PREDICTING AND CHANGING
TEEN SEXUAL ACTIVITY RATES:
A Comparison of Three Title XX Programs

by

THE INSTITUTE FOR RESEARCH AND EVALUATION

Stan E. Weed, Ph.D. Principal Investigator
with
Joseph A. Olsen, Jacqueline DeGaston, Jerry Prigmore

Submitted to

December 1992

TABLE OF CONTENTS

CONCLUSIONS AND RECOMMENDATIONS 73

APPENDICES

INDEX OF FIGURES

INDEX OF TABLES

INTRODUCTION

Increasing attention is being focused on the problems of teen pregnancy, sexually transmitted diseases, and other consequences of early and premature sexual involvement. Many of the problems which have produced national concern about teen pregnancy are also shared by the state of Utah. A special statewide task force sponsored by the Governor's office met and studied the problem over a several month time period during 1987. The departments of Education, Health, and Social Services were represented by their respective superintendents or executive directors. Representatives from the medical and legislative arenas were also involved. In addition to holding public hearings and taking expert testimony, the task force also collected data from a state wide sample of high school students to provide factual information for their deliberations. This current pilot project is in part a follow-up to the work and recommendations of the governor's task force, and is a joint effort by the Institute for Research and Evaluation, the State Office of Education, and the local school districts of Millard, Murray, and Jordan. A first year report was presented to the State School Board in December of 1989. This report will provide an update on the second and third years of the project, including a report of the follow-up data for the first year students (collected during the second year), pre-post data from the new students entering the program during the second year of the project, and follow-up data from those second year students which was collected during the third year of the project.

The Problem

In spite of the current perception and claims to the contrary, Utah's overall teenage pregnancy rate is considerably lower than the national average (77 vs 108 pregnancies per thousand teens in 1984) and lower than all of the other Western States. Utah also has the lowest teen abortion rate in the nation (about 14 abortions per 1000 women age 15-19 as compared to the national rate of 44 abortions per 1000 women in the same age group). However, Utah's teenage birth rate, though declining substantially over the past 5 years, is about the same as the national rate (49 births per 1000 women age 15-19 in 1985). More important, however, are the statistics for unmarried teens in this age group. It is in this unmarried category where the risks are higher for the child and the negative impact on the mother and society is greater. The proportion of all teen births that occurred to unmarried teens in Utah increased from 28 % to 56% between 1975 and 1987. The national figures were 38% to 64% during that same time period (1975-1987). Both the number and the proportion of out-of-wedlock

births have increased. These increases, and the multitude of subsequent health, educational, and social consequences for girl and baby argue for action to be taken. The solutions, however, are still being debated.

The anxiety over the problems associated with premature sexual activity has intensified in the face of the growing concern for and incidence of AIDS. As with pregnancy rates, sexual activity rates are also considerably lower in Utah than in other areas, as will be seen later in the report.

Potential Solutions

The process of finding solutions is complicated by three basic questions dealing with problem responsibility and ownership, program philosophy, and program effectiveness:

*   Whose problem is it? What is the role and responsibility of government and public agencies versus homes and parents? At what level of society (individual girl, boy and girl, family, community, larger society) should an intervention occur? One of the important and lively debates occurring in educational communities and agencies around the nation centers on the role of public education in the teaching of family life education and human sexuality. This project has taken the position that it is primarily a parental responsibility, and that the public school system can play an important supportive role to parents.

*   What approach or strategy ought to be taken? Even more important are the questions about the nature and underlying philosophy of the intervention. In Utah, as in other states, there continues to be differences of opinion between various groups about how best to address the problem. This project has taken the approach to test three programs on a pilot basis which adhere primarily to the Federal Title XX guidelines which focus on a message of abstinence, try to involve parents in a meaningful way, and teach human sexuality in a context of basic and traditional values.

*   What really works? Finally, questions about effectiveness -- What really works, what difference does the program make in the lives of the young people -- have to be a central consideration. The common attitude that "doing something is better than doing nothing" often becomes a substitute for doing something that really works.

Doing something that is not effective becomes a major impediment to doing something that will work. In deciding what works, or what works best, the question of possible unintended or even negative effects also needs to be considered.

Good decisions by administrators require careful attention to all three areas: problem ownership, program philosophy, and program effectiveness.

The current visibility and sense of urgency for dealing with teenage sexuality will continue to put pressure on state and local education agencies to take action to address the problem. However, the appropriateness and effectiveness of the proposed solutions need to be determined prior to large scale implementation if we are to make a significant and lasting impact on the fundamental underlying problems. It is also important to assess how well programs fit into the situational and cultural context where the programs are to be employed. Many states and local districts have tried to address the problem, but without any significant success. Most have relied on programs based on an informational/decision making model of intervention in spite of a lack of any compelling evidence to support that approach. Others have relied on the contraceptive approach, and more recently the school based clinic model has been tried, also without success. Rather than simply repeating the failure of others, this project considered and tested other intervention strategies and also examined the underlying factors and dynamics of the basic problem -- premature, premarital sexual activity.

The Premise

The pilot programs evaluated here assume that it is both desirable and possible for teens to avoid premarital sexual involvement. They take the position that it is not only in the best interests of the teen to abstain from sexual activity, but that they would recognize the message as viable and acceptable. As was stated in the Governors Task Force Report of November 1988

Programs should be developed stressing that abstinence is the surest, safest, and only fully effective way to avoid teen pregnancy and other problems attendant to early sexual involvement. There should be a clear, consistent, and unambiguous message affirming the value and importance of sexual abstinence for teenagers. A strong, sustained, and broadly-based effort to reduce early sexual activity is essential to an effective strategy for preventing teen pregnancy in Utah.

3

We urge that a concerted effort be made in both the public and private sector to devote more programming and resources to value-based effort to encourage sexual abstinence among teenagers. We are committed to finding ways to help teens postpone or discontinue sexual activity. We need to help them understand the risks and consequences of premature and irresponsible sexual behavior, and the reasons for abstaining from sexual activity during their teenage years. Encouraging greater abstinence among teenagers is both a viable and realistic strategy for preventing teenage pregnancy. Although there are many additional reasons for teenagers to remain sexually abstinent, the social and health problems associated with early sexual activity constitute a sufficient and compelling justification. (p. 63)

While the emphasis on abstinence was central in these programs, the message to students was not limited to a simplistic "just say no" approach. The programs tested also gave attention to the qualities needed in successful relationships, the importance of strong and permanent family units, healthy and wholesome lifestyles, and the key role and responsibility that parents have in transmitting and reinforcing the above set of values. (See Appendix E for a summary of curriculum content in the three programs.) The project also sought for compatibility and integration with the broader character education goals of the Utah Department of Education, as well as consistency with the state's legal guidelines concerning sexuality education. Some additional general guidelines were adopted in terms of program selection, including evidence of prior success, age appropriateness, etc. While no existing programs met all of the guidelines perfectly, some of the important ones were evident in each program.

