

# The Effects of an Abstinence-Based Sex Education Program on Middle School Students' Knowledge and Beliefs

**Elizabeth Mayfield Arnold**

**Thomas E. Smith**

**Dianne F. Harrison**

*Florida State University*

**David W. Springer**

*University of Texas at Austin*

*A statewide evaluation of the Education Now and Babies Later (ENABL) program was conducted to assess its ability to increase adolescents' knowledge and beliefs about pregnancy prevention. ENABL is aimed at preventing teenage pregnancy through abstinence. Using a quasixperimental research methodology, middle school students (N= 1,450) comprised a treatment group (n = 974) and a comparison group (n = 476). Subjects completed a pretest and posttest reflecting knowledge and beliefs about teenage pregnancy. ANCOVA revealed significant differences ( $F = 8.98, p < .001$ ) on posttest scores between the two groups. The treatment group showed marked improvement from pretest to posttest scores, whereas the comparison group did not. These findings support the claim that the Postponing Sexual Involvement (PSI) curriculum is effective in affecting students' knowledge and beliefs about teenage pregnancy and illuminate the need for social work intervention at a variety of levels to address this multifaceted problem.*

Although the birth rate for adolescents declined 8% between 1991 and 1995 (U.S. Department of Health and Human Services [HHS], 1997), adolescent pregnancy still looms as a social problem with a current annual national rate of 112 pregnancies per 1,000 female adolescents (Alan Guttmacher Institute,

---

**Authors' Note:** Correspondence may be addressed to Elizabeth L. Mayfield Arnold, Institute for Health and Human Services Research, 2035 E. Paul Dirac Drive, Suite 236, HMB, Florida State University, Tallahassee, FL 32306-2810, or via the Internet to elm6634@garnet.acns.fsu.edu. This research was supported by the Florida Department of Health to evaluate Education Now and Babies Later (ENABL). Special thanks is extended to Cheryl L. Robbins and Virginia A. Miller of the Florida Department of Health for their assistance with this project, and to Sandi Miller, ENABL Coordinator, Osceola County, Florida, for granting permission to use her ENABL evaluation tool in this study.



Research on Social Work Practice, Vol. 9 No. 1, January 1999 10-24  
© 1999 Sage Publications, Inc.

1997). In Florida, the estimated number of pregnancies in 1994 for females ages 19 and younger was 52,639, with approximately 25% ending in abortion (Lopez, Westoff, Perrin, & Remmel, 1995).

Many adolescents who give birth find themselves raising their children as single parents, a difficult task that places them at a higher risk for poverty. In 1992, the federal government spent \$34 billion on support to teenage mothers, which represents a substantial 36% increase from 1990 (Poole, 1996). Of female-headed households in Florida, more than half (53.9%) of these families live below the poverty line (*1996 Annual Report*, 1996). As a result of the alarming personal and societal costs of adolescents becoming pregnant, President Bill Clinton has vowed to step up efforts to reduce adolescent pregnancy (Lameiras & Gaulin, 1997). A national, multiphased public education campaign called Girl Power! was launched by the HHS in 1997 to promote self-esteem, provide accurate information on health issues, and support abstinence-based education initiatives. Five promising pregnancy prevention programs have been targeted for federal funds. One of these programs is Postponing Sexual Involvement (PSI) (HHS, 1997), a nationally recognized abstinence-based pregnancy prevention program developed by Marion Howard of Emory University. This article presents the results of an evaluation of the Education Now and Babies Later (ENABL) program that used the PSI curriculum as its core component.

#### RECENT HISTORY OF PREGNANCY PREVENTION EFFORTS

The new federal welfare law passed in August 1996 allocated \$50 million per year in new funding for abstinence-based sex education programs beginning fiscal year 1998 through the Maternal and Child Health block grant. In addition, the five states that reduce their out-of-wedlock births by the largest margin are eligible to receive \$20 million if they also keep abortion rates lower in comparison to the 1995 rates (HHS, 1997). The availability of such funding provides incentives for the development and expansion of pregnancy prevention programs that previously had been hindered by inadequate funding. In 1989, five states devoted \$64,000 and one state (Wisconsin) allocated \$200,000 through direct grants to sex and AIDS education programs at the local school district level; no other states allocated any funds (Kenney, Guardado, & Brown, 1989). The scant amount of funding allocated by states illustrated either the lack of interest in the issue of sex and AIDS education or the desire of states to maintain direct control over the funding and operation of such programs.

