber & Firmin (2014), from which this summary was drawn.

disintegration of the black family in America, with a primary culprit in this disintegration being the rising rate of nonmarital births in the African-American community.

Vinovskis (1981) points out that “both the policy makers and the news media emphasized the ‘epidemic’ nature of adolescent pregnancy. Almost everyone in the Administration and the Congress assumed that the problem of adolescent pregnancy was a new and growing crisis for Americans ...and therefore these policy-makers usually advocated drastic and immediate steps to deal with the ‘unprecedented situation’” (pp. 205-230).

During this time period (1950-1975), marriage rates were declining, marriage was occurring at later ages, the “baby boom” was increasing the number of teens in the population, and sexual activity rates among teens were on the rise (Zelnick, Kantner & Ford, 1981). This combination of social trends led to an increase in nonmarital childbearing (Ventura & Bacharach, 2000). Furstenburg (2007) and Vinovskis (1981) both point out that it was the changing *ratio* of nonmarital teen births to all births among teens that sounded the proverbial alarm about the “epidemic” of teen pregnancy. In fact, in absolute numbers, *fewer* teenagers were getting pregnant, but of those that did, a steadily increasing percentage did not marry. As a result, teenage parenthood became synonymous with single parenthood.

After 1975, teen pregnancies, births, and abortions rose again and peaked around 1990, then began an overall decline that continued through 2012. In 2011, the birth rate for teenagers ages 15-17 was 15.4 per 1,000, down 60% from 1991. For teens ages 18-19, the birth rate was 54.1 per 1,000; down 42% from 1991. However, of the 333,771 births to females under age 20, nearly nine of ten (89%) were to unmarried teenagers. With fewer teens entering into marriage, the proportion of births to unmarried teens, with some variation depending on geography and ethnic group, has increased dramatically--89% in 2011 versus 29% in 1970 (Solomon-Fears, 2013).

Although teen pregnancies, abortions, and births have all steadily declined since 1990, social and political attention remains highly focused on adolescent pregnancy and childbearing, in part because of their negative social and economic consequences for teen mothers and their children:

Teen childbearing is associated with adverse health and social outcomes for teen mothers and their children, although these outcomes often reflect preexisting social deficits. Compared with women who delay childbearing until their 20s, teen mothers are more likely to drop out of school and have low educational attainment; to face unemployment, poverty, and welfare dependency; to experience more rapid repeat pregnancy; to become single mothers; and to experience divorce, if they marry. Infants of teen mothers are more likely to be premature and experience infant mortality. The children of teenage mothers do less well on indicators of health and social wellbeing than do children of older mothers (Santelli & Melnikas, 2010, p.371).

These social and economic costs of teenage (and overwhelmingly nonmarital) childbearing have been widely and repeatedly publicized. A recent report (National Campaign to Prevent Teen Pregnancy, 2013) highlighted the economic costs by combining child welfare benefits, public sector health care expenses, spending on incarceration for the sons of women

who had children as adolescents, and lost tax revenue—for a total of 9.4 billion dollars in the 2010 year alone.

These concerns have fueled ongoing efforts to intervene both nationally and locally, and also led to vigorous policy debates about the best course of action for interventions to take. It is interesting to note that national attention continued to focus on solving the supposed teen pregnancy crisis, when in fact the data showed that teen pregnancies were decreasing while the percentage of nonmarital births to teens continued to climb as fewer and fewer teen mothers got married. One could argue, based on what the research reveals about the high costs of teens raising children without the support of a marriage partner, that the decline in marriage was the key societal problem. And yet, public policy continued to focus on teen pregnancy without addressing the sharply declining marriage rate or the desirability of healthy family formation.

Sexually transmitted infections (STIs). A second major trend, though slower to gain public and political attention, was the identified increase in adolescent rates of STI. While teen pregnancy—the most visible consequence of adolescent sexual activity—has been decreasing, STIs have been called a “hidden epidemic” (Centers for Disease Control (CDC), 2001; Fortenberry, 2002). During the 1950s and 1960s, gonorrhea and syphilis were identified, and to some extent monitored, by state and federal agencies. By the early 2000s, there were over 25 separate STIs on the CDC list, though most of them were not being systematically monitored. HIV/AIDS was of particular concern because of its life-threatening potential and because there was not a known effective cure for it.

CDC estimates that nearly 20 million new STIs occur every year in this country, half among *young* people ages 15–24. One quarter of sexually active teens have an STI, (Trenholm, et al., 2007) and adolescent rates for most STIs are on the rise (CDC, 2001, 2003a, 2003b). Each of these infections is a potential threat to an individual’s immediate and long-term health and overall well-being. In addition to increasing a person’s risk for HIV infection, STIs can lead to severe reproductive health consequences, such as infertility and ectopic (tubal) pregnancy.

STIs are also a serious drain on the U.S. health care system, costing the nation almost \$16 billion in health care costs every year (CDC Fact Sheet, 2013). CDC used conservative assumptions in generating its estimates, so the true numbers of STIs in the United States may be even higher than estimated. Many cases of chlamydia, gonorrhea, and syphilis continue to go undiagnosed and unreported, and data on several additional STIs—such as human papillomavirus (HPV), herpes simplex virus, and trichomoniasis—are not routinely reported to CDC. As a result, the annual surveillance report captures only a fraction of the true burden of STIs in America (CDC, 2012).

Surveillance data continue to show that numbers and rates of reported chlamydia and gonorrhea cases are highest in Americans between the ages of 15 and 24. While other STIs are not monitored as systematically, CDC estimates indicate an increase in genital warts, genital herpes, and vaginal infections since 1966. HPV, which can cause cancer, was the most

common STI in terms of overall prevalence and newly reported infections (Satterwhite, et al., 2013).

Chlamydia rates have essentially doubled since 1992. Gonorrhea rates have declined since 1976, but continue to be the highest among 15-25 age group, among females, and among African Americans. Syphilis rates have declined overall since the early 1940s, although among men who have sex with men, there has been a large increase in syphilis since 2007. Overall, rates for men are significantly higher than for women, and higher for African Americans than other races. Each year, one in four teens contracts an STI (Guttmacher Institute, 1994), and one in two sexually active persons will contract an STI by age 25 (Cates, Herndon, Schulz, & Darroch, 2004). (See the web site of the American Sexual Health Association for a concise summary of statistics on sexually transmitted infections (<http://www.ashsexualhealth.org/std-sti/std-statistics.html>)).

Both young men and young women are heavily affected by STIs, but young women face the most serious long-term health consequences. It is estimated that undiagnosed STIs cause 24,000 women to become infertile each year (CDC Fact Sheet, 2012). The consequences of STIs appear to at least equal those of teen pregnancy, at least in terms of frequency and damage to physical health.

Psychological consequences of premature sexual activity. There is an increasing recognition that the risks associated with adolescent sexual activity, for both males and females, reach beyond pregnancy and STI. Whether or not a pregnancy or STI occurs, sexual initiation has been associated with poorer emotional health for adolescents, including lower self-esteem, regret of sexual activity, depression, and suicide, as well as a higher likelihood of experiencing sexual exploitation (such as statutory rape), dating violence, and unwanted or forced intercourse/rape. An analysis of the national Ad-Health data (a large-scale study of U.S. adolescents conducted from 1994 to 1996) reported that most sexually active teens had experienced a loss of self-esteem at first intercourse (Bearman & Bruckner, 2001). In a recent survey of a representative sample of American adolescents, 67% of those teens who had already initiated sex said they wish they had waited. The number was even higher for girls, at 77% (National Campaign to Prevent Teen Pregnancy, 2003).

Another analysis of the Ad-Health data found that sexually experienced adolescents were 2.5 to 4 times more likely than virgin teens to be depressed or have suicidal thoughts (Hallfors, et.al. 2004). And a third analysis of this data reported that among sexually experienced teens, girls were three times and boys eight times more likely to have attempted suicide than those who were virgins (Rector & Noyes, 2003). In 1991, the journal *Pediatrics* reported that the attempted suicide rate for sexually experienced girls between 12 and 16 is six times higher than it is for girls that age who are virgins (Orr, Beiter, & Ingersoll, 1991). One study (Hallfors et al., 2004), seeking to clarify whether teen sexual activity is the cause or result of depression, found that among adolescent girls, depression is *not* consistently followed by sexual activity, but sexual activity is frequently followed by depression. Teens who engage in sexual activity are also more likely to become enmeshed in a “problem behavior syndrome” that includes other-risking taking and antisocial behavior such as drug and alcohol use and crime (Armour & Haynie, 2007).

Sexual exploitation and abuse. Sexual exploitation or abuse is not uncommon among sexually active adolescent girls. Among teen girls initiating sex before age 14, 18% (more than one in six) say their first intercourse was not voluntary (Abma, et.al. 2004). The same survey reported that among females whose first intercourse occurred before age 20, only 34% said they really wanted it to happen (Abma, et.al. 2004). Statutory rape—defined as a teen under age 16 having sex with a partner three or more years older—is commonplace among sexually experienced young adolescent girls. In the U.S., 41% of sexually experienced 15-year-old girls, 53% of the 14-year-olds, and 65% of those 13 years or younger report they have experienced statutory rape, with the average age of the partner being more than five years older (Moore & Manlove, 2005). Sexually active high school girls are almost 5 times more likely to be victimized by dating violence than girls who are abstinent (Silverman & Clements, 2004). And the 2005 Youth Risk Behavior Surveillance Summary reported that by 12th grade, approximately 1 in 8 high school girls had been physically forced to have intercourse against her will (Eaton, ET .al. 2006).

In recent interviews with unmarried teen mothers in New Mexico, the senior author noted another example of the emotional fallout of teens' sexual activity. For these young unwed mothers, what was most distressing was not that they now had a baby to raise. They were coping with that by continuing their schooling, planning for their future, and learning about motherhood and child care. What appeared from their comments to be much more upsetting was that the baby's father had abandoned them, and was not taking any responsibility for the child. The fact that they had been used and abandoned was more devastating than that they now had a child to care for. In a similar way, STI consequences, especially those that are lifelong and/or life-threatening, can have deep and ongoing psychological repercussions.

There is now a broad medical and social science consensus about the negative consequences of teen sexual activity, particularly those consequences that are obvious and observable such as STIs, unwed pregnancy, and single parenthood. There is, however, far less consensus about what to do regarding these consequences. We turn now to the different approaches to addressing these problems.