PURPOSES OF THE PROJECT

Incorporated in this project were *program evaluation* efforts that would examine both the short term and long term results of these programs, including reasons for success or failure, and ways to improve them. A second major purpose was to collect the kind of data that would *increase our understanding of the nature and dynamics of the problem.* What is the process and what are the dynamics by which young people acquire, modify, or abandon sexual attitudes, values, and behavior patterns? Are those processes and dynamics amenable to intervention efforts? This latter purpose is central, because it provides a basis and a framework by which programs can be designed as well as evaluated. If the key leverage points are not addressed at all, let alone adequately or effectively, one has little hope of making a difference.

4

Evaluation of pilot programs

The purpose of evaluating programs on a pilot basis that have shown promise in other states was to see if and how well they might work in this environment, and to determine the degree to which they would be acceptable to the community at large. In the face of limited resources and pressing needs, creating new programs and writing supporting curricula appeared to be unrealistic for both the state office and the local districts.

There are several programs used nationally which were developed and tested under the 1981 Adolescent Family Life Act (Title XX). Several of these have shown considerable promise in the early stages of evaluation. They incorporate several of the above mentioned guidelines, and emphasize a value-based, parental involvement, abstinence-oriented approach. The stated purposes of the Title XX legislation were:

> *find effective means, within the context of the family, of reaching adolescents before they become sexually active in order to maximize the guidance and support available to adolescents from parents and other family members, and to promote self discipline and other prudent approaches to the problem of adolescent premarital sexual relations, including adolescent pregnancy. (ibid. para 11C(1))*

The parental role was further emphasized in the Title XX legislation as follows:

> *the prevention of adolescent sexual activity and adolescent pregnancy depends primarily upon developing strong family values and close family ties, and since the family is the basic social unit in which the values and attitudes of adolescents concerning sexuality and pregnancy are formed, programs designed to deal with issues of sexuality and pregnancy will be successful to the extent that such programs encourage and sustain the role of the family in dealing with adolescent sexual activity and adolescent pregnancy. (Sec. 2001. The Public Health service Act, Title XX, para 10A)*

This philosophy was felt to be more easily and readily integrated into the schools in Utah than the more typical information/decision making model of most sex-education approaches. These national programs have already been developed and used in other areas of the country with encouraging results, and

5

using existing curriculum can simplify the process of program design and adoption for the state and local school districts, if they are found to be effective and can be successfully implemented here.

Three basic curricula were identified for use within the context of the pilot program. One is titled Teen-Aid, the second is Sex Respect, and the third is called Values and Choices. All of these programs have been developed under the auspices and guidelines of the Title XX legislation. Curriculum summaries of these three programs are included in Appendix E. The Values & Choices materials were edited and modified so as to comply with state law and community values. The school district piloting these programs elected not to use the sections on homosexuality, masturbation, birth control options, etc. These modified materials are very similar to the original Values & Choices program tested and approved under OAPP funding. Appendix F contains a copy of the manual used in this pilot project.

When the three programs were originally implemented in the Fall of 1988, the State Office of Education and three school districts were interested in testing potential solutions to the problem defined above. Evidence was not available for Utah students about which, if any of the Title XX programs would be effective in meeting the objectives of reducing the rates of pregnancy, abortion, sexually transmitted diseases and the other social and emotional consequences of early sexual activity. The federal Office of Adolescent Pregnancy Programs was also interested in this project because it provided a unique opportunity to concurrently test and compare three well known and widely used prevention programs on a homogeneous population using the same measurement scales and analysis techniques.

Each of the three programs sent their own staff to do the teacher training and in-service work. The training for the teachers in the school district using the Sex-Respect program (Murray District) required one full day. The teachers in the school district using the Teen-Aid program (Jordan District) received almost two days of training. The teachers using the Values & Choices program (Millard District) received an introduction and orientation. All of the programs recommend a set of video materials, with Values & Choices having the highest number of video minutes as an integral part of the program. The implementation of all three programs, including the teacher training, parent orientation, student workbooks, and video support occurred as close to the prescribed mode as possible. The two exceptions to this, both mentioned in more detail elsewhere, were the number of units covered in the Teen-Aid program due to its broader and more comprehensive scope, and the use of the

6

original Values & Choices format as it was tested under the Title XX grant.

The nature and dynamics of the problem

Finding or developing effective solutions requires a good understanding of the problem being addressed. Faulty or untested assumptions about what will work, make a difference, produce intended outcomes, etc. drastically reduce the likelihood of success. There is a growing consensus that the typical approaches are not solving the problems. A variety of factors have been offered as explanations about why adolescents become involved sexually and put their health, future, and lives at risk. While there is not yet wide agreement on which of those factors is the most important, there is wide agreement that a broad set of factors and dynamics are involved, and that these influences are more complex than simple. A clear understanding of what those factors are, and the relative magnitude of the impact they have on adolescent sexual behavior is a critical need in determining policy and program direction. Solutions that do not address the core factors that have the biggest impact on sexual behavior will simply not be effective.

A significant purpose of this project then was to gain a better understanding about the nature and dynamics of the problem, and then link that understanding with program evaluation. The programs were then evaluated in terms of their effects on the key factors that were shown to have the greatest influence on premarital sexual activity.