The incidence of adolescent pregnancy was not viewed as a significant problem prior to 1960, but by the end of the next decade, recognition of the seriousness of the issue began to develop (Schinke, 1998). Although the 1970s and 1980s saw an increase in sex education, the numbers of adolescents reportedly reached by these programs varied, which may be because sex education has no universally accepted definition. However, during these decades, courses focused on anatomy and biology, and proponents of sex education were labeled as being “antifamily” (Scales, 1981). Problems of definition are complicated from a historical perspective because few prior studies have explored the content of programs or the sociopolitical context in which curricular decisions are made. Furthermore, educators may be dissuaded from using effective but unpopular teaching strategies, thus hindering the potential positive impact of a program (Firestone, 1994).

The importance of public opinion cannot be overestimated as a factor in the success or failure of program implementation. The fate of sex education appears to depend on a consensus by decision makers that, in turn, is influenced by medical and moral issues (Thomson, 1994). Public opinion polls have found support for sex education, “but it appears to be a passive rather than active and visible” (Rosoff, 1989, p. 64). In some states, statutes allow parents to exempt their children from participation in sex education programs. Health educators have encountered opposition from people who want to keep all children out of such programs, even when parents and community members have an opportunity to provide input into the program and curriculum development (State of Florida, 1990). Some parents believe that sex education should only be provided at home. However, a low level of parental knowledge regarding human sexuality is a significant barrier in parents attempting to teach their children basic information about pregnancy prevention (Gilbert & Bailis, 1980).

Although a national consensus may never exist regarding the content of pregnancy prevention programs, HHS adheres to and promotes five principles to reduce adolescent pregnancy: parental and adult involvement, abstinence, clear strategies for the future, community involvement, and a sustained commitment to youth over time (HHS, 1997). Many legislators, parents, and educators support the promotion of abstinence as the best form of pregnancy prevention. Kenney et al. (1989) surveyed large school districts throughout the nation and found that more than two fifths (43%) of districts require abstinence be taught in their curricula, and less than half (48%) encourage that abstinence be taught. Although abstinence is emphasized in the majority of programs, educators must contend with the fact that many youth involved in such prevention efforts may already be sexually active, thus documenting the need for programs to target kids earlier (Rosoff, 1989).

The increasing popularity of abstinence-based programs has brought with it the need for program development, evaluation, and monitoring. The National Association of County and City Health Officials (NACCHO) and HHS contend that the goal of pregnancy prevention efforts should be to conduct research to “understand more fully the determinants and antecedents of unintended pregnancy” (HHS & NACCHO, 1996, p. 9). As Scales (1981) noted, the focus has historically been training, curriculum development, and program implementation, with some states actually preventing evaluation from taking place.

Demands cannot be made to answer the question “does it work” if fundamental restrictions are placed on the collection of essential data with which to answer that question. And unless more research is conducted that contributes to the answer, those who support sex education will continue to face obstacles of skepticism from those who, not unreasonably, would like to see convincing data on the impact of sex education. (Scales, 1981, p. 564)

Without information about factors that influence teenage pregnancy, efforts at primary prevention are limited and are less likely to make a substantial impact.

### **EXISTING PROGRAMS AND EVALUATIONS**

Many sex education programs aimed at pregnancy prevention exist nationwide with varying degrees of formal structure, content, and evaluation. Frost and Forrest (1995) reviewed evaluations of five popular pregnancy prevention programs and found that of the four programs that examined rates of sexual initiation following program completion, all had significant reductions in rates of initiation of sexual activity; the highest success rates were found when younger adolescents were targeted. In addition, two of the five programs reduced pregnancy rates among participants.

The Program Archive on Sexuality Health and Adolescence (PASHA) has identified 11 primary pregnancy prevention programs (which includes all 5 reviewed by Frost and Forrest, 1995), in which three common behavioral impacts were found: increased abstinence, improved contraceptive use, and lower pregnancy rates (Card, Niego, Mallari, & Farrell, 1996).