II. Attempted Solutions to the Problems Posed by Teen Sexual Activity

Solutions to problems depend a great deal on how we choose to define those problems. The *risk reduction* approach (sometimes called comprehensive sex education, or CSE) to the problems posed by teen sex—an approach originally called “safe sex,” then later renamed “safer sex” (because condoms sometimes failed to prevent pregnancy and STI transmission), then finally called “risk reduction”—argues that most teenagers are going to have sex and that their sexual activity is not necessarily problematic in and of itself. Rather, the risk reduction approach defines the real problem as being the pregnancy and STI consequences of teen sexual activity, and it therefore sees providing information about and access to contraceptive devices, along with information about STIs, as the best solution. For example, the Alan Guttmacher Institute, a strong and early supporter of this approach as the best way to reduce teen pregnancy, stated: “In the United States, poverty and inequity clearly are behind much of our high rates of pregnancy, birth and abortion. But lack of sensitive, confidential, low-cost

contraceptive services and the denial of accurate and frank information about sex, are equally to blame” (Guttmacher Institute, 2000, p. 2). The Family Planning and Population Research Act of 1970, an amendment to the Public Health Service Act, was an early attempt to address the teen pregnancy “crisis” by making grants available to States to establish family planning services.

A second, fundamentally different approach to the problems posed by teen sexual activity emphasizes primary prevention by encouraging *risk avoidance* through abstinence from unmarried sexual activity. This approach includes nonmarital pregnancy and STIs in its definition of the problem, and points out that since abstinence is the only 100% effective way to avoid those undesirable consequences, abstinence education is the approach that is truly in the best interest of young people and society. Moreover, abstinence education views adolescent sexual activity as inherently risky behavior that exposes teens not only to the dangers of pregnancy and STI but also to the risk of negative psychological consequences (regret, lowered self-esteem, depression, relationship problems, etc.). Risk avoidance means avoiding *all* the dangers of premature sexual involvement. This approach does not assume that teens will inevitably become sexually active, and cites evidence showing that sexual activity rates among teenagers do in fact vary widely as a function of their beliefs and values, family attitudes, peer group norms, the kind of sex education they receive, community supports, and other factors that are amenable to social and educational influence.

Abstinence education, based on the risk avoidance philosophy, was formally launched at the federal level in 1981 with the passing of the Adolescent Family Life program (Title XX of the Public Health Service Act), introduced by Senators Ted Kennedy (Democrat) and Orin Hatch (Republican). While these two Senators were adversarial on many issues, Title XX was one of their cooperative ventures. The 1996 Welfare reform law also provided funding for abstinence education block grants to states, known as Title V, section 510. It included specific criteria defining abstinence education; for example,

- has as its exclusive purpose, teaching the social, psychological, and health gains to be realized by abstaining from sexual activity;
- teaches abstinence from sexual activity outside marriage as the expected standard for all school-age children;
- teaches that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, STI, and other associated health problems;
- teaches that a mutually faithful monogamous relationship in context of marriage is the expected standard of human sexual activity;
- teaches that sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects;
- teaches that bearing children out-of-wedlock is likely to have harmful consequences for the child, the child’s parents, and society;
- teaches young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances; and
- teaches the importance of attaining self-sufficiency before engaging in sexual activity.

Subsequent programs titled SPRANS (Special Projects of Regional and National Significance), later replaced by CBAE (Community Based Abstinence Education), continued the federal funding sources for abstinence education. Funding for these programs was discontinued in the October 2010 budget, and was replaced by replaced by (1) the Teen Pregnancy Prevention program (TPP) and (2) the Personal Responsibility Education Program (PREP), with an emphasis on “evidence-based” programming.

In recent years, some have advocated a third approach—a combination of the risk reduction and risk avoidance strategies. Here, the premise is that both strategies are needed, and that they are compatible—can be presented side by side, with positive effects. While some risk reduction (CSE) programs purport to emphasize both abstinence and contraceptive strategies, in reality the abstinence message is minimized at the expense of the emphasis on contraceptive practices. We will use the term *risk reduction* for those programs where the primary emphasis is on “safer sex.”

An examination of these three strategies—risk reduction, risk avoidance, and a combination of the two—provides a context that will clarify what is distinctive about the abstinence education (risk avoidance) approach, which is the main focus of this chapter.

III. What Works? The Evidence-Based Approach to Programmatic Interventions

Much attention has been given to the term “evidence-based” in the ongoing debate about which sex education approach best protects adolescents and society from the harmful consequences of youthful sexual activity. This section deals with the “evidence of effectiveness” question. It seems timely for evidence to be reviewed, or better yet scrutinized, so that policy decisions in the future can be based less on the “evidence-based” *label* and more on the actual evidence. Busy policymakers do not always have the time or inclination to get into the details of the evidence as they go about trying to make informed decisions. In this review, the quality and the comparability of evidence relevant to the debate will be examined. In the process, we will also examine the reasons for the success or failure of the different strategies. We begin our discussion of effectiveness by addressing the question of what the criteria for effectiveness should be.

A. Effectiveness Criteria

Criteria for assessing the effectiveness of risk reduction programs. Reduced pregnancies and STIs have been the primary goals of risk reduction programs, and therefore are the fundamental outcomes for determining their effectiveness. While advocates of this approach and media reports often present this strategy as successful in reducing pregnancy and STI rates, it is surprising to see how little actual evidence exists to support that claim.

Consider, for example, a review of 115 evaluation studies representing the best sex education research over a 15-year period (Kirby, 2007). Only 22 of the 115 studies measured reduction of STIs as a program outcome. Twenty of those studies found no reduction in STIs. The two studies that did find a reduction both occurred not in a school context but with self-selected patients in a clinic setting. In reading the report carefully, one will find that there were no school or community-based “risk reduction” programs that actually reduced STIs.

A second example: “What Works 2008: Curriculum-Based Programs that Prevent Teen Pregnancy,” published by the National Campaign to Prevent Teen and Unplanned Pregnancy, (2008), listed 28 programs that have the “strongest evidence of success” in preventing teen pregnancy. Upon closer examination, however, we see that 20 of those 28 programs did not measure rates of teen pregnancy as an outcome. Of the 8 programs that did, 2 did not reduce teen pregnancy, 3 had impact on pregnancy that lasted less than 12 months, and only 3 reduced pregnancy for 12 months or longer. Of those 3 interventions, one was not a sex education program—it did not include any sex education or discussion of sex (Lonczak, et al., 2002)—and one of the remaining two was found to be ineffective in a second evaluation study (Kirby, et al., 2005). This leaves only one CSE program that reduced teen pregnancy rates for at least one year, out of 28 supposedly “effective” programs. This does not constitute “strong evidence for success” as claimed by the publication’s “What Works” title.

In the rest of the chapter, we focus our analysis on programs designed for and implemented in school settings, which is where most sex education programs occur.

Given the risk reduction model’s lack of evidence of program impact on the very outcomes (pregnancy and STI) it is designed to ameliorate, it has turned to intermediate outcomes, such as “condom use at last intercourse,” “condom use at first intercourse,” or “frequency of condom use,” as a basis for establishing “effectiveness.” Effectiveness has been attributed to a program if there was a significant increase in the percentage of students who met even one of these criteria; for example, “Condom use at *last* intercourse increased from 35% to 43%” (Kirby, 2007). While a change of this kind could be significant statistically speaking, its impact on STI and pregnancies would be inconsequential, even if that small increase were maintained for a long time. These intermediate outcome measures do have some utility, but they fall far short of demonstrating a meaningful impact on the longer-term outcomes of primary interest—STI and pregnancy.

Criteria for assessing the effectiveness of risk avoidance (abstinence) programs. The criteria for effectiveness of abstinence-based programs are more stringent. These criteria are that there will be a lower rate of *initiation* of sexual activity (sexual debut), a higher rate of *discontinuation*, or both. The standard is not (as with condom education) *abstinence on first date*, or *abstinence on last date*. Occasional abstinence or frequent abstinence is not the goal of abstinence education interventions. In comparing the effectiveness of abstinence education and risk reduction, it would be inappropriate to conclude that abstinence education failed while using a high standard for success, and CSE succeeded using a much lower standard.

In addition, if we wish to compare the effectiveness of the risk reduction and abstinence education approaches, we must look at studies that used comparable settings and populations.

Most abstinence education programs, including those funded under Title V, Title XX, and CBAE, have been offered in a school setting, either during or after school. A few are based in community settings such as recreation facilities. These community-based strategies offered to *all* youth in a group setting should not be equated with *clinical intervention* strategies where self-selected youth and others seek health services (including condoms), often on a one-on-one basis. A risk reduction or condom-centered strategy that is used in a clinic setting with clients seeking contraceptives or STI diagnosis and treatment is obviously different in many respects from a sex education program implemented in a school setting with a general population of students. Results of programs in these two different settings should not be compared with each other. We cannot expect that approaches found effective in one setting would necessarily work well in the other, or that the findings from the clinical interventions could be generalized to community-based strategies aimed at a whole community.

The development of reasonable and rigorous standards for scientific evidence of program effectiveness has been undertaken by national groups such as *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 its publication, "Standards of Evidence: Criteria for Efficacy, Effectiveness, and Dissemination" (Society for Prevention Research, 2004; also Flay, et al., 2005). These standards include a requirement of long-term sustained effects as well as attention to main effects vs. subgroup effects. Standards of this kind provide us with a credible basis for determining the effectiveness of sex education programs.

Drawing on the scientific community's efforts to establish meaningful standards of evidence for assessing program effectiveness, we maintain that a sex education program must meet at least three criteria—equally applicable to the risk reduction and risk avoidance approaches—in order to claim effectiveness:

1. Significant protection. The first criterion of effectiveness is significant protection against the problems a sex education program is designed to reduce. Abstinence education (risk avoidance) and CSE (risk reduction) share the ultimate goal of reducing teen pregnancies and STI. However, data on those outcomes are difficult to obtain for individuals and are typically not collected in school-based program evaluations. That difficulty leads researchers to look at intermediate outcomes. As we have already indicated, the intermediate goals of the risk avoidance and risk reduction strategies are quite different, and reflect differences in the basic intervention strategies of the two approaches: one approach seeks to avoid risk altogether by promoting abstinence from sexual activity, while the other seeks to reduce risk by promoting birth control, particularly condom use since it is the only birth control device offering some protection against STI.