EVALUATION METHODS

Program Evaluation Strategy

Typical evaluation approaches look for changes in students as a result of program participation. Some take the additional step of taking into account *levels of program implementation* so that program results can be interpreted in light of the degree of exposure or "dosage" that the student receives. This project has taken a somewhat broader approach. In addition to the global effect of a given program, we have considered the role of the teacher in determining program outcomes, and also looked at the personal characteristic the students bring to the setting, recognizing that there is a broad range of backgrounds, attitudes, and values of students that may influence the program experience a student has. A major interest then was to look at the interaction between

program characteristics, teacher characteristics, and student characteristics. This three way interaction is depicted below.
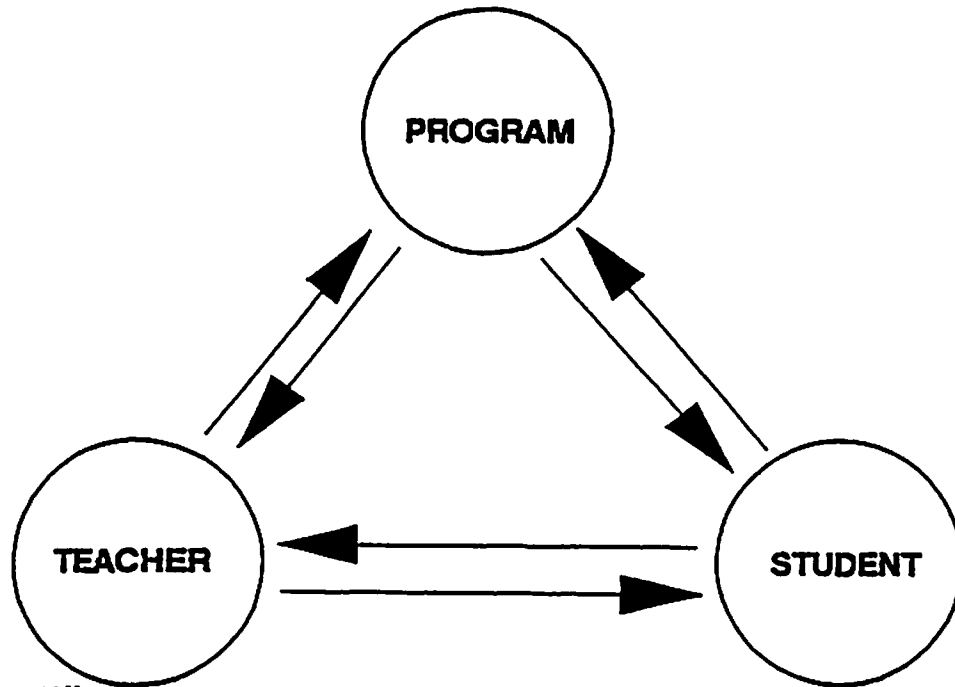
These three basic dimensions and their effect on each other will be taken into account in the analysis strategy.

Evaluation Design and sample groups

The evaluation design was fairly straightforward. Pilot program (experimental) schools were identified within the three districts, with three high schools and five junior high/middle schools using the pilot programs. The high school students were primarily in 10th grade health classes, and the junior high/middle school students were primarily in 7th grade. One exception to this was the district using Values and Choices. In this case, the health class was taught in the 8th grade. For comparison purposes, comparison schools were selected from the same three districts, with two high schools and three junior high/middle schools making up the comparison group. See the following table for a summary of the evaluation design.

		Pre-Test	Intervention	Post test	One year follow-up
High School Programs (1st Cohort)					
N=218	Sex Respect	O_1	X_1	O_2	O_3
N=507	Teen-Aid	O_1	X_2	O_2	O_3
N=147	Values & Choices	O_1	X_3	O_2	O_3
Junior High Programs (1st Cohort)					
N=399	Sex Respect	O_1	X_4	O_2	O_3
N=685	Teen-Aid	O_1	X_5	O_2	O_3
N=140	Values & Choices	O_1	X_6	O_2	O_3
High School Programs (2nd Cohort)					
N=316	Sex Respect	O_1	X_1	O_2	O_3
N=1529	Teen-Aid	O_1	X_2	O_2	O_3
N=199	Values & Choices	O_1	X_3	O_2	O_3
Junior High Programs (2nd Cohort)					
N=395	Sex Respect	O_1	X_4	O_2	O_3
N=1041	Teen-Aid	O_1	X_5	O_2	O_3
N=225	Values & Choices	O_1	X_6	O_2	O_3
High School Comparison Group					
N=508	1st Cohort	O_1			O_3
N=548	2nd Cohort	O_1		O_2	
Junior High Comparison Group					
N=539	1st Cohort	O_1			O_3
N=248	2nd Cohort	O_1		O_2	

N sizes are based on pre-test from the linked samples.

The program and comparison schools were very similar with respect to
population characteristics, school size, age of the sample, etc. (See Appendix C
for comparison between groups). This was true in spite of the districts being
located in different parts of the state. Students in the suburban and rural areas
were very similar, and provided the homogenous sample we were looking for to
do program comparisons. Pre- and post test data was collected from the
program students with a three to four week interval, and then one year later the
longitudinal follow-up data was collected from a sample of those same students.
This follow-up sample was approximately half of the pretest sample size, and was
drawn by classroom groups from the pretest sample. As can be seen from the
table above, the one year follow-up data was collected for both the 1st and 2nd
cohorts. In addition, program teachers were interviewed to determine the level
and kind of program implementation, teacher characteristics and teaching style,
program rating by teachers, and other relevant information. This data was linked

9

with the 2nd cohort of students so that teacher differences could be accounted for.

The control or comparison school data was collected during the same time period and in a similar manner. However, the 1st cohort of comparison school data involved pre- and follow-up data only. The 2nd cohort of comparison school data involved pre- and post test data but not follow-up data.

The data was anonymous, and linked for pre and post, and pre and follow-up to allow for analysis procedures. The linking procedure involved maintaining school, teacher, and class period data, and then matching students within those class period groups on gender and birth date information. Eighty-five percent of the students who participated in the one year follow-up test were linked to their pre test data. The pre- to post data linkage rate was also 85%.

A random sample of those not responding to the follow-up questionnaire were tracked to determine whether their lack of availability was due to pregnancy drop out or other causes. We found no particular pattern with the non-respondents in terms of pregnancy related drop-outs. There were equal numbers of male and female students, and in the main their lack of availability was due to family moving, seniors who had graduated, or students who had transferred to a different school.

During the second year of the project, new students moving into the 7th, 8th, and 10th grades became new program participants. Pre- and post test data was also collected from this 2nd cohort of new students. During the third year, follow-up questionnaires were administered, again with an 85% return rate on follow-up questionnaires for the participants sampled from the pre-test. The full data base for this report is based on a sample of approximately 7,000 students, with data collected at three different points in time (pretest, post test, and one year follow-up). This totaled 17,000 questionnaires during the three year life of the project.