Despite some promising results from evaluations of pregnancy prevention programs, their long-term benefits can be difficult to assess. Koo, Dunteman, George, Green, and Vincent (1994) studied the School and Community-Based Intervention Program in Denmark, South Carolina. They found that although the pregnancy rates among program participants declined initially,

the pregnancy rate began increasing steadily after the discontinuation of key components of the program, the cessation of related services, and a loss of momentum. This highlights the difficulty in maintaining lasting changes and reinforces the need for continued program follow-up and evaluation.

Despite the abundance of pregnancy prevention programs, a small number of evaluations have been conducted to assess long-term gains from such interventions. A contentious issue is whether gains in knowledge about sexuality issues influence sexual behavior. Kirby (1984) found no relationship between knowledge and behavior change in a study of sex education programs. Eisen and Zellman (1987) also found little relationship between formal sex education and self-reported sexual activity when students were followed at 3- and 6-month intervals following a 15-hour (six-session) program based on the Health Belief Model. By contrast, a later study by Eisen, Zellman, and McAlister (1985) found support for the assertion that sex education can lead to changes in behavior and decision making regarding sexual issues.

One issue of concern to health educators is whether school-based programs are more effective than those in other community settings. Shama and Coombs (1992) examined sex education programs using a theoretical perspective that supports the relative autonomy of schools; this theory suggests that schools are autonomous from the larger society. Using this framework, they assert that school-based programs have been ineffective because they exclude the societal influences outside of the school as a contributing factor to teenage pregnancy. They go on to argue that government agencies, the community, and the media must be used to influence society and ultimately change the behavior of youth these programs are targeting. Comprehensive programs that go beyond a narrow biological approach to include societal and contextual factors are believed to be crucial to program effectiveness (de Gaston, Jensen, & Weed, 1995). In addition, programs must reflect the current research on adolescent sexual activity and have a clearly articulated theoretical base (Schinke, 1998).

### **PSI: HISTORY AND EVALUATION**

PSI is an experiential educational program for adolescents based on the social influence or social inoculation model that theorizes that young people engage in potentially harmful behaviors due to inadequate knowledge. The aim of PSI is to provide adolescents with information about the general nature of social relationships, their rights in relationships, and ways to deal assertively with peer pressure so that they can postpone sexual involvement. The programmatic philosophy is that those youth ages 16 and younger are

often pressured into activities for which they do not fully understand the implications (Howard & McCabe, 1990). The PSI curriculum consists of five sessions, each lasting 45 to 60 minutes, in which the following subjects are covered: risks of sexual involvement, social pressures, peer pressure, assertiveness techniques, and reinforcing skills (Grady Health System, 1995).

PSI was developed at Grady Memorial Hospital in Atlanta, Georgia, in 1983 by hospital staff of the Emory University School of Medicine/Grady Memorial Hospital. The staff of the Teen Services Program, who provide family planning services to adolescents ages 16 and younger, realized that traditional approaches to influencing sexual behavior among teens were ineffective. They subsequently made the decision to revise their curriculum, thus resulting in the development of PSI. The program was field tested in Atlanta and Cleveland and subsequently implemented in the Atlanta public school system through a grant from the Ford Foundation (Howard & McCabe, 1990). An evaluation of the Grady Hospital program found that those who received the PSI program were just as likely to have a boyfriend or girlfriend but less likely to begin having sex when compared to those who did not participate in PSI. However, pregnancy rates among the experimental and comparison groups were similar. The program appeared to be effective for those who had never had sex prior to the program but not for those who had already become sexually active (Howard & McCabe, 1990).

PSI is the core curricular component of the ENABL program, an award-winning educational and informational program adopted in several states, that is aimed at preventing teenage pregnancy through abstinence. In addition to PSI, ENABL has three other components: a statewide media and public relations campaign, the provision of training for individuals who teach PSI, and an evaluation of the program's effectiveness.