This difference leads to intermediate outcome measures that are also quite different. In abstinence education, the standard of success is to reduce sexual initiation rates, and to promote discontinuation of sex for those that have already initiated. In risk reduction or condom-centered sex education, the outcome measures often use a less rigorous behavioral standard—including condom use at first or last intercourse, or frequency of condom use. However, *consistent* condom use (CCU)—using a condom for every act of intercourse—is, as

a measure, behaviorally more equivalent to abstaining from or discontinuing sexual activity, and should therefore be the standard by which the condom's capacity for prevention of STIs is measured.

According to the CDC, it is *consistent condom use (CCU)* that provides the partial protection against STIs of which condoms are capable: *"To achieve the maximum protective effect, condoms must be used both consistently and correctly. Inconsistent use can lead to STI acquisition because transmission can occur with a single act of intercourse with an infected partner. Similarly, if condoms are not used correctly, the protective effect may be diminished even when they are used consistently"* (CDC, 2013). According to a study in the journal *AIDS* (Ahmed, et al., 2001), for example, "Irregular condom use was *not* protective against HIV or STI and was associated with *increased* gonorrhea/chlamydia risk" (italics added). A Denver study (Shlay, et al., 2004) reported that "when all condom users were compared with non-users (N=126,220), there was limited evidence of protection against specific STIs." But when consistent vs. inconsistent users were compared, the consistent users had significantly lower infection rates.

In addition to consistent use, correct use is essential for obtaining even partial protection. Condom use errors can occur in multiple ways, including breakage, slippage, delayed application, and application that is wrong side out. Such errors can detract substantially from the efficacy of condoms as a risk reduction strategy. A substantial rate of user error has been documented among both teen and adult condom users. Across four recent studies, rates of user error ranged from 21.7% among college males to approximately 50% during a four-month period for a large clinic-based sample of adults who were consistent condom users (Crosby, Sanders, & Yarber, 2002, Grimley, Annang, Houser, & Chen, 2005, Mertz, Finelli, Levine, et al., 2000, Shlay, et al., 2004). Condom protection failure, then, is a combination of inconsistent use and incorrect use.

CCU is the behavior on which most estimates of condom effectiveness are based. Most students and many sex education teachers are not aware that even with consistent condom use, the level of protection against STIs is far from complete. The level of STI protection provided by consistent condom use ranges from a 30% risk reduction for genital herpes to an 80% risk reduction for the transmission of the potentially deadly HIV (Holmes, Levine, & Weaver 2004; Martin, Krantz, Gottlieb, Margaret, Langenberg, et al. 2009; Sanchez, Campos, Courtois, Gutierrez, Carrillo, Alarcon, et al., 2003; Weller & Davis, 2002).

Measures such as condom use at first or last intercourse might serve as *preliminary* indicators of some program impact, but the gap between such measures and consistent use by American teens is often wide, suggesting that measures such as use at first or last intercourse are more likely to indicate *inconsistent* use rather than consistent use. For example, in 2002, 68% of sexually active teen girls reported condom use at first sex, compared to 28% who said they always use a condom (Franzetta, et al., 2006). For a sex education program to be deemed worthy of being promoted to the academic community, the public, and school officials as "one that works" and should be implemented, surely the highest standard—whether consistent condom use or abstinence from sexual activity—should be employed.

Clearly, if we wish to compare the effectiveness of the risk reduction and risk avoidance approaches, we must come as close as possible to using comparable criteria. That standard would not be met, for example, if we compared the effectiveness of abstinence education on abstinent outcomes such as refraining from or stopping sex to comprehensive programs' effects on weak outcome measures such as condom use "at first intercourse." The latter measure would be no more useful than "abstinent on the first date," "abstinent on the last date," or "abstinent most of the time."

The difficulty of achieving completely comparable effectiveness criteria is illustrated by the fact that even the CCU measure is not truly equivalent in rigor to the measures used to assess abstinence education's effectiveness. This is because even with CCU, 20% to 30% of those exposed to an STI will still acquire it (Crosby, et al., 2003; Winer, et al., 2006).

CCU is therefore not fully adequate as a measure of the effectiveness of the risk reduction approach, but it is the most rigorous standard available to this approach.

For all of these reasons, any measure less than CCU is clearly an unacceptable standard of success for CSE. CCU is as close as we can come to a similar outcome measure for comparing abstinence education and condom-centered risk reduction programs. Unfortunately, this relatively rigorous measure was used in only 6 of the 72 studies reviewed by Kirby that had a minimum follow-up time of 1 year (Kirby, 2007). It is not a perfect comparison, of course, as the evidence (cited above) shows that even consistent condom use does not prevent all STI. For example, HPV and Chlamydia are transmitted through skin-to-skin contact in areas not covered by a condom. However, CCU is much more comparable than the "condom use at first intercourse" measure, or anything else that falls short of consistent and correct use.

2. Sustained results. The second criterion for measuring program effectiveness that must be comparable between the two strategies is the time frame for outcome measurement. Was the targeted behavior measured six months, 12 months, or two years after the intervention? And was the same time frame used when comparing the behavior assessed in abstinence education with the behavior assessed in CSE or condom education?

Consider, for example, the widely cited Mathematica report which evaluated four abstinence education programs measured outcomes two and one-half to five and one half years after the program's end, with no interim support or reinforcement of the message (Trenholm, et al., 2007). Not surprisingly, none of the four programs showed decreased sexual activity three to five years after the program. Several news reports touted this study as the final proof that abstinence education does not work (Guttmacher Institute, 2007). However, when the 107 comprehensive or condom-centered programs in the Kirby review are held to the standard of this same time frame (Kirby, 2007), it can be seen that not one of them reported an increase in CCU, nor did any of them report a decrease in STIs over that time period. This lack of program impact was not similarly reported in the news as evidence that CSE programs "do not work." One does not need to be allied to either camp to acknowledge the bias evident in such comparative evaluations.

To be considered effective, a program's behavioral impact should last for a substantial period of time, at least 12 months following program participation, e.g., from one school year to the next. 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 in order for an intervention to be designated as an effective or model program. 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 (Office of Adolescent Health, 2010).

3. Broad impact. The third important criterion of program effectiveness is breadth of impact. Effects of sex education programs should occur for the intended/targeted population of program participants and *not just for a subgroup of the target population*. There are school-based sex education programs that have produced results on less protective outcomes, for shorter durations, or for subgroups of the intended population. While these results may identify programs with "potential," they do not constitute sufficient evidence to judge a program as "effective" and to justify widespread dissemination and financial support of the program as being "evidence based."

IV. Program Effectiveness

With these three criteria in mind—significant protection, sustained results, and broad impact—we have a basis for taking a closer look at the evidence, and comparing the effectiveness of school-based sex education strategies.

A. Program Success with Risk Reduction Strategies

1. Effectiveness of comprehensive (risk reduction) programs. In the past 20 years, research on CSE has been fairly extensive and there is a common perception that comprehensive sex education programs are effective (Kirby, 2002, Manlove, et al., 2002, Scher, Maynard, & Stagner, 2005, Thomas, 2000). The National Campaign to Prevent Teen and Unplanned Pregnancy published a landmark review of 112 peer-reviewed studies covering 20 years of research on sex education (*Emerging Answers 2007*). This review identified *no* school/curriculum-based CSE programs that had increased the number of teens who used condoms consistently—that is, every time they have sex—over a one-year period. The same review found *no* school/curriculum-based CSE programs that had produced a decrease in teen pregnancy or STI rates for any period of time. Only 5 programs were found that increased some measure of non-consistent condom use for 12 months, but there is no evidence that these programs reduced STIs. As we have pointed out, consistent use is required to receive the partial protection from STI that condoms can provide, and other studies have shown that inconsistent condom use can increase STI rates.

In looking closely at this large group of studies, we found 34 school or community based studies of CSE and 7 studies of abstinence programs that met the following criteria: 1)

comparable outcome measures (either abstinent behavior, CCU, STI, or pregnancy); 2) an appropriate and similar time frame (1 to 3 years); and 3) broad-based impact, not just sub-groups of the total sample.

For the 34 CSE studies that are comparable to the abstinence education studies on these criteria, none of the published studies reported an increase in CCU after one year (many did not even measure it).

In addition, none of the 34 studies reported reductions in STI rates (either not significantly different after at least one year or not measured). There were 3 studies that reported decreases in pregnancy rates (Philliber, et al., 2002; Stanton, et al., 2004; and Vincent, et al., 2004), one of which was not replicated by another study 3 years later (Kirby, et al., 2005). As can be seen, the actual evidence regarding CSE as a prevention strategy is far less compelling than what the media reports and public perception would suggest.

The CSE program studies (33) also measured sexual initiation, and 9 found significant reductions (Coyle et al., 2004; Hubbard & Rainey, 1998; Kirby et al., 1991; Philliber et al., 2002; Sellers et al., 1994; Aten et al., 2002; Sikkema et al., 2005; and Zimmerman et al., 2008), one of which was not replicated 3 years later (Kirby, 2005). It is interesting to note that the CSE programs appeared to be more effective at achieving teen abstinence than achieving the outcomes of reducing pregnancy and STIs, although not as effective proportionately as the abstinence programs (9 out of 33 effective CSE programs versus 5 out of 7 effective abstinence programs).

Using the same three above-listed criteria to make the evidence comparable, we look at the seven abstinence education studies from Kirby's list that meet these criteria. Of these, five of the seven reported a significant reduction in initiation rates (Clark et al., 2005; Denny & Young, 2006; Doniger et al., 2001; Howard & McCabe, 1990; Weed et al., 1992).

2. Condom limitations. What is usually labeled CSE or *risk reduction* typically has at its core the promotion of condom use. Condom use is advocated by many as the sexually active person's best protection against both pregnancy and STI transmission. Given the lack of success in promoting condom use, however, a closer look at the efficacy of this strategy is warranted.

As we have demonstrated under the *risk reduction* paradigm, the success of the promotion of condom use is best judged on the basis of CCU, defined as using a condom for every act of intercourse. Data from the CDC shows that among sexually active U.S. teens, only 47.8% of males and 27.5% of females reported that they used condoms consistently during the prior one-year time period (CDC, 2004). While some interventions appear to have increased teen condom use at *first* or *last* intercourse, or *frequency* of use (Laris & Kirby, 2007), efforts to increase adolescent rates of CCU use have produced little evidence of success.