Given the make up of this sample, different components were used for different analysis purposes. Most of the short term program effects and program comparisons were done using the 2nd cohort. This choice was based on the fact the 2nd cohort had teacher data available, the instrument used for the second cohort had some additional measures available that were not on the questionnaire for the 1st cohort. Furthermore, the 2nd cohort had pre-post data for the comparison group. The 1st cohort data had the advantage of a comparison group with longitudinal data, and therefore was used to examine the

program vs control group comparison for longer term program effects, primarily transition (virgin to nonvirgin) rates. The third category of analyses combined the pre- follow-up linked data from both samples in order to look at transition rate data in more detail and with a larger sample size. The following table provides a summary of the sample sizes for the various linked components of the data sets.

Sample Components sizes for linked pre-post and pre- follow-up data

SAMPLE COMPONENTS	PRE-POST LINKAGE	PRE- FOLLOW-UP LINKAGE
1st Cohort TOTAL	3143	1963
High School program group	872	475
Jr. High program group	1224	732
High school control group	508	349
Jr. High control group	539	407
2nd Cohort TOTAL	4164	1671
High School program group	2044	1090
Jr. High program group	1661	581
High School control group	548	--
Jr. High control group	248	--

Not every analysis had exactly the same numbers as the preceding table due to missing data on particular items.

Measurement

A variety of factors or variables were measured, some with single items and others with multiple items where a scale was necessary to measure the construct. The scales were developed as a part of this and other projects of the research organization conducting this study. Details of the scales, their psychometric properties, and other technical information are available in Appendix A. Significant caution was taken to insure that the measures were both reliable and valid. The measures and constructs were selected because they either had a significant relationship to the program objectives, were related to the dependent variable of sexual activity, or were important demographic and situational measures that would help to interpret the data with regard to specific subgroups of the population. Samples of the questionnaire for students and teachers are contained in Appendix B.

Data Analysis Strategies

A variety of analysis procedures were used to unravel and decipher the data and to understand what was being portrayed. For program comparison purposes, repeated measures analysis of covariance was used, along with simple t-test and crosstab analysis (2nd cohort). Covariates were selected based on two criteria: whether there were differences between any of the program or comparison groups on specific demographic variables, and whether these demographic variables were significantly related to the dependent variable. Four covariates were found that met this criteria: Family composition, Church attendance, alcohol use, and dating (steady) behavior. The repeated measures analyses were computed for a variety of sub-groups (for example, males vs. females, younger versus older, virgin vs. non-virgin, etc.) Within the crosstab analysis, positive and negative movement patterns were also determined, and weighted and unweighted net gain scores were computed for all programs and a variety of significant sub-groups. Loglinear and Catmod procedures (within SAS) were used to examine behavior in the longitudinal data set (1st cohort), with a focus on the transition from virgin to non-virgin status.

For many of the analyses contained in this report the second cohort was used, particularly for the short term program effects. This selection was based on the fact that the 2nd cohort had the additional data from the teachers which allowed us to take into account teacher and implementation differences. In addition, the sample from the 2nd cohort was somewhat larger, and the teachers for all of the programs had one year of experience in presenting the material in a classroom setting. When examining the program effects on behavior one year later, both the 1st and 2nd cohorts were often used in order to provide a large enough base of students to examine transition from virgin to non-virgin status.

RESULTS

The results of this project will be presented in a general sequence which addresses questions that seem to be pertinent to most administrators, school board members, or others who deal with related policy questions.

ADMINISTRATIVE QUESTIONS

1. The nature and extent of the problem. What is the level of sexual activity among Utah students, and how does it compare with national figures? What does "sexually active" really mean for Utah teenagers? What is the comparative level of risk?

2. What are the most important factors and dynamics of premature/premarital sexual behavior? What are the significant factors that influence the transition from virgin to non-virgin status? Are they unique to the Utah population? What implications does this have for development and intervention efforts?

3. How well do the pilot programs incorporate those factors, and to what extent can we observe program influence or impact on these key measures?

   a. Short term
   b. long term

4. What is the effect of the teacher on the program results?

5. How do the programs fare with respect to population subgroups, particularly male vs. female, older vs. younger, and virgin vs. non-virgin?

6. Are there any unintended or negative effects from these programs? If so, how do we explain them?

7. What recommendations can be made, based on what we now know from the three year pilot project, with regard to these three programs, program development, general policy, or other issues?

Given this list of pertinent issues, this report will provide some discussion of implications within each question category where possible and appropriate.

1. The nature and extent of the problem. What is the level of sexual activity among Utah students, and how does it compare with national figures? What does "sexually active" really mean for Utah teenagers? What are the teen pregnancy rates for Utah?

The focus in this section of the report will be on the rates of sexual activity, including a breakdown that provides a better understanding of what the term "sexually active" really means. This focus has been adopted because the prevention programs being tested are in fact dealing with that particular behavior. The consequences of that behavior are also important, but occur at a later time period -- often many months after the program has ended. The most obvious consequences of premature sexual behavior are often seen in the form of pregnancy and STD's. As noted in the introduction to this report, Utah teens are considerably below the national figures with respect to teen pregnancy and abortion, but similar with respect to live birth rates. The live birth rate is of course directly affected by the low abortion rate. The percent of all teen births occurring out-of-wedlock is also below the national figures, but is increasing at a rate similar to the national trend. These figures are documented in the Governors task force report and won't be elaborated on here.

Utah Teen Pregnancy

What should be noted, however, is the 1988 report from the Utah State Department of Health. The department data illustrate that while the overall pregnancy rate for teens appears to be dropping slightly between the years of 1975 and 1987, the pregnancy rate for unmarried teens is increasing during that same time period (See Figure 1) in spite of increased family planning services to teens. It would appear that the effectiveness of family planning services to teens depends a great deal on their marital status. It is clear that something very different is going on with unmarried teens as compared to married teens when it comes to birth control counseling and services. It should also be noted that the pregnancy rate on this chart was created from birth rate and abortion rate figures provided in the Utah State Department of Health report. The pregnancy rate reported here does not include an estimate of miscarriages.

14

Figure 1. Teen Pregnancy rates (married & unmarried) and Family Planning Client rates for 15-19 year old Utah women.