The California ENABL program was launched in 1992 by Governor Pete Wilson to try to reduce the state's teenage pregnancy epidemic (Vanzi, 1995). Although still in use in several other states, the California program was abandoned following a study by the University of California at Berkeley that produced equivocal results about its effectiveness. Kirby, Korpi, Barth, and Cagampang (1995) evaluated the ENABL program for youth ages 12 to 14 years from April 1992 to June 1994. They found a small positive impact on some of the variables at 3 months, but at 17 months, the results indicated that PSI had no long-lasting impact on any of the mediating variables, including the decision to have sex. Although the results were disappointing to proponents of ENABL, the withdrawal of support for the program was viewed by some as premature. Judith McPherson Pratt, a health education consultant who developed ENABL, called the disabling of the California program an "early abandonment of a promising program" that illustrates society's investment in the

“quick fix” approach rather than long-term planning aimed at producing real change (Pratt, 1996).

Hence, the development of ENABL came from practice-based ideas about the most effective method of trying to instill in young teens the desire to delay sexual involvement. With some measure of success found by the Grady Hospital Study, and equivocal results in California, the need for further evaluations of ENABL is apparent in light of new funding and legislative mandates to improve sex education at the state and local levels. To succeed in meeting the needs of today’s youth, evaluation of sex education programs must take place. As Dr. Marion Howard, founder of PSI, stated about her experience with pregnancy prevention efforts, “Essentially, it was learned that continuing programs merely on the basis of good feelings about what is being done can do a tremendous disservice to young people” (Howard, 1991, p. 604). Likewise, the social work literature has reflected the professional concern that interventions should be empirically demonstrated to be effective (Fischer, 1973; Harrison & Thyer, 1988; Rubin, 1985).

## METHODOLOGY

An evaluation of the effectiveness of the ENABL program was conducted using a quasiexperimental research methodology. A formative evaluation study of the efficacy of the ENABL program was necessary to determine if the PSI curriculum was effectively implemented. The need for a widely acceptable survey questionnaire led the research team to select one that had been previously piloted in Florida (personal communication, S. Miller, June 1996). The need to develop new items for pregnancy prevention programs evaluations has been demonstrated in previous evaluations of ENABL (Kirby, Korpi, Barth, & Cagampang, 1997). Although the survey questionnaire did not include items about sexual activity, it examined subjects’ knowledge, beliefs, and attitudes about sexuality. For programs targeting younger students, indications of a program’s success is commonly judged by its ability to affect skills or attitudes as a preliminary measure of efficacy (Card et al., 1996).

The study examined whether students who completed the PSI curriculum achieved significantly higher scores on the evaluation instrument than those who did not receive the training. This component of the analysis allowed the researchers to measure the formative success of the ENABL program. Implementing a systematic evaluation of ENABL required at least a quasiexperimental research design. A quasiexperimental design allowed researchers to not mandate random assignment to treatment and comparison conditions.

Such a design allows for some conclusions, albeit limited, about the efficacy of the interventions. A large sample size ( $N = 1,450$ ) supported the use of parametric statistical procedures.

To assess the effectiveness of the PSI curriculum in increasing students' knowledge about abstinence-based issues related to sexual behavior and pregnancy, subjects completing the pretest were assigned a score based on the number of items answered correctly out of 14 dichotomous (true/false) items. These items reflected information taught in the curriculum or information that could be easily extrapolated based on the curriculum, reflecting respondents' knowledge, beliefs, and attitudes about sexual behavior and teenage pregnancy (e.g., you can get pregnant the *first* time you have sex, you *always* have the right to say "NO" to having sex). For example, a perfect score reflecting a high degree of knowledge about sexual behavior and pregnancy would be 14, whereas a student who answered half of the questions correctly would receive a score of 7. The brevity of the instrument ensured that the adolescent participants would not become fatigued in completing the measure and thus introduce measurement error. At this time, the psychometric properties of the measure are unknown. However, it has been used previously in Florida and was tested for its acceptability and feasibility (personal communication, V. Miller, July 1996).

### Sampling

Initially, the sampling strategy was to recruit experimental group subjects from counties receiving ENABL state funding or from counties participating in ENABL without receiving state money ( $N = 35$ ). In addition, the research team planned to recruit comparison group subjects from counties not participating in ENABL ( $N = 32$ ). Finding a comparison group proved difficult after receiving refusals from 55 school districts out of 67 counties. Therefore, the comparison group was formed from counties scheduled to receive ENABL but who had not done so during the period of data collection.