A review of over 100 studies of sex education programs in the U.S. over the past 15 years found only two programs that had affected CCU by teens for a 12-month time period (Laris &

Kirby, 2007; DiClemente, Wingood, Harrington, et al., 2004; Villarruel, Jemmott, & Jemmott 2006). One of these programs increased CCU from 45.3% to 58% of sexually active teens (DiClemente, et al., 2004). The other program did not produce an increase in CCU, but did hold the rate of CCU to its initial level of 42% of the sexually active, in contrast to a control group where the rate decreased to 28% (Villarruel, et.al. 2006). Another review (Kirby, Laris, & Roller, 2006) looked at 50 well-designed evaluation studies of U.S. CSE, going back to 1990, and included these findings:

- None of the programs increased the prevalence of *CCU* among adolescents for a period greater than one year. Only one program produced a significant increase in the prevalence of CCU that was sustained for a period of one year (DiClemente, et.al., 2004)
- Thirteen control trials of CSE found no increase in teen condom use for any period of time.
- Only two CSE programs succeeded in improving less stringent measures of teen condom use (*not* CCU) for a period longer than two years, and none lasted beyond three years.

Other problematic features of the condom strategy include:

- Even with consistent and correct use (which is rare), condoms may diminish but do not effectively prevent STIs that are spread through skin-to-skin or skin-to-sore contact. These STIs are on the rise in the adolescent population (Crosby, DiClemente, Wingood, Lang, & Harrington, 2003; Weller & Davis, 2002; Wald, et al., 2001; Winer, et al., 2006).
- After 20-plus years of CSE efforts in the U.S., adolescent rates of CCU are not high enough to eliminate the STIs for which condoms *are* most preventive, such as HIV, let alone STIs for which condoms are least preventive. Adolescents contract one-fourth of all new HIV infections (CDC, 2003b). Among sexually active U.S. teens, only 47.8% of males and 27.5% of females report using condoms consistently over a one-year period (CDC, 2004), and efforts to improve those rates have not proven successful.
- CCU cannot prevent the negative emotional consequences of teen sex or the sexual exploitation and sexual violence that are often associated with teen sexual activity, as described above.

There are several significant barriers to CCU among teens. Keep in mind that CCU is also difficult to achieve among college students, even medical students (Crosby, Sanders, & Yarber, 2002), among married couples wanting to avoid an unplanned pregnancy (Shlay, McClung, Patnaik, & Douglas, 2004), and even among clinic patients already diagnosed with STI (Grimley, Annang, Houser, & Chen, 2005). For teenagers, it seems to be even more difficult. According to the National Center for Health Statistics (Abma, et al., 2002), sexually active female teens report a CCU rate of 28%, while sexually active boys report a 47% consistent use rate.

The large discrepancy in reported consistency of use between males and females makes one question the accuracy of these self-reported rates. But whatever that real rate is, it is low, and attempts to increase it and maintain it among teens have been consistently unsuccessful. Why?

At least three factors seem to come into play. First, we think there is a large disconnect between the common risk reduction strategy of “providing information” (even if it is medically accurate) and encouraging “responsible decision making,” on the one hand and, on the other hand, the immaturity of the teenage brain as revealed by the latest brain research. This research has come to the fore during the last 15 years, and is therefore still early in its development. However, there is growing consensus that the capabilities for impulse control, risk assessment, anticipation of consequences, forward planning, and rational decision making are not fully developed in a young person’s brain until their early twenties. “The parts of the brain responsible for more “top-down” control, controlling impulses, and planning ahead—the hallmarks of adult behavior—are among the last to mature” (National Institute of Mental Health, 2011, p.3).

An earlier take on this issue stated “. . . the greatest changes to the parts of the brain that are responsible for functions such as self-control, judgment, emotions, and organization occur between puberty and adulthood. This may help to explain certain teenage behavior that adults can find mystifying, such as poor decision-making, recklessness, and emotional outbursts” (Research Facts and Findings, 2002, p.1).

Finally, one of the foremost researchers in this area of neuroscience stated:

There is now incontrovertible evidence that adolescence is a period of significant changes in brain structure and function. Although most of this work has appeared just in the past 15 years, there is already strong consensus among developmental neuroscientists about the nature of this change. And the most important conclusion to emerge from recent research is that important changes in brain anatomy and activity take place far longer into development than had been previously thought. Reasonable people may disagree about what these findings may mean as society decides how to treat young people, but there is little room for disagreement about the fact that adolescence is a period of substantial brain maturation with respect to both structure and function. . . .

Heightened sensitivity to anticipated rewards motivates adolescents to engage in acts, even risky acts, when the potential for pleasure is high, such as with unprotected sex, fast driving, or experimentation with drugs. (Steinberg, 2013, p.1, 2)

Those of us who have raised teenagers can relate to this evidence. And this developmental timetable works against CCU by teens. As one frustrated CSE teacher told us, “They can’t even remember to bring a pencil to class—how will they be good condom users?” Logical, foresighted thinking is even less likely to occur in a moment of passion.

Second, there is an important relationship component that affects condom use. Given the inherent need of teens to be accepted and loved, it is difficult for them to pull out a condom and give the implicit message, “I don’t trust you to be free of disease, nor can you trust me.

But since this is just a casual hook-up with no commitment or loyalty expected, let's just enjoy the moment and do it more safely." Teen relationships can be that shallow, but many if not most are looking for something more meaningful. Sex without a condom fits their social and emotional need to find love and intimacy better than having sex with a condom does (Ackermann & de Klerk, 2003; Gebhardt, Kuyper, & Greunsven, 2003; Hebling & Guimarães, 2004). The data also show that the older the teen and the longer the relationship, the less likely they are to use a condom at all, let alone consistently (Fortunberry, 2002b).

Third, those who are at greatest risk (the girls) are those with the least amount of control in the relationship. They are outweighed, overpowered, and usually seeking love and acceptance. Boys and girls often have different reasons for seeking sexual intimacy (for males, it is likely to be more about physical fulfillment), and the strategy of promoting consistent condom use does not take into account those differences.

In summary, a fairly large body of research shows that CSE (risk reduction) programs in the schools have not been proven to be effective on most of the outcome measures used. There is no evidence that they increase teens' CCU. A very few of them have increased the number of teens who use condoms more often (but not consistently), but there is not any evidence that this resulted in lower rates of teen STIs or pregnancies. There have been some CSE studies (9) that increased abstinence but fewer, proportionately, than abstinence interventions.

B. Program Success with Risk Avoidance (Abstinence) Strategies

Given the lack of compelling evidence for CSE strategies, the high rates of condom user error, the partial protection levels achieved even with correct and consistent use, and the emotional harm and sexual violence which condoms do not reduce, it seems appropriate to ask whether it is possible and desirable, as an alternative strategy, to promote abstinent behavior and thereby substantially increase the number of teens who abstain from sexual activity.

Promoting abstinence as a lifestyle is no easy task, especially given the cultural context in which today's adolescents live. Movies, music, peers, Internet pornography, and other influences are constantly pushing a different message. Many teens succumb to those influences. Abstinence education faces an uphill battle. In spite of that, it is apparently easier to convince adolescents to abstain than it is to convince them to use condoms consistently.

For example, if we do a side-by-side comparison of program strategies from Kirby's list of credible studies, and look at those primary prevention programs which have a common setting and population, and which have (1) reasonably comparable outcome measures (CCU and abstinence), (2) a similar time frame (one to two years), and (3) broad based impact, we find 38 studies of comprehensive programs that fit all three categories. From Kirby's same list, we find seven abstinence education studies that meet those same criteria. From the list of 38 CSE studies, 10 reported a significant improvement in abstinence, but none reported an increase in CCU. And this was in programs where abstinence was not the central message. In the seven abstinence education evaluations, five reported a significant reduction in sexual

initiation rates. Kirby's (1991) statement that "it may actually be easier to delay the onset of intercourse than to increase contraceptive practice" (p.262) is being borne out.

According to data from both the National Survey of Family Growth, and the Youth Risk Behavior Surveys, the national trends in teen sexual activity have shown a steady decline from 1988 through 2010. (The 2014 data show a continuing decline.) Females 15-19 who were sexually experienced declined significantly from 51% in 1998 to 43% in 2006-2010. For males of the same age group, the decline was even larger: 60% in 1998 to 42% in 2006-2010 (Martinez, Copen & Abma, 2011, p6. Fig. 1). Apparently, teens' sexual behavior is amenable to change. Contrary to the perception that all teens are "doing it," more than 80% of teens under 15 and more than 70% of teens 15 to 17 say they have not had sex (Healthy People, 2013). This increase in teen abstinent behavior corresponds with the decline in teen pregnancy, teen births, and teen abortions—an encouraging trend by anyone's standards.

The CDC's *Guidelines for Effective School Health Education to Prevent the Spread of AIDS* recommended that schools provide programs that encourage abstinence from sex:

School systems should make programs available that will enable and encourage young people who have not engaged in sexual intercourse...to continue to abstain from sexual intercourse until they are ready to establish a mutually monogamous relationship within the context of marriage... For young people who have engaged in sexual intercourse...school programs should enable and encourage them to stop engaging in sexual intercourse until they are ready to establish a mutually monogamous relationship within the context of marriage (CDC, 1988, p.1).

The American College of Pediatricians' policy is similar (American College of Pediatricians, 2013), and Healthy People 2020 challenges health advocates to increase abstinence among teens by 10% (Healthy People, 2013). To meet these goals, evidence-based abstinence education programs are needed.

We are seeing a pattern of evidence that well-designed and well-implemented programs can be effective. Of the seven abstinence programs examined in Kirby's *Emerging Answers* review (2007), five reported a significant reduction in rates of sexual initiation (Clark et al., 2005; Denny & Young, 2006; Doniger et al., 2001; Howard & McCabe, 1990; Weed et al., 1992).

Let us review some additional examples of successful abstinence education programs that were not included in Kirby's 2007 review:

1. The *Heritage Keepers Abstinence Education* study used a large sample size ($n=1,535$), matched comparison group, and a 12-month follow-up (Weed, Ericksen & Birch, 2005). It found that program students were about half as likely to initiate sexual intercourse after one year as were the comparison students, after controlling for pretest differences (odds ratio=.539, $p<.001$). Program students also had significant improvement on cognitive factors that appeared to mediate their abstinent behavior (Weed, Ericksen, Lewis, et al., 2008). This

study was replicated with a larger sample and more rigorous methods, and produced very similar results (Weed, Olsen, Ericksen, 2013).