PREGNANCY RATE (#/THOUSAND) AND FAMILY PLANNING CLIENTS (#/THOUSAND) 15-19 YEAR OLD UTAH WOMEN

Family Planning Clients

MARRIED Preg. Rate

UNMARRIED Preg. Rate
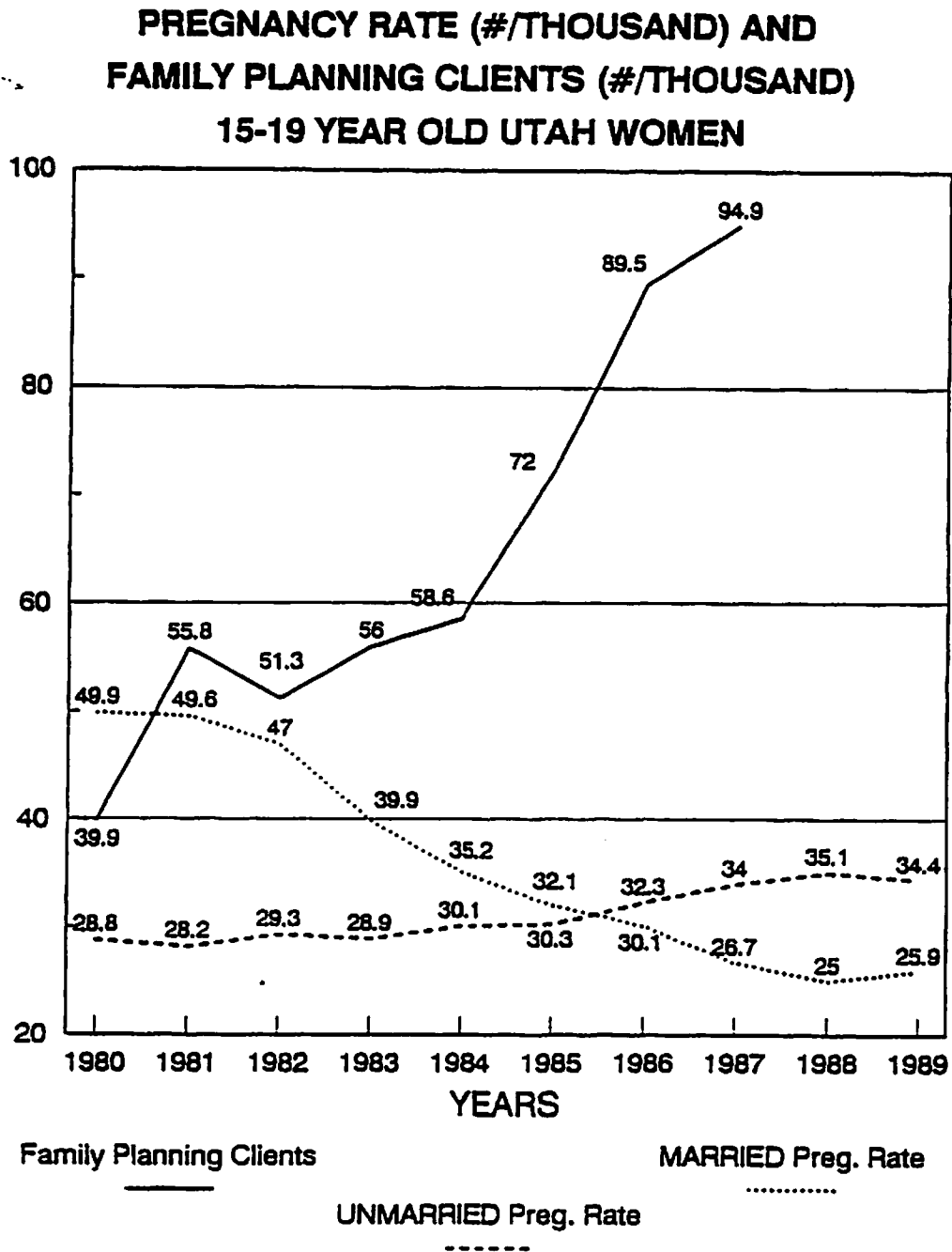
Percentage were calculated from Utah Health Department data.

15

Utah Teen Sexual Activity Rates

The following chart illustrates the global "sexual activity" rate for 10th grade students in Utah as compared to a national sample. Keep in mind that these students are primarily 10th graders. The figures for 7-8th grade students were considerably lower (14.1% for boys and 7.6% for girls). This was the grade level of program participants and comparison school students at the time of the pre-test. Since the vast majority of adolescents are still in school at these grades, the rates will be representative of Utah adolescents generally who are in the same grade. In addition, it is important to recognize that sexual activity rates increase each year, so that 11 and 12th grade students will in general have higher rates. For example, the rate of sexual activity (global) among 11th grade Utah students is 8-10% higher than for 10th graders.

Figure 2. Sexual Activity Rates, 10th grade, Utah vs. Other Regions

Have you ever had sexual intercourse?
Utah and Midwestern States -- 10TH GRADE
1990 data -- Utah n = 2,214, Midwest n = 1,663
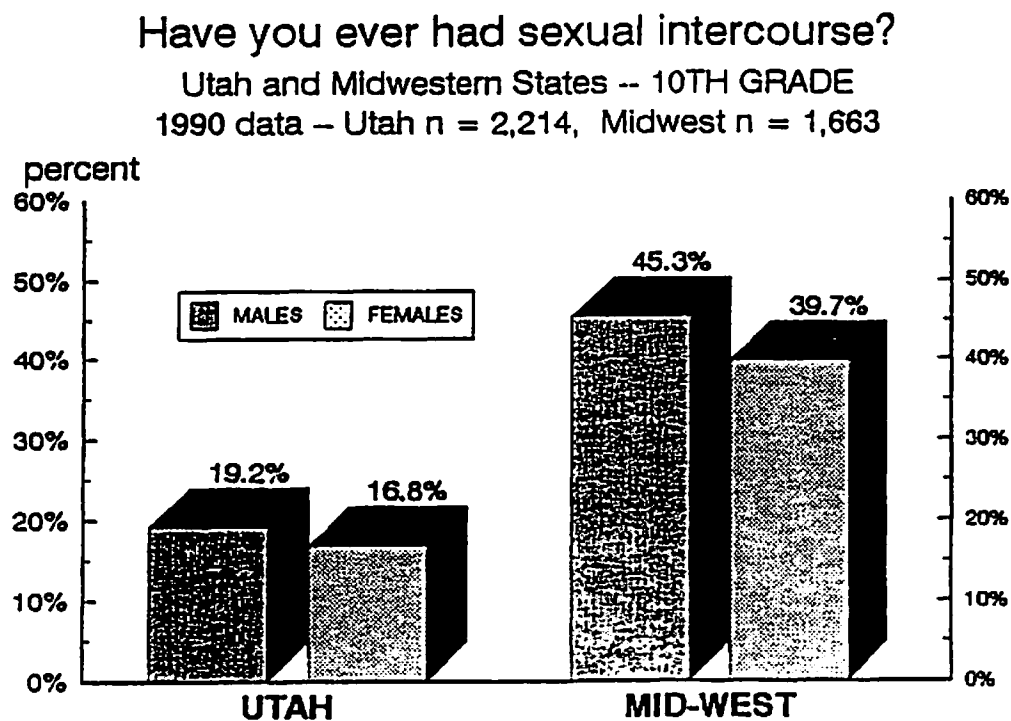
Note: Midwest data is based on 1,663 10th Grade students collected from 6 high schools during the 1989-1990 school year.