Letters requesting participation were sent to every school district in Florida ( $N = 67$ ); follow-up telephone contact with representatives from each school district yielded the eventual study sample described below. After receiving permission from each school district to conduct the evaluation, parental consents were obtained. Research assistants then traveled to each school, obtained student consent, and administered the questionnaire.

The cohort of students ( $N = 1,450$ ) was drawn from 20 middle schools representing 10 school districts in rural counties or counties bordering large urban areas. Roughly two thirds (67%,  $n = 974$ ) completed the PSI curriculum and one third (33%,  $n = 476$ ) were in the comparison group. This cohort was

composed of the following ethnic groups: one fifth (20.3%) African American, more than half (57%) Caucasian, 17.7% Hispanic, 1.3% Native American, and .6% Asian American, with the remainder of the respondents marking Other (.3%). Approximately half of the respondents were male (44.6%) and half were female (52.2%). The cohort predominantly (95.7%) came from the sixth grade. The majority of the students (89%) were doing well in school (making As, Bs, or Cs). Nearly three fourths (73.5%) stated that they had a boyfriend or girlfriend, with the remainder (25.2%) stating that they had never had a boyfriend or girlfriend. The respondents averaged 2.1 days per week in which there was no parental supervision for at least 1 hour. More than four fifths (81.9%) of the cohort spoke mostly or only English at home. More than half (55.1%) of the respondents lived with both their mother and father; more than one quarter (28.3%) lived with their mother compared to only a few (3.9%) who lived with their father; 7.9% lived half-time with their mother and half-time with their father; and 4.4% had other arrangements. Nearly one third (30.9%) of mothers had completed high school and 36.7% had completed college; the remainder (32.3%) of the respondents' mothers had a middle or elementary school education or the students did not know their mothers' educational level.

## RESULTS

Students receiving the PSI curriculum (experimental group) and those in the comparison group were compared using analysis of covariance (ANCOVA), with the pretest as the covariate (see Table 1). Those cases where a respondent completed a pretest but not a posttest (15.7%) were omitted from the ANCOVA analysis. The  $F$  score ( $F = 8.98$ ) was significant at the  $p < .001$  level, indicating that a significant difference existed on posttest scores (holding the pretest scores constant) between those respondents who were exposed to the PSI curriculum and those who were not.

Further analysis of the paired pretest and posttest scores found that the treatment group (composed of 4 counties) receiving the PSI curriculum showed improvement from mean pretest (10.06,  $SD = 2.17$ ) to mean posttest (11.36,  $SD = 1.79$ ) scores (see Table 1). By contrast, the comparison group (composed of 7 counties) not exposed to the PSI curriculum did not show marked improvement from mean pretest (10.02,  $SD = 1.93$ ) to mean posttest (10.31,  $SD = 1.90$ ) scores. It is worth noting that 2 of the comparison counties had a decrease in their mean scores from pretest to posttest. Both changes were statistically significant at the .05 level.

**TABLE 1: Analysis of Covariance of Posttest Scores With Pretest Scores as the Covariate**

<i>Measure</i>	<i>Mean Pretest (SD)</i>		<i>Mean Posttest (SD)</i>		<i>df</i>	<i>F Score</i>
	<i>Treatment</i> ( <i>n</i> = 1,143)	<i>Control</i> ( <i>n</i> = 566)	<i>Treatment</i> ( <i>n</i> = 974)	<i>Control</i> ( <i>n</i> = 476)		
Knowledge and beliefs	10.06 (2.17)	10.02 (1.93)	11.36 (1.79)	10.31 (1.90)	1	8.98*

\* $p < .001$ .

An effect size (ES) of .55 was calculated. Cohen (1977) has simplified the quantification of ES by proposing that ES be expressed as a function of the overall population standard deviation whenever possible (Brewer, 1978). This approach has been used here. Furthermore, Cohen (1977) provides a guide for interpreting ES values with an ES of .20 as small, .50 as medium, and .80 as large ES.