2. A 2008 evaluation of the *Reasons of the Heart* abstinence curriculum found that adolescent students who were virgins who received the program were about half as likely as the matched comparison group to initiate sexual activity after one year (odds ratio=.413, $p<.05$). This program also achieved impact on cognitive mediators that appeared to contribute to the program's success (Weed, et al., 2008)

3. In a 2006 study conducted by Dr. John Jemmott at Princeton University, African-American youth (ages 10-15) were randomly assigned to one of four interventions: abstinence, safer-sex, safer-sex and abstinence, and health-promotion control intervention. Adolescents who received the abstinence intervention were less likely to report ever having sexual intercourse at 24-month follow-up than were those in the health-promotion control intervention ($p=.02$), the safer-sex intervention ($p=.007$), or the safer-sex and abstinence intervention ($p=.05$). Youth in the abstinence program who did start having sex were no less likely than those in the other groups to use condoms (Jemmott, Jemmott, & Fong, 2006).

4. A 1990 study in the *Family Planning Perspectives* journal of the *Postponing Sexual Involvement (Abstinence Version)* found that low-income, minority students in the 8th grade (in Atlanta, Georgia) who participated in the *Postponing Sexual Involvement* program were 5 times less likely to have had sex at the end of the 8th-grade than students who did not participate (4% vs. 20%). By the end of the 9th-grade, the difference between the two groups was still significant, with rates of 24% vs. 39% (Howard & McCabe, 1990).

5. A 1992 evaluation by the U.S. Office of Population Affairs of the *Sex Respect* and *Teen Aid* programs found that the two programs together reduced the initiation of sexual activity among at-risk students by 25% compared with similar at-risk students who did not receive any abstinence education (Weed, Olsen, DeGaston, & Prigmore, 1992).

6. A 2005 study funded by the Department of Health and Human Services evaluated the *Choosing the Best* program in Georgia and found that 11.5% of virgin students exposed to this abstinence education program had begun having sex one year later, compared with 21.6% of the students who received no abstinence education (Weed & Anderson, 2005).

7. A 2001 study in the *Journal of Health Communications* found that after a 5-year county-wide mass communications program called *Not Me, Not Now*, there was a 32% reduction in the percent of teens under 16 who had experienced sex ($p<.05$). The adolescent pregnancy rate for Monroe County dropped from 63.4% in 1993 to 49.5% in 1996. Similar counties in New York not exposed to this campaign did not experience a comparable decline in the teen pregnancy rate ($p <.01$) (Doniger, Adams, Utter, & Riley, 2001).

8. The 2010 *Promoting Health Among Teens* study compared behavioral outcomes using four approaches: abstinence-only, safer-sex (contraception focus), combined approach (abstinence and safer sex), and an untreated control group. Two years later, students in the

abstinence-only cohort initiated sex at a significantly lower rate than in any of the other cohorts (Jemmott, Jemmott, & Fong, 2010).

Taken together, these studies provide more rigorous evidence than Kirby's *Emerging Answers* review (2007) that abstinence education programs can be effective. A developing pattern of scientific evidence indicates that abstinence education programs, if properly designed and implemented, can cut rates of teen sexual activity by as much as half for significant periods of time, without reducing condom use by the sexually active. (Condom use was measured by the Jemmott et al. (2006) and Treholm et al. (2007) studies of abstinence programs, and no reduction in use by sexually active teens was found). This body of research suggests that teaching adolescents to avoid sexual activity is a viable primary prevention strategy, one that can fully prevent the harmful and costly consequences of teen sex.

Do all abstinence education programs work? Of course not. We have also evaluated several programs that do not work, do not work well, or do not work for all the program participants. Such findings were truer of abstinence programs in the early stages of development and implementation, when they did not have program evaluation data to give direction to program improvement. Findings of ineffectiveness will, of course, continue to be true of abstinence programs that do not provide adequate dosage to go beyond superficial impact, do not impact the cognitive mediators that bring about enduring behavioral change, are not delivered by teachers who themselves believe in the abstinence message they are presenting to teens, and so on. As with all educational interventions, those programs that are well-designed and well-implemented are the ones that will be effective.

OTHER COMMENTARIES AND RESEARCH REGARDING ABSTINENCE EDUCATION

Critics of abstinence education typically cite reviews of abstinence education studies that found no positive impact on teen sexual behavior (Kirby, 2007; Kohler, et al., 2008; Underhill, et al., 2007). We have also evaluated programs that don't work well, along with those that do. Most of the ineffective programs we have evaluated, like the "no impact" programs reviewed by abstinence education critics, were developed and implemented during the first decade of federal abstinence funding at a time when most abstinence programs and their research evaluation were still in their infancy. Later, drawing from our evaluation research, we will discuss the program features that differentiate effective abstinence education interventions from ineffective ones.

Let us look more closely at two well-publicized research reports that concluded that the abstinence programs were ineffective in reducing teen sexual activity. The first such research report was the aforementioned *Emerging Answers 2007*, the exhaustive review of the best sex education evaluation studies of the preceding 15 years. Not included in *Emerging Answers* were subsequently published studies of abstinence interventions, several of which reported significant increases in rates of teen abstinence for at least 12 months after the program. For example, two of these studies found that teen participants were half as likely to become

sexually active as non-participants after one year (Weed, et al., 2005, Weed, et al., 2008). The third study found that the program had increased teen abstinence significantly for a period of two years. Furthermore, students in this third program who did initiate sexual activity were no less likely to use condoms than those in the control group (Jemmott, et al., 2010). And, as previously noted, *Emerging Answers 2007* found only one CSE program out of 115 studies that improved for at least 12 months teens' CCU (the outcome that is, for risk reduction programs, what abstinence is for risk avoidance programs) (DiClemente, et al., 2004).

The second well-publicized research report often cited by critics of abstinence education was a federally funded evaluation by Mathematica Policy Research, Inc. It conducted a longitudinal study of four abstinence interventions and found no reduction in teen sexual activity (Trenholm, et al., 2007). The media reported this study as showing that abstinence education does not work, and that therefore CSE (condom-centered) programs would work. Once again, a closer examination of the actual study and its findings does not support that conclusion.

The design of the Mathematica study was rigorous in some ways—it investigated four different abstinence programs and followed students longitudinally—but it also suffered from a number of limitations:

1. ***Inappropriate timing of program dose.*** The age group for the interventions in the *Mathematica* study was quite young—elementary and early middle school. Some were as young as 4th- and 5th-grade. The interventions did not continue or in any way reinforce the initial treatment during the key years (9th, 10th, 11th grade) when transition into sexual activity typically occurs. Thus, the treatment was not delivered or reinforced when it was most relevant and needed. As the *Mathematica* report points out, “The findings provide no information on the effects the programs might have if they were implemented for high school youth or begun at earlier ages but served youth through high school” (p. 61). At the outset, then, the evaluation started with interventions that, because of their inappropriate timing, had little hope of impacting behavior in the long run.
2. ***Unusually long time between intervention and follow-up evaluation.*** The follow-up time frame employed in this study—2½ to 5½ years after the program's end—is too long for any type of sex education intervention to have a sustained effect on behavior without interim reinforcement of the program message. A myriad of negative influences operate in adolescents' lives to overpower any initial program effect that may have occurred so far in the past. The follow-up interval for measuring behavioral outcomes was much longer than what is typical in evaluations of CSE programs. For example, *Emerging Answers 2007* reported that only 7 out of 107 studies of CSE programs used a follow-up interval of 4 years or longer, and none of these 7 programs significantly increased teen condom use of any kind, including CCU, for that length of time. Thus, when held to the same standard of effectiveness used in the Mathematica study, no CSE program in the past 15 years would be called “effective.” In fact, we are not aware of *any* evaluations of school based CSE programs that have shown positive changes in teen condom use after three years, and

are aware of only two that have shown impact after two years, and these were using the lower standard of success (not CCU).

3. ***Cross-contamination of program effects.*** The benefits of a random assignment research design are best realized when the treatment and control groups can be kept separate and their integrity maintained. In this way, the treatment or “medicine” is not shared between the groups. However, in field experiments (which sex education evaluations typically are), this requirement of separate treatment and control groups is difficult to achieve, especially with teenagers, and particularly with an intervention that deals with a topic as highly charged and commonly discussed as sex. Students randomly assigned to the treatment and control groups don’t live in these groups—they interact with friends, siblings, and dating partners in the other group. Any new values or behaviors adopted by each group tend to be shared across the groups, and the longer that sharing lasts, the more likely it is that the differences between the two groups will disappear as their attitudes, values, beliefs and behaviors merge over time. This cross-group contamination is likely to be a more powerful “intervention”—a stronger influence on attitudes and behavior—than a typical one-hour-per-day, short-term classroom-based intervention. With almost six years for this spillover effect to operate, as was true in the *Mathematica* study, the cross-contamination would minimize the measurable differences between the groups, even if the program had successfully reduced the participants’ sexual activity. The *Mathematica* study did not address this problem in its design, nor did it take it into account when reporting its findings.
4. ***Non-representative study sample.*** The high-risk population used in the *Mathematica* study does not represent the teen population in the U.S. The majority of the sample was African-American youth from poor, single-parent households; the fact that these abstinence programs produced no impact on this sample does not tell us whether the same programs would have had an impact on a different group of teens.
5. ***Inadequate attention to mediator variables.*** Sex education research must identify and track over time the important causal mechanisms (cognitive mediators such as future orientation, personal efficacy, personal values, peer influence, etc.) that influence adolescent sexual risk behavior. Unless we identify and monitor how programs do (or do not) impact these causal mechanisms, program success or failure cannot be understood, intervention modifications cannot be made, and longer-term program potential cannot be identified. The *Mathematica* study had several shortcomings in this area. First, the study’s generic logic model did not take into account differences in how the four specific programs conceptualized mediating causal mechanisms, and therefore each program’s theory was not tested by the study. Second, *Mathematica*’s design did not assess a great enough variety of mediating variables; only two of the ones it chose to measure showed a significant relationship to the targeted sexual behavior, and neither of those showed significant pre-post change.