Figure 2 demonstrates that Utah adolescents compare favorably with the midwest data and other national figures. The most recent National Survey of

16

Family Growth (1988) and the January 1992 report from the Center for Disease Control also report sexual activity rates that are double those for Utah students. This does not suggest that Utah has nothing to worry about and that significant action is not in order. The major question is what in fact should be done, and the answer to that question is not as simple nor obvious as it might first appear. It is clear, however, that effective intervention strategies cannot presume that "everyone is doing it."

It is obviously important that we be accurate and realistic about the problems we are trying to solve. The term "sexual activity" is often used without any clarification or explanation, and is often interpreted as if the teens included in the rate were all very similar, were having sex on a regular basis, and were therefore at constant risk. A more accurate picture is obtained by distinguishing between those for whom sexual intercourse occurred but one time and not recently, those for whom it was both recent and often, and those in between. This is not to say that one experience is of no concern, but rather to indicate that there are different levels of activity and consequently different levels of risk. In addition, those who have been forced into sexual intercourse would not be in the same category as those who were voluntary participants with respect to intervention strategies (See Figure 3).

Figure 3.   Sexual Activity Rates, delineated by frequency and recency.

HIGH SCHOOL SEXUAL ACTIVITY
UTAH 10TH GRADE   1989-90 DATA

81.9%

80%

60%   13.3%

40%   TOTAL

20%

                    4.6%   3.2%   3.8%   0.6%   1.1%   4.6%
0%

VIRGINS   ONCE   2-3   4+   ONCE   2-3   4+

NOT RECENTLY   RECENTLY

17
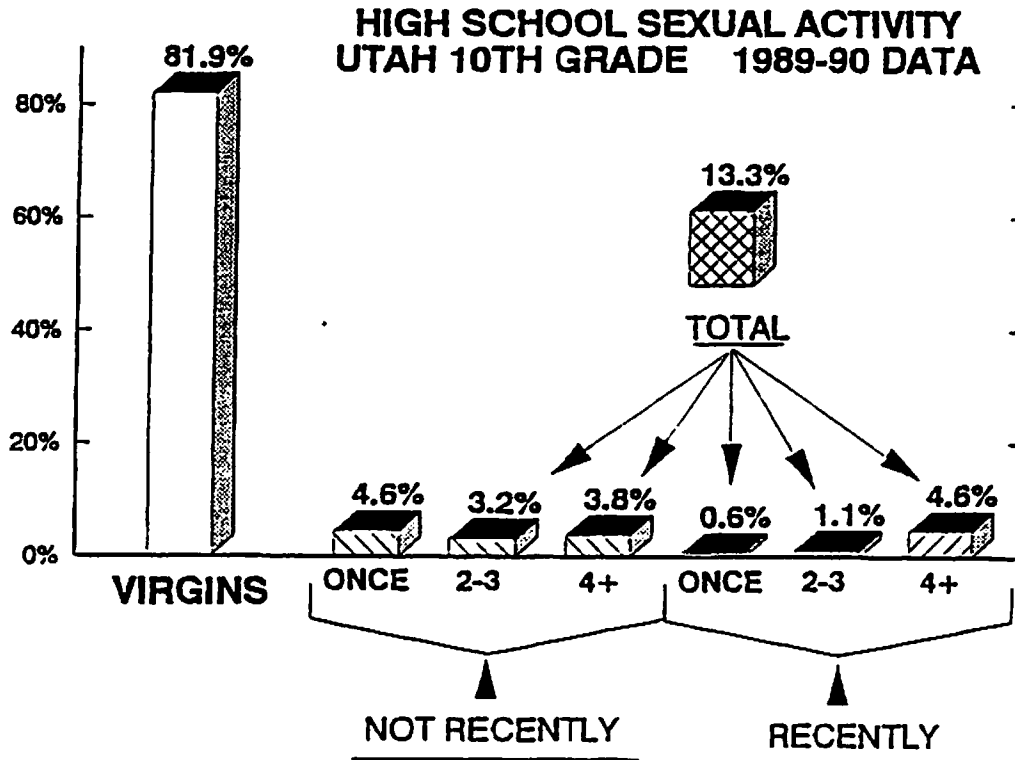
Let us assume for the present that our definition of "sexually active" includes those teens who have recent and/or multiple intercourse. As can be seen in Figure 3, those that can really be considered "sexually active" constitute a much smaller minority than is usually supposed. Thirteen and one/half percent of the tenth graders fall in this category, a drop from the 18% seen in figure 2. For the students in 7th and 8th grade the rate drops from 10.8% to 7%. If we also remove those students who have only had intercourse when forced, the 10th grade rate drops to 12.9%. It is this group, those that have two or more experiences and that are recent, that might be more accurately described as "sexually active". This provides a more detailed and refined count of sexual activity which helps define the problem more clearly.

This clarification is important for at least two reasons. First, if teens are told repeatedly that everyone is doing it, and they believe it, this can directly affect the likelihood of their own involvement. This is not surprising, given the propensity that teenagers have to fit in, be accepted, do what others do, etc. Secondly, there are important implications for intervention strategies. If it is assumed that most or all teens are sexually active by the time they are in the 10th grade, one might develop a very different kind of program than one based on the assumption that a minority of students are involved.