Using this criteria, the effect size in this study (.55) would be considered medium. In the present study, the ES is interpreted as the proportion of variance explained (PVE) in the posttest by the pretest scores. With an ES of .55, the independent variable (pretest scores) explains about 8% of the variation in the dependent variable (posttest scores). It is, therefore, reasonable to conclude that the intervention is credible in terms of its effectiveness when compared to the average social work intervention reported in published outcome research.

## DISCUSSION AND APPLICATIONS TO SOCIAL WORK PRACTICE

This study provided useful guidance for states considering the adoption of teenage pregnancy prevention programs in public school systems. Although there are several methodological limitations, the study provides support for the short-term efficacy of the PSI curriculum. However, it is important to note that this program is not designed as a one-time quick fix for the complex issue of adolescent pregnancy. Adolescents must continue to have reinforcement of the ideas and concepts learned in the program through continued exposure to the program in school, home, and/or other community settings.

Despite positive outcomes, the varying reactions to presentations of sex education curricula outside of the home illustrate the need for increased community education regarding the benefits of teaching adolescents about abstinence. Thus, one conclusion from this study is that broad-based community support and parental involvement are critical to the implementation and

success of adolescent pregnancy prevention efforts. Because parents have the right for their children not to participate in pregnancy prevention programs in the state where this evaluation was conducted, all adolescents cannot be reached through formalized programs. A lack of community support can also prevent programs from even being adopted by local school districts if parents oppose such programming.

An intervention's effect size, in and of itself, does not reflect that intervention's clinical significance, or practical value. In considering the clinical or substantive significance of this study's results, other factors, along with effect size, must be taken into consideration. Once the curriculum is accepted by schools, it is relatively easy to implement and inexpensive. In addition to these benefits, the program is producing a medium effect size around an issue (adolescent pregnancy) that is of considerable concern to any family or community with adolescents. This is particularly true for disadvantaged populations in lower socioeconomic neighborhoods where adolescent pregnancy rates tend to be higher. Collectively, these conclusions lend support to the clinical significance of these findings.

The current limitations on pregnancy prevention efforts illustrate the need for social work intervention in this area. The diversity of practice settings in social work allows for social workers to be involved at various points of intervention, including health care settings, community agencies, and schools. Social workers must promote prevention efforts but can also be instrumental in enhancing the messages presented in formalized programs such as PSI. Viewing adolescent pregnancy from an ecological perspective clearly illuminates the need to account for the social context of teenage sexuality and collaborate across systems with other health care professionals (Smith, 1997). Those invested in preventing adolescent pregnancy must translate empirical knowledge into practice efforts while realizing that the multifaceted nature of the problem precludes simplistic solutions (Schinke, 1998).

Our enthusiasm about finding the positive outcomes was tempered by the number of school boards and administrators who refused to even consider implementing the evaluation, much less the curriculum. This suggests that implementing a school-based strategy to curtail teenage pregnancy faces an uphill struggle with little assurance of eventual success. Although the commitment of local advocates of ENABL was heartwarming and inspirational, it was clear that for many counties, teenage pregnancy prevention programs remain a controversial issue. Students and parents alike reported that they believed that the program provided meaningful information. It may well be that students and parents will be enthusiastic advocates of ENABL prior to its official acceptance by school boards and administrators. Advocacy on the part

of supportive parents and further education of school board members and administrators continues to be necessary, even for abstinence-based programs.

### **Limitations and Implications for Research and Evaluation**

As a formative evaluation, we can state that the program was effectively implemented. Without a summative evaluation, we cannot make any conclusions about the impact of ENABL on adolescent pregnancy rates. The evidence regarding the assertion that sex education leads to changes in behavior is mixed, with some researchers claiming support for the notion that education leads to changes in sexual behavior (Eisen, et al., 1985), and some finding no relationship between the two (Kirby, 1984). Likewise, results addressing knowledge of AIDS as a factor in behavior change are conflicting (Miller, Booraem, Flowers, & Iverson, 1990). Because no definitive link between knowledge and behavior exists, any future reduction in pregnancy rates among program participants cannot be directly linked to the PSI curriculum. This is a general limitation of research on the impact of sex education on pregnancy rates because one cannot control for the impact of other influences on adolescents' decision making about sexual behavior.