6. ***Failure to share interim data with program designers.*** The Mathematica study did not share interim data on the causal mechanisms with the four programs to support their improvement. In *Mathematica's* case, data on the mediating variables was not shared with the programs until four or five years later. Had we taken that approach with some of our own program evaluations (e.g., in Arkansas, Virginia, South Carolina, and Georgia), we would likely have seen the same “no impact” result when measuring behavior five years later. Instead, in part because these programs benefitted from interim data on how they were influencing the targeted mediating variables, they matured over time, and are now realizing up to 50% reduction in teenagers’ initiation of sexual activity.

Because of these design limitations, the findings of the Mathematica study regarding the four particular abstinence programs it evaluated cannot be generalized to represent the overall efficacy of abstinence education. But equally important to a correct understanding of the Mathematica study is the fact that *it did not set out to compare abstinence education with CSE (risk reduction) programs*. It did not study any “safer sex” programs, nor suggest that they are the obvious default if abstinence programs are not successful. We remind the reader that a substantial number of other studies during the past two decades have examined condom-based school interventions, and only one out of 50 reported an improvement in CCU after a period of at least one year. We believe that pattern of evidence is hardly grounds for embracing a condom-based sex education policy if a particular abstinence program appears not to be working.

A final point about the Mathematica study is a basic one that applies to interpreting all research: Any new study must be viewed not in isolation but in the context of the total body of relevant research that preceded it. Prior to the Mathematica study, as we have shown, a growing number of well-designed studies of abstinence programs had achieved substantial reductions in teen sexual activity (as much as half) for periods ranging from 12 to 24 months. That success stands in contrast to the failure of school-based CSE to achieve the goal of increasing CCU. When CSE and abstinence education are evaluated in terms of the outcomes that each approach aims for—CCU in the case of CSE and reduced sexual activity in the case of abstinence education—the evidence is better for the effectiveness of abstinence education.

C. Can the Risk Reduction and Risk Avoidance Approaches Be Combined?

Some would argue that abstinence education and condom (or CSE) education should both occur so as to not only give a risk avoidance message, but also to accommodate those students who are already sexually active. Advocates of this combination approach have sought support from public opinion polls that ask parents about their preferences regarding sexuality education. But on the whole, such polls have repeatedly found American parents to be very much pro-abstinence education; they want schools to teach their children not to have sex. For example, across three different national polls, 70% to 90% of parents said they want a strong abstinence message given to teens (NPR/Kaiser Foundation, 2004; (Zogby, Bonacci, Bruce, & Wittman, 2003); Zogby, 2004). More than 90% believe that adolescents should not become sexually active (Zogby, et al., 2003), and fully two-thirds (67%) say it is morally wrong for them to do so (Zogby, 2004). Only 8% believe that teaching adolescents about condom use is more important than teaching abstinence (Zogby, et al., 2003). And only 7%

want sex education to convey the message that it's okay for teen to engage in sexual intercourse as long as they use a condom (Zogby, et al., 2003).

As is often the case with polls, opinion on a specific matter has varied with how the question is asked. It is true that many parents respond favorably when asked whether teens should be given information about how to obtain and use condoms (39% and 58% in one poll (NPR/Kaiser Foundation, 2004), and 78% and 81% in another (Zogby, 2004). However, when asked to respond to the actual content of popular CSE curriculum materials, the large majority of parents (70% to 90%) opposed the explicit information about sexual practices, condom use, and masturbation that such materials contained. These polls also report that parents opposed (76%) to withholding from teens medically accurate information showing that condoms provide only partial protection against STI, and 70% do not want their own child to be given contraception in school or taught how to obtain contraception without their knowledge or approval.

Finally, while a majority of parents believe teens should have information about contraception, fewer than half (40%) think that abstinence and contraception should be taught in the same classroom. Most parents prefer that biological facts about contraception either be taught in a health curriculum separate from the abstinence program (56%), or not taught at all (22%)(Zogby, 2004).

Advocates of combining the risk reduction and risk avoidance approaches might argue that doing so is consistent with program evaluations that have measured both condom use and abstinence as outcomes. Evaluating both kinds of outcomes might seem to suggest that the different messages are somehow compatible and could be effective in combination. But we don't think it follows logically that because it's possible for the same study to evaluate two very different kinds of outcomes (increased condom use and decreased sexual activity), those outcomes represent educationally compatible program goals and underlying philosophies. The risk reduction and risk avoidance approaches are based on very different assumptions and premises about human sexuality, healthy relationships, and family formation (differences we address in greater detail in Section VII). It is difficult to see how these two different ideologies could be combined.

In evaluating whether a combination model approach makes sense in sex education, we think it's helpful to consider what we do in other areas of health education. We normally seek to attain our program goals by transmitting a coherent, consistent message rather than mixed messages that undercut each other. In drug education, for example, we don't say, "Avoid using illegal drugs and their harmful consequences to users and society," and then add, "But if you decide to use them, here's a way to reduce the risks." Why, then, would we say to teens, "Avoid premarital sex and the risks of pregnancy, disease, and emotional hurt—but if you decide to have sex, here's a way to partially reduce some of those risks"? Teenagers—and their parents—will see that for what it is: a weak endorsement of abstinence.

It's also useful to recall that thus far, *no* condom education programs have been able to increase teenagers' CCU. Why would abstinence programs that have succeeded in increasing teen abstinence want to add to their efforts an educational strategy—urging adolescents,

“Always use a condom when you have sex”—that has for more than two decades been unable to achieve its goal? In education, program designers do not normally reason, “Let’s try to improve this strategy that’s working by adding one that isn’t.”

Two final arguments against the combination approach: (1) When it has been studied, it has been found to weaken the effectiveness of the abstinence component. Recall the 2010 *Promoting Health Among Teens* study that included a comparison of an abstinence-only program with one that combined abstinence with “safer sex” instruction. Teen sexual activity rates were higher in the combination approach; and (2) In practice, combination programs, rather than giving equal time to risk reduction and risk avoidance, typically focus on condom education and treat abstinence superficially. Abstinence in combination programs is, on average, given about 10% of the attention. That is a recipe for making abstinence education ineffective.

V. Using a Causal Model to Evaluate Abstinence Education: A Case Study

In recent decades, health and education program evaluation studies have emphasized the need to measure hypothesized mediating variables in order to strengthen causal explanations of program effects or their absence (Fitz-Gibbon & Morris, 1996; Reynolds, 1998; Worthen, 1996). Known as “Confirmatory Program Evaluation” (CPE), this approach provides a framework for conducting theory-driven outcome evaluations, ones that generate the data needed to test the theoretical constructs underlying a program’s design. Reynolds writes, “Of special interest is testing the causal mechanisms that may lead to longer-term program effects. In CPE, the evaluator investigates the empirical relationships among program, intervening, and outcome variables . . . If the identified causal pathways leading to the desired outcome are consistent with the theory and operation of the program, causal inference is strengthened and the coherence of the program outcome relationship is supported” (Reynolds, 1998, pp. 206, 209).

In this section we describe in more detail our evaluation of an abstinence education program, *Heritage Keepers* (2014), which incorporated the CPE emphasis on measuring mediating variables (Weed, Ericksen, & Birch, 2005). We believe this study met most of the challenges inherent in applied field research. It sought to examine not only the basic outcome of reduced sexual activity, but also the causal mechanisms operating to bring about that reduction. As Reynolds pointed out, research that examines the mediating variables that link program inputs to desired outcomes enables program designers to subsequently modify their intervention so as to impact those causal mechanisms even more effectively.

To identify causal mechanisms, it is helpful to look at social science literature that addresses mediators of behavior and how those mediators are influenced. Social learning theorists use cognitive theory to identify important cognitive mediators of social learning. Protection motivation theory focuses on behavioral intentions, self-efficacy, outcome expectancies, attitudes, and social norms (Ajzen, 1991; Armitage & Conner, 2000; Bandura, 2004; Conner & Armitage, 1998; Floyd, Prentice-Dunn, & Rogers, 2000). These and similar psychosocial constructs have been shown in previous research to be significantly related to

adolescent sexual behavior (Kirby, et al., 2007b; Plotnik, 1992; Resnick, et al., 1997). Constructs similar to these were helpful to us in designing the abstinence program we will now describe.

The *Heritage Keepers* Abstinence Education curriculum had been reviewed by the federal government, selected as meeting federal criteria for “evidence based,” and thereby approved for federal funding. Designed for middle and/or high schools, *Heritage Keepers* was based on a set of psychosocial constructs posited to influence adolescent sexual behavior. *Heritage Keeper’s* 450-minute interactive curriculum can be presented in 45-minute class periods over 10 consecutive school days, or in 90-minute sessions over five days. Heritage Keeper’s curriculum and training encourages sensitivity to race, gender, sexual experience, sexual orientation, family of origin structure, the persons students are living with, and whether students already have a child. However, the program’s message does not vary based on those variables, since all students are assumed to have the capacity to, and are encouraged to, abstain from sexual activity.

Program content is consistent with Title V, Section 510 A-H standards and includes definitions of abstinence and recommitment to abstinence, reproduction and anatomy, STI information, determining and integrating personal values with behavior, goal setting, establishing protective boundaries, building healthy relationships without having sex, benefits of marriage, and developing skills to refute and refuse sexual initiation. A “whole person” approach is applied that takes into account how students see themselves, what and whom they value, how they relate to others, where they are going, and how they will react to stimuli introduced into their lives.

Psychosocial constructs believed to be predictive of teen sexual behavior provided the theoretical foundation guiding Heritage Keeper’s curriculum design, training, implementation, monitoring, and program improvement processes. These constructs included *Behavioral Intention (Intention)*; *Abstinence Values (Values)*, *Future Impact of Sex (Future Impact)*, *Abstinence Efficacy (Efficacy)*, and *Justifications for Sex (Justifications)*. During annual 3-day trainings, program instructors learned how to engage students in active learning processes that addressed these targeted mediators. For example, the program addresses common “justifications for sex” by listing typical reasons teens give for initiating sex and by providing alternative arguments. Students practice these arguments in directed role-plays. They also take turns in role-plays in which they alternate playing someone engaging in sex outside marriage, someone effectively resisting those arguments, and a third person encouraging the resistance. These exercises are designed to increase “abstinence efficacy.” The program emphasizes the “future impact of sex” through interactive activities that help students make a personal connection between the possible consequences of sexual activity and the plans they have for their future. They are also given data about the benefits to the couple and any children they may have and about the benefits of forming and raising a family within a long-term legal and ethical commitment. This fosters the development of students’ “abstinence values” by promoting class discussions differentiating between short-term infatuations and lasting love.