Interventions designed to fit the reality of the problem will do more good overall than those designed for atypical students and then imposed on the rest of the population. The reality is, the large majority of Utah teens are not sexually active. And for those that are, there was a point in their life that prevention efforts would have made a difference. The public will be best served by policy designed to do the most good for the most people.

Given this evidence, the logic and strategy of the Title XX programs seems viable even for 10th and 11th grade students in this population. In populations or contexts where the age of first sexual intercourse is lower, primary prevention programs would of course need to begin at an earlier age when the large majority of the students are abstinent. That of course is the purpose of primary prevention. A criticism often directed at the abstinence programs, that they are out of touch with reality, appears to be based on something other than evidence even for this 10th grade population. With over 85% of 7th, 8th, and 10th graders never having had any sexual intercourse, Utah policy makers are in a very favorable position to emphasize primary prevention. Even among those that have been sexually involved, the recency and frequency rates are low.

18

Interventions designed to fit the reality of the problem will do more good overall than those designed to fit the atypical student and then imposed on the rest of the population. The reality is, the large majority of Utah teens are not sexually active. And for those that are, there was a point in their life that primary prevention efforts would have made a difference. The public will be best served by policy designed to do the most good for the most people.

In spite of the problems with the typical measure of "sexual activity" the subsequent sections of this report will use the more common definition of "sexually active" -- those who are not virgins -- in order to maintain consistency and comparability with other studies. It is instructive to note at this point however that the global measure is not a particularly good portrayal of those who are "sexually active" since it includes those for whom the experience occurred only once, was not recent, and those for whom it was a forced rather than voluntary experience.

A final matter deserving attention in this section is what will be called **transition rates**. This has to do with the proportion of students whose status changes from virgin to non-virgin within a one year time period. These rates for Utah students (7th, 8th, and 10th grade) who make this transition in a given year are presented in the following table.

Table 1   General Transition rates for 7th, 8th, and 10th grade students after one year

N = 3,056	10TH GRADE	7TH AND 8TH GRADE	TOTAL GROUP
ALL	. 12.6%	13.4%	13.0%
MALES	14.7%	20.2%	17.6%
FEMALES	10.9%	7.4%	9.0%

As can be seen in Table 1, the overall transition rate for this group is 13% per year, with males being considerably higher than females (17.6% vs 9.0%). The transition rate for jr. high is surprisingly close to that of the 10th grade students. Junior high males are the highest of all groups, and jr. high females are the lowest. These rates establish an important base line and frame of

reference for looking at prevention programs which have as a goal the reduction of this rate of transition into sexual activity. An important next step is to account for or explain this transition.

2. **What are the most important <u>factors and dynamics</u> of premature/premarital sexual behavior? What are the significant factors that influence the transition from virgin to non-virgin status? Are they unique to the Utah population? What implications does this have for development and intervention efforts?**

Just as an incorrect assessment of the <u>extent of the problem leads to faulty solutions</u>, misunderstanding the dynamics of the problem will lead to inadequate and ineffective programs as well. Variables most often linked with premature sexual behavior and pregnancy (ignoring the question of relative importance or impact for the moment) include such things as self-esteem, peer pressure, parent communication, home conditions, family composition, future orientation, locus of control, perceived vulnerability, maturational pace, related risk behavior (alcohol and drug use, tobacco use, etc.) early/frequent/steady dating, age, race, socioeconomic level, school attendance and performance, religious involvement, personal values and standards, etc. With such a multitude of possible factors that might be targeted by program intervention, program development and effective intervention becomes extremely challenging. Selecting factors that make the most difference is an important step in developing effective solutions.

It is equally important to determine what is *not* related to sexual behavior in adolescents so that we do not spend time and effort on strategies that are not effective. For example, the typical solution employed for the last ten or fifteen years has assumed that the basic problem is ignorance, and that more information about human biology and reproduction, etc. would lead to better decisions. Numerous studies published over the past several years have consistently demonstrated that the typical sex education approach which emphasizes biological/reproductive information[1] is not effective in changing behavior. A recent summary of those various studies

20

concluded:

> *The results of these studies are in almost uniform agreement that sex education programs have no measurable impact on the incidence of teen pregnancy. . . . traditional sex education programs have little or no effect either positively or negatively on altering the age of onset or frequency of adolescent sexual activity, on increasing contraceptive use, or on preventing unplanned teenage pregnancy.* [2]

A more recent review states:

> *Although the results of such evaluations have been somewhat inconsistent, they clearly demonstrate that the first two generations (the information model and the values clarification/decision making model) of sexuality education programs did not dramatically lessen sexual risk-taking or measurably reduce teenage pregnancy; at best, they may have slightly increased the use of birth control. These results are similar to those found in evaluations of smoking, alcohol and drug abuse curricula based upon similar theoretical models.* [3]

These studies and more recent thinking have clearly indicated that the dynamics of the problem are much more complex than simply overcoming ignorance, clarifying values, and making better decisions. This project has provided an important step towards addressing this complexity by identifying important predictors and antecedents of early sexual activity, and assessing the relative impact of those factors on sexual intentions and behaviors. This is of particular importance because it provides useful direction for program development and program assessment. If we know the most important factors that influence the target behavior, and if those factors are amenable to influence, we then have a much better handle on the leverage points for prevention and change.

> If we know the most important factors that influence the target behavior, and if those factors are amenable to influence, we then have a much better handle on the leverage points for prevention and change.

The following illustrations identify several key factors related to premature sexual involvement. The well established distinction between correlational and causal relationships needs to be taken into account when examining this data and the relationships being illustrated. Three general statistical rules of thumb should be considered: First. a simple (zero order) correlation of cross sectional

data does not prove that a causal relationship exists. However, *lack* of a correlation relationship indicates that a causal relationship is very unlikely. Second, multivariate relationships are more appropriate than zero order correlations because they identify other variables that might explain the apparent relationship between the two original variables. They can also help establish the relative weight of the various predictor variables. Third, longitudinal correlations (correlations between measurements that are taken at two different points in time) help to establish the direction of causality since events that occur later in time cannot cause those which happened earlier. *Multiple regression analysis with longitudinal data is a more vigorous and valid test of causal relationships than simple cross sectional methods. In addition, experimental designs which examine the effects of treatment to matched groups over time are necessary in order to test those causal relationships and their direction.* This report relies on a combination of these last two strategies to draw inferences about causal relationships.