In addition, there were a number of methodological limitations that reduced our ability to generalize study results. The refusal of many counties to participate in ENABL and its subsequent evaluation suggests that we know little about counties that chose not to participate. Because the ultimate study sample was self-selected, it may be that the results are not generalizable to all counties in this state. Furthermore, the large sample size may have led to statistical artifacts in the analysis, thus leading to an overestimate of the program's efficacy.

In addition, there are limitations in using ANCOVA with intact groups (Lord, 1969). However, other statistical methods for analyzing these kind of data (i.e., matched samples or gain score ANOVA) suffer many of the same problems. The fact is that inferring cause-effect from intact groups may result in artifacts, regardless of the type of statistical analysis (Stevens, 1996). However, as Pedhazur (1982) pointed out, "the conduct of such research, indeed all scientific research, requires sound theoretical thinking, constant vigilance, and a thorough understanding of the potential and limitations of the methods being used" (p. 525).

The level of improvement in the mean scores for the comparison group was lower than the mean level of improvement for the experimental group. Although the exact cause of this unexpected improvement in the comparison group is unknown, it is hypothesized that it may have been a random occurrence or the result of the statewide ENABL media campaign.

It should be noted, however, that although using participating counties can produce such extraneous influences, the use of this sampling technique was unavoidable because no nonparticipating counties would agree to participate in this evaluation.

Ironically, we learned much from this study that could not have been predicted prior to our involvement. Opponents objected to ENABL despite its emphasis on postponing sexual involvement. Although this goal would seem consonant with traditional family values, opponents remained unappeased. What remains uncertain is why they were so adamantly opposed to ENABL and its evaluation. Future research should be directed toward uncovering reasons for opposition so that strategies to overcome these obstacles to both research and practice can be designed.

#### REFERENCES

- Alan Guttmacher Institute. (1997). *Teen pregnancy rates highest in California, Nevada, Hawaii, Arizona and New Mexico, new analysis shows* [On-line]. Available: <http://www.agiusa.org/new/newsrelease597.html>
- Brewer, J. K. (1978). *Everything you always wanted to know about statistics, but didn't know how to ask*. Dubuque, IA: Kendall/Hunt Publishing.
- Card, J. J., Niego, S., Mallari, A., & Farrell, W. S. (1996). The program archive on sexuality, health, & adolescence: Promising "prevention programs in a box." *Family Planning Perspectives*, 28, 211-220.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- de Gaston, J. F., Jensen, L., & Weed, S. (1995). A closer look at adolescent sexual activity. *Journal of Youth and Adolescence*, 24, 465-479.
- Eisen, M., & Zellman, G. L. (1987). Change in incidence of sexual intercourse of unmarried teenagers following a community-based sex education program. *Journal of Sex Research*, 23(4), 27-54.
- Eisen, M., Zellman, G. L., & McAlister, A. (1985). A health belief model approach to adolescents' fertility control: Some pilot program findings. *Health Education Quarterly*, 12, 185-210.
- Firestone, W. A. (1994). The content and context of sexuality education: An exploratory study in one state. *Family Planning Perspectives*, 26, 125-131.
- Fischer, J. (1973). Is casework effective? A review. *Social Work*, 18, 5-20.
- Frost, J. J., & Forrest, J. D. (1995). Understanding the impact of effective teenage pregnancy prevention programs. *Family Planning Perspectives*, 26, 188-195.
- Gilbert, F. S., & Bailis, K. L. (1980). Sex education in the home: An empirical task analysis. *Journal of Sex Research*, 16, 148-161.
- Grady Health System, Adolescent Reproductive Health Center. (1995). *Postponing sexual involvement educational series for young teens* [Brochure]. Atlanta, GA: Author.
- Harrison, D. F., & Thyer, B. A. (1988). Doctoral research on social work practice. A proposed agenda. *Journal of Social Work Education*, 24, 107-114.