To facilitate consistent delivery of the program, a fidelity-to-plan checklist helped instructors keep track of what they had taught to each class. Using the same checklist, we provided program administrators with feedback on each of the mediator variables as short-term outcomes variables in order to help administrators gauge instructors' effectiveness and take steps to improve program delivery.

Our evaluation study of Heritage Keepers (Weed, et.al, 2005) had two primary purposes: (1) to test the program's effectiveness at postponing adolescent sexual debut, and (2) to simultaneously test the program's theoretical framework regarding the causal linkages between initiation of teen sexual intercourse and the psychological constructs hypothesized to be mediators of abstinence. Our study's sample included 2,215 students, grades 7 to 9, of which 63% were African American and 42% were male. Program and comparison students were matched using propensity score analysis, a procedure that enabled us to establish strong baseline equivalence between these the program and comparison groups on demographic and mediator measures. The Heritage Keepers study appears to be the first in the U.S. to use propensity score matching in an outcome study of sex education. This matching procedure, by establishing baseline equivalence of the program and comparison groups on key factors, mitigated possible bias/mismatch in the original sample. Our assessment of program outcomes included pretest-posttest comparisons and follow-up tests after one year.

Using structural equation models and mediation analysis, several results stand out:

1. After one year, the group that experienced the Heritage Keepers program exhibited substantially and statistically significant lower rates (67% lower) of sexual initiation than the comparison group, suggesting a strong program effect on sexual behavior.
2. Program participants who reported sexual experience at the pre-test also reported significantly fewer sexual partners at the time of the one year follow-up ($p=.035$).
3. At the one-year follow-up, there were clear and statistically significant differences between the program and comparison groups on four of the five program-targeted mediator variables (the one exception being personal efficacy).

Pertaining to the second purposes of the study, the observed program effects on sexual behavior were almost entirely explained or mediated by the four program-targeted cognitive constructs on which they program and comparison groups differed. This evidence provided clear empirical support for the program's theoretical model, identifying important causal mechanisms that can influence adolescent sexual risk behavior. The statistical relationship demonstrated among three factors—the program intervention, the change in psychosocial mediators targeted by the program, and long-term sexual behavior—provides stronger evidence than has been previously available for a program's causal impact on teen abstinence.

The Heritage Keepers study (Weed, et al., 2005) shows that abstinence education programs that influence key attitudes, values, and behaviors which are directly predictive of sexual risk behavior, can produce a long-term delay in initiation of sexual intercourse as well as a reduction in sexual partners. Future research should continue to identify and test

important mediating factors, and designers of abstinence programs should use all such findings to strengthen program impact on the causal mechanisms that influence young people's sexual behavior.

VI. What Are the Characteristics of Effective Abstinence Education Programs?

As mentioned earlier in this chapter, our research shows that some abstinence programs work and some don't. The important questions to ask are, "Which ones work, and why?" Abstinence interventions are most effective when they incorporate what has been learned from research about how to reduce adolescent sexual risk behavior. Successful abstinence education programs tend to do that and to share a number of other attributes. Listed below are a dozen characteristics of effective programs we have observed over 20 years of evaluating more than a hundred abstinence interventions. We have not collected empirical data that enables us to rank or weight these characteristics; we encourage program designers to treat all these factors as worthy of attention as they seek to maximize overall program effectiveness. The more of them they incorporate, the greater likelihood of success.

- **Message Clarity.** Effective programs send a clear, direct, and unapologetic message promoting teen abstinence.
- **Pre-Post Impact on Mediating Factors.** From our perspective, the gold standard in abstinence education program design includes identifying, targeting, and assessing cognitive, emotional, and other important mediators that, taken together, comprise a theoretical causal model capable of predicting adolescent risk behavior. This kind of causal model links sexual abstinence to mediating variables such as intentions, self-efficacy, independence from peer pressure, future education and career goals, healthy and unselfish relationships, aspirations for a happy marriage and family life, personal values, qualities of character, and sense of identity that embraces positive characteristics. As indicated in our summary of the Heritage Keepers study, our research has thus far developed measures for what we believe to be five key mediators: *Abstinence Efficacy*, *Independence from Peers*, *Future Impacts of Sex*, *Justifications for Sex*, *Abstinence Values*, and *Abstinence Intentions*; measures of other mediators that we think important, such as character and sense of identity, remain to be developed. However, the mediators listed here are components of this sense of identity, which would also include qualities such as self-control, delay of gratification, and respect for self and others—a composite of positive character qualities that lead to healthy lifestyles. Programs that produce significant and sizable pre-post (short-term) change in mediators such as these usually produce long-term reductions in teen sexual activity.
- **Attention to the Messenger.** Effective programs give as much attention to the messenger as they do to the message. Effective teachers make more of a difference in program outcomes than do printed materials. These teachers engage students in the

learning process, gain their respect, model their message, and believe in their ability to impact students. Successful programs carefully select, train, and monitor their teachers along these dimensions. We should not expect students to take the abstinence message seriously if their teacher doesn't. For that reason, abstinence studies that do not select teachers who have the above characteristics have reduced from the outset their ability to provide a valid test of the program's effectiveness.

- ***Adequate Dosage.*** Successful programs deliver an adequate amount and intensity of program "dosage." We recommend dosage of at least 8 consecutive one hour class-periods for an initial program installment, followed, if possible, by reinforcement with several single-class follow-ups or assemblies throughout the year. This dosage should ideally be repeated over multiple years. High-risk populations typically need a more time-intensive program dose.
- ***Age-Appropriate Curriculum.*** Effective programs are a good fit with the developmental needs and tasks of the target age group. The content typically progresses each year to match the developmental maturity of the age group and builds on and reinforces content from previous years. In our critique of the Mathematica study of abstinence programs, we pointed out that the validity of that evaluation was significantly weakened because the programs were implemented at too young an age.
- ***Multi-Modal Instruction.*** Effective programs do not rely on the traditional textbook and lecture method of classroom teaching. They elicit participation from students in the form of role-playing and discussion groups, use stories and vignettes (including depictions of real-life role models), ask students to apply concepts to real-life situations, teach skills that students practice, employ homework assignments that require application of the concepts beyond the classroom, and invite students to make a personal commitment to abstinence.
- ***High-Quality Implementation.*** Effective programs achieve high fidelity of implementation. They implement the major components of the intervention as the program intended. They also achieve high attendance on the part of the program participants.
- ***High-Quality Program Evaluation.*** Effective programs do quality program evaluation, and take seriously the lessons learned, especially those that identify program shortcomings. They have a commitment to continuous, data-driven improvement.
- ***Medical Accuracy.*** Effective programs present medically accurate information, consistent with the best available research, about reproduction, condoms, hormonal contraceptives, STI, and pregnancy.

- ***Supportive of School and/or Community Change.*** These programs often seek to influence the sexual norms of the school and/or community in which the target population resides—to change the norm of teen sexual activity to a norm of abstinence.
- ***Cultural Sensitivity.*** These programs take into account the cultural characteristics of the target population.
- ***Parent Involvement.*** Abstinence programs without a parent involvement component have been able to achieve positive results. We do not yet have research comparing the effectiveness of abstinence programs that do include a parent component with programs that do not. But we can reasonably predict that meaningful parent involvement is likely to increase the effectiveness of an abstinence education program since much childrearing research (e.g., Berkowitz & Grych, 1998) demonstrates that parents have a significant impact on a child's social and moral development. Research shows that parents also influence the sexual attitudes, values, and behaviors of their children. The National Study of Adolescent Health (1997) found that teens were more likely to delay sex if they perceived that their mothers disapproved of their engaging in sex. A more recent study (Guilamo-Ramos, et al., 2012) found that fathers' talking to their teens about sex also had the effect of delaying sexual involvement.

Given the evidence regarding the importance of parents, some abstinence programs have involved parents in one or more ways: assigning homework that requires parent-teen discussion of sex-related issues; offering parents workshops on topics such as adolescent development and effective parent-teen communication; and providing workshops that parents and teens attend together. Parent involvement strategies such as these can lead parents to take advantage of opportunities in family life to reinforce the school's abstinence message, thereby increasing the program's dosage and encouraging a young person to attach a high value to refraining from sexual activity.

Abstinence education programs that incorporate a majority of these characteristics will have a high likelihood of producing a sustained reduction in teen sexual behavior among their participants. Well-designed and well-implemented abstinence education programs can reduce teen sexual activity by at least one half for periods of one to two years, substantially increasing the number of adolescents who avoid the full range of problems related to teen sexual activity.

CHARACTERISTICS OF EFFECTIVE ABSTINENCE EDUCATION TEACHERS

One of the most important characteristics listed above has to do with the classroom teacher or instructor. This feature deserves more attention. In addition to measuring the *content* of an educational program, an effective evaluation pays attention to the *process* by which that program is delivered, including the teacher's critical role as an element in the

educational paradigm. The typical objective of a classroom teacher of traditional subjects is the students' acquisition of knowledge or the understanding of concepts. When attempting to reduce teen pregnancy and STIs, however, transmitting knowledge is not enough, because the ultimate objective is to change students' values, their personal efficacy, resistance to negative peer influence, the decisions they make about sex in real-life situations, and ultimately their behavior. Teachers play an even more important role in the process of influencing values and behavior than they do in the transmission of knowledge. We have found that in addition to adequate competence in basic teaching skills, the teacher's *bond with the student*, *commitment to the program*, *modeling of the desired outcomes*, and *sense of self-efficacy* in influencing youth are key factors influencing students' cognitive, affective, and behavioral outcomes. Research on teacher effectiveness in both the traditional classroom as well as in risk behavior interventions supports this point of view.