- Howard, M. (1991). Evaluation: It makes a difference. *Bulletin of the New York Academy of Medicine*, 67, 595-605.
- Howard, M., & McCabe, J. B. (1990). Helping teenagers postpone sexual involvement. *Family Planning Perspectives*, 22, 21-26.
- Kenney, A. M., Guardado, S., & Brown, L. (1989). Sex education and AIDS education in the schools: What states and large school districts are doing. *Family Planning Perspectives*, 21, 56-64.
- Kirby, D. (1984). *Sexuality education: An evaluation of programs and their effects*. Santa Cruz, CA: Network Publications.
- Kirby, D., Korpi, M., Barth, R. P., & Cagampang, H. H. (1995). *Evaluation of Education Now and Babies Later (ENABL): Final report* [Evaluation report]. Berkeley, CA: University of California, School of Social Welfare, Family Welfare Research Group.
- Kirby, D., Korpi, M., Barth, R. P., & Cagampang, H. H. (1997). The impact of Postponing Sexual Involvement curriculum among youths in California. *Family Planning Perspectives*, 29, 100-108.
- Koo, H. P., Dunteman, G. H., George, C., Green, Y., & Vincent, M. (1994). Reducing adolescent pregnancy through a school- and community-based intervention: Denmark, South Carolina revisited. *Family Planning Perspectives*, 26, 206-211, 217.
- Lameiras, M. M., & Gaulin, E. (1997, January 5). Emory program gets Clinton praise. *The Atlanta Constitution*, p. A16.
- Lopez, G., Westoff, W., Perrin, K., & Rimmel, R. (1995, August). *Pregnancies averted among publicly funded family planning users: Florida—1994* [Technical report]. Tampa: University of South Florida, College of Public Health, The Department of Community and Family Health.
- Lord, F. (1969). Statistical adjustments when comparing pre-existing groups. *Psychological Bulletin*, 70, 162-179.
- Miller, T. E., Booraem, C., Flowers, J. V., & Iverson, A. E. (1990). Changes in knowledge, attitudes, and behavior as a result of a community-based AIDS prevention program. *AIDS Education and Prevention*, 2, 12-23.
- 1996 annual report: Florida education and employment council for women and girls. *Investing in Florida's women and children: Implications and recommendations for workforce development and welfare reform*. (1996). Orlando, FL: University of Central Florida, College of Education, Center for Education Research and Development.
- Pedhazur, E. (1982). *Multiple regression in behavioral research* (2nd ed.). New York: Holt, Rinehart & Winston.
- Poole, D. L. (1996). Welfare reform: The bad, the ugly, and maybe not too awful. *Health & Social Work*, 21, 243-246.
- Pratt, J. M. (1996, January 3). [Letter to the editor]. *The Sacramento Bee*, p. B9.
- Rosoff, J. I. (1989). Sex education in the school: Policies and practice [Editorial]. *Family Planning Perspectives*, 21, 52, 64.
- Rubin, A. (1985). Practice effectiveness: More grounds for optimism. *Social Work*, 30, 469-476.
- Scales, P. (1981). Sex education in the 70's and 80's: Accomplishments, obstacles, and emerging issues. *Family Relations*, 30, 557-566.
- Schinke, S. P. (1998). Preventing teenage pregnancy: Translating research knowledge. *Journal of Human Behavior in the Social Environment*, 1(1), 53-66.
- Shamai, S., & Coombs, R. B. (1992). The relative autonomy of schools and educational interventions for substance abuse prevention, sex education, and gender stereotyping. *Adolescence*, 27, 761-767.

- Smith, C. A. (1997). Factors associated with early sexual activity among urban adolescents. *Social Work, 42*, 334-344.
- State of Florida, Department of Education, Office of Policy Research and Improvement. (1990). *Hot topics: Usable research. Human sexuality education: Elements of effective research*. Tallahassee, FL: Author.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Thomson, R. (1994). Moral rhetoric and public health pragmatism: The recent politics of sex education. *Feminist Review, 48*, 40-60.
- U.S. Department of Health and Human Services (HHS). (1997). *A national strategy to prevent teen pregnancy*. Washington, DC: Government Printing Office.
- U.S. Department of Health and Human Services, Public Health Service, Health Resources & Services Administration, Maternal and Child Health Bureau, & National Association of County and City Health Officials (NACCHO). (1996). *Unintended pregnancy: Prevention strategies for local health departments* (Publication No. MCU-116060-11). Washington, DC: U.S. Government Printing Office.
- Vanzi, M. (1995, December 28). Governor ends teen pregnancy program. *Los Angeles Times*, p. A7.