Studies of teacher effectiveness have shown that the quality of the interpersonal relationship between the teacher and student contributes to higher credibility and greater student impact (Burke & Nierenberg, 1998; Wentzel, 1997, 1998, 2002; Peart & Campbell, 1999; Howard, 2002). Furthermore, a teacher's high expectations (Ennis, 1998; McEwan, 2002; Peart & Campbell, 1999; Wentzel, 2002), and attitudes towards the program (Serow 1994; DeGaston, et al., 1994) increase positive change in students. Finally, program implementation and success are highly dependent on teacher qualities, including the key role played by teachers in achieving fidelity to program implementation (Dusenbury, et al., 2003), whether for academic results (see Abbott, 1998; Whitehurst, 1994), prevention of drug or alcohol abuse (Hansen, 1991; Rohrbach, 1993) or other aspects of school climate and success (Haynes, 1998). In summary, the effectiveness of a program intervention designed to influence adolescent values and behavior is dependent in many ways—especially in sex education—on the qualities of the teachers assigned to implement it. If abstinence education teachers strive to make personal connections with their students, feel confident in their ability to have an impact on teens (high self-efficacy), are enthusiastic about the program, and model the lifestyle they are teaching, they will have optimum success in influencing their students to avoid sexual activity and the problems that flow from it. Selection, training, monitoring, and feedback to teachers all contribute to effective teaching of abstinence education.

VII. Ideology vs. Evidence in the Sex Education Debate

In the debate about sex education, we typically debate the solutions but don't adequately examine the ideological premises that underlie them. In reality, whether one favors a risk-reduction approach to sex education or a risk-avoidance, abstinence-until-marriage approach is very much influenced by one's underlying ideology or philosophy regarding the role of sexuality in human relationships.

One of the revealing moments in the history of the sex education debate occurred during a House of Representatives Committee hearing in April 2008. Seven members of a panel testified before the Committee on behalf of groups such as the American Public Health Association (Georges Benjamin), the American Academy of Pediatrics (Margaret J. Blythe), the Halbreth Department of Population and Family Health at Columbia University (John

Santelli), the Institute of Medicine of the National Academies (Harvey Fineberg), and the Institute for Research & Evaluation (Stan E. Weed). In the course of this hearing, the panel members were asked a simple yes or no question by Representative Virginia Foxx (Republican, North Carolina). The question was, “If [you were] provided evidence that abstinence education programs are as [effective] as or more effective than comprehensive sex education, would you support optional federal funding for such programs? Five of the seven panel members voted “No.” Only two (Weed and Fineberg) voted “Yes.” [Hearing before the Committee on Oversight and Government Reform, House of Representatives, One Hundred Tenth Congress, Second Session, April 23, 2008].

If abstinence education were proven to work—to delay sexual involvement, reduce sexual partners, diminish STIs and pregnancies, and protect against the harmful psychological consequences of premature sexual involvement—what could be the possible reason to not support it? It’s significant that abstinence education not only lacks support from its opponents but also has been aggressively targeted for government defunding. The SIECUS organization, for example, states on its web site (www.siecus.org) that since its inception, “SIECUS has been tracking abstinence-only-until-marriage programs, advocating for an end to federal funding for these programs, and helping educators and parents keep these harmful programs out of their schools.”

Passionate statements of opposition to abstinence education from CSE and its allies have a familiar ring when we recall the history of sex education in America. Mary Calderone, Alfred Kinsey, Margaret Sanger, and other early twentieth century champions of sexual freedom expressed similar strong opposition to premarital abstinence and other traditional restraints on sex. The ideology of sexual freedom culminated in the sexual revolution of the 1960s and 1970s and helped to shape a sex education that carried a similar message to the young: They, too, should be free to enjoy the pleasures of sex with as few restrictions as possible. In 1988, Debra Hafner, then executive director of SIECUS, wrote in SIECUS Report that teens should

. . . explore the full range of safe sexual behavior. . . a partial list of safe sex practices for teens could include talking, flirting, dancing, hugging, necking, massaging, caressing, undressing each other, masturbation alone, masturbation in front of a partner, and mutual masturbation (Hafner, 1998, p. 9)

THE PHILOSOPHY OF ABSTINENCE EDUCATION

Contrast the ideology of maximizing sexual freedom, including sexual experimentation by the young, with the following statement of the philosophy of abstinence education, based on our work over four decades with abstinence education programs:

- Abstinence is about self-control and self-discipline. It is waiting for the right time, the right place, and the right person to enjoy intimacy and bonding with the person you commit your life to. It is about replacing immediate pleasure and gratification with long-term joy.

- Abstinence is about freedom. Freedom from disease, emotional hurt, worry, distrust, and suspicion. Freedom to pursue your goals and dreams unfettered by health problems, pregnancy, or a child that you cannot support and nurture on your own. Freedom from making yourself a burden to others—your family, your community, your society. Freedom from having to make a choice about aborting an unwanted pregnancy.
- Abstinence is about self-respect. It is knowing your worth and potential, and that you will not be used by others for their pleasure. That you do not owe your body to another person for any reason, that your value as a person does not depend on giving away cheaply that which is priceless.
- Abstinence is about respect for others. It is recognizing their worth and potential, and not using others for your pleasure and selfish purposes.
- Abstinence is about love—wanting and doing what is truly best for the other person. Putting others at risk of disease, pregnancy, emotional hurt and pain by not waiting for the right time, and place, and person is not an expression of love.
- Abstinence is about not rationalizing premarital sex with excuses such as “I’m in love,” “I practice safer sex,” “She/he owes me,” and “He will leave me for another if I don’t have sex with him.”
- Abstinence is about commitment—making a decision you intend to keep whatever the cost.
- Abstinence is about knowing who you are, what you stand for, and where you are going with your life – your sense of identity. It is a lifestyle that represents strong character, a nobler purpose, a higher standard than what you are surrounded by.
- Abstinence is about encouraging higher standards in your community and society rather than accepting and normalizing behaviors which break down the values that sustain a healthy society.
- Abstinence is about starting over if you need to—about not letting past mistakes dictate your future, about moving forward and making new choices. It is about breaking the cycle, if one exists, that tends to repeat itself in families if we don’t challenge it.
- Abstinence is about hope—for a healthy and happy future, and a family unit in which spouses prepare themselves for commitment, faithfulness, and trust.

To summarize the fundamental ideological differences between the two major approaches to sex education: The philosophy that seems to us to underlie the CSE, risk reduction approach views sex as pleasure-seeking that does not necessarily involve commitment, love, or even emotional engagement. In this view, normal sexual development should include early experimentation and discovery. Sex education based on this view says, “Make sex safer, but don’t constrain it.”

By contrast, the philosophy underlying abstinence education views sex as much more than physical intimacy. From this perspective, sex also includes emotional, intellectual, and moral dimensions and therefore requires commitment, trust, maturity, and exclusivity in the relationship—the conditions most likely to occur within the context of a committed relationship historically known as marriage.

WHERE DOES EVIDENCE COME INTO THE PICTURE?

What is the role of evidence in this clash of ideologies? In a rational world, of course, evidence should matter. Programs that can cite credible, rigorous evidence of effectiveness deserve the support of the relevant stakeholder groups, from legislators to academics, boards of education, principals, sex education teachers, parents, the media, and young people themselves. We have argued that an objective review of the best evidence to date shows that the risk reduction or CSE model has not achieved its stated goals of reducing teen pregnancy or STIs or increasing CCU, whereas a growing number of peer-reviewed studies find that well-designed abstinence education programs have been successful in achieving their goal of reducing teen sexual activity and maintaining that reduction for a year or more after the program.

In the light of this evidence, why is there such fierce opposition to abstinence education from the CSE camp and its allies? Some CSE partisans may be misled—by a pro-CSE media and by research reviews claiming positive results for CSE when the data show otherwise—into sincerely believing that teaching students to use condoms “works” and encouraging them to abstain doesn’t. But it seems to us that something deeper than beliefs about effectiveness is also operating, namely, an unwillingness to abandon a fundamental, less publically acknowledged agenda: breaking down restrictive barriers surrounding sex.

Our analysis leads us to conclude that at the end of the day, at least for the advocates of maximizing sexual freedom, the sex education debate is often less about evidence and more about ideology. That seems to be the most plausible explanation of why opponents of abstinence education say they wouldn’t support it even if the evidence showed that it works. We hope our chapter will encourage all concerned groups to take a fresh look at what the accumulated research on sex education really shows about the relative effectiveness of CSE and abstinence education, and to objectively consider the philosophy and rationale that undergirds these different approaches to teaching about human sexuality.²

CONCLUSION

From its early beginnings, sex education in America has generated considerable controversy that continues unabated today. Our chapter has examined the goals and effectiveness of the three rival approaches—risk reduction (CSE), risk avoidance (abstinence education), and a combination of those two strategies—that currently compete for the support of educators and other stakeholder groups. We have argued that a close examination of the evidence shows that the risk reduction and combination approaches have thus far not achieved their professed goals of reducing teen pregnancies or STIs or even the more modest intermediate goal of getting sexually active teens to use condoms consistently. By contrast, well-designed abstinence education programs—those that provide adequate dosage, target

² For further information about abstinence education and classroom strategies that develop the mediating variables of positive identity and character strengths, visit the authors’ websites: Weed (aegis-character.com) and Lickona (www.cortland.edu/character).

important mediating causal mechanisms, utilize effective teachers, etc.—have achieved significant reductions in teen sexual activity that are still evident a year or more later. The evidence suggests that it may in fact be easier to get a teenager to abstain from sex than to use a condom consistently.

We have also sought to show that beneath this debate about evidence are fundamental philosophical differences among the competing approaches concerning questions of values and beliefs: What is the purpose of human sexuality? What is its role in human relationships and its connection to society's stake in healthy families and communities? Is sex just about personal pleasure-seeking, or is it tied to higher values and a bigger vision that includes committed love and responsibility to one's community? We think it is clear from mounting social science evidence that the goal of the sexual revolution—to break down all restrictions on sexual freedom—has carried a very high societal cost, including an epidemic of STIs, unwed pregnancies, fatherless families, and the many psychological repercussions of temporary sexual relationships.

Ultimately, in choosing an approach to sex education, the question we must answer is, "What is truly in the best interest of children, families, communities, and society as a whole?" We think the best answer lies in programs that deal with students as whole persons—that foster their development of a future orientation, their respect for self and others, their self-control, their capacity to delay gratification, and their concern for the health and happiness of those persons whose lives they impact, including those with whom they become romantically involved and the children they may someday bring into the world. Effective abstinence programs are designed to foster these very qualities and have in fact produced higher levels of sexual self-control in teens exposed to them. For that reason, we think they merit support from those seeking better solutions to teen pregnancy, single parenthood, STIs, and the emotional consequences of premature sexual activity.

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