The following graph (figure 4) presents two important correlates of sexual activity and illustrates the single and combined relationship of steady dating and drinking behavior on sexual behavior.

Figure 4. **Relationship between steady dating, drinking, and sexual involvement.**

RISK FACTORS RELATED TO SEXUAL ACTIVITY
1989-1990 HIGH SCHOOL (10th GRADE) DATA

DRUNK	NO	NO	NO	PAST	PAST	PAST	RECNTI	RECNTI	RECNTI
STEADY	NO	PAST	NOW	NO	PAST	NOW	NO	PAST	NOW
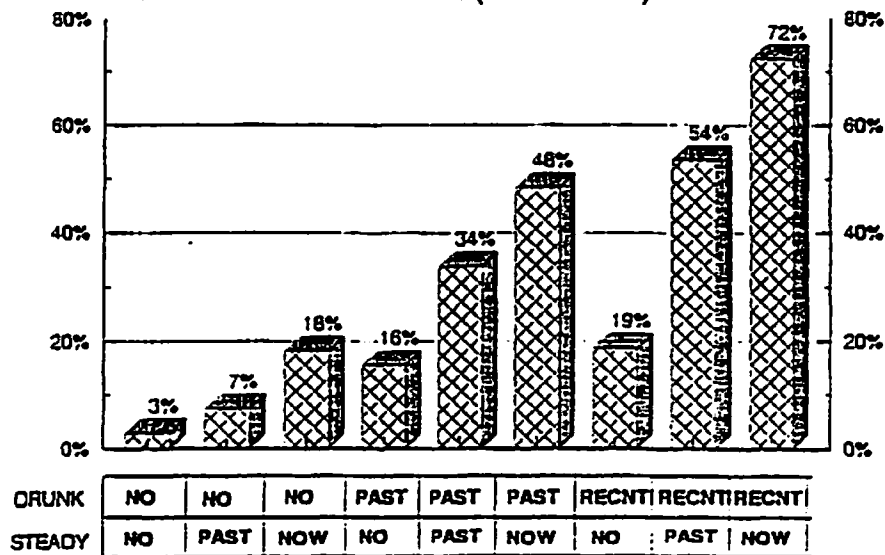
Note: Analysis based on pre-test data for 2nd cohort. N = 3,620

It has been demonstrated repeatedly in social science research that the best predictor of future behavior is past behavior. In the case of prevention/early intervention programs, however, where the majority of students have not engaged in sexual intercourse, past sexual behavior is not available as an indicator. What then are the factors that will explain the transition from non-involvement to involvement in sexual activity? Answering this question is crucial to early intervention and prevention strategies. Figure 4 illustrates the strong relationship between drinking and dating behavior and sexual activity, and shows the cumulative effect of these risk behaviors as they relate to sexual involvement.

Teen's steady dating experience and involvement was classified into three categories: 1. (NEVER) Those who had never participated in steady dating, 2. (PAST) Those who had been involved in a steady dating relationship in the past but were not currently going steady, and 3. (NOW) Those who were currently involved in steady dating. Involvement and experience with alcohol was similarly grouped into three levels: 1. (NEVER) Those who had never been drunk, 2. (PAST) Those who had been drunk before but not in the last four weeks, and 3. (RECENT) Those who reported being drunk during the past four weeks.

As mentioned above, this particular analysis does not prove that drinking and steady dating cause sexual intercourse, but it is clear that they are strongly related. The longitudinal data presented in Figure 5 is more telling, in that it describes the transition rate into sexual activity by previously virgin students when using the same related risk behaviors as the antecedent factors.

Figure 5. **Related risk factors and one-year transition rates**

RISK FACTORS AND SUBSEQUENT TRANSISTION
FROM VIRGIN TO NON-VIRGIN STATUS

(LINKED DATA, 89-91 PRETEST & FOLLOW-UP)

3.8%	5.1%	12.3%	21.3%	25.4%	36.7%	31.2%	41.2%	43.5%

DRUNK	NO	NO	NO	PAST	PAST	PAST	RECNT	RECNT	RECNT
STEADY	NO	PAST	NOW	NO	PAST	NOW	NO	PAST	NOW
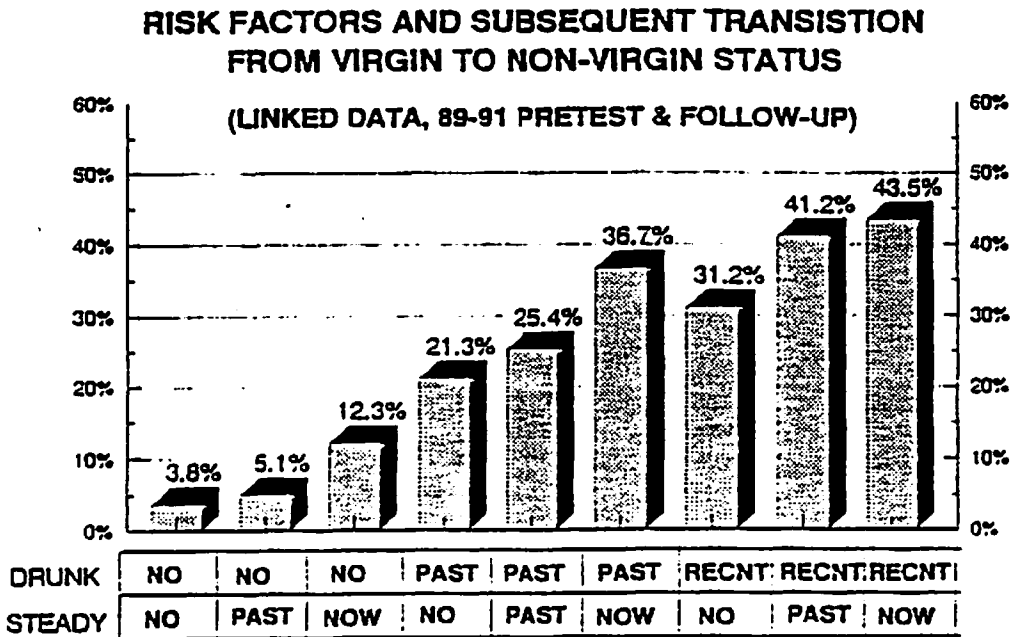
Note: Analysis is based on the longitudinal data for both 1st and 2nd

23

cohorts. and includes all grade levels in the sample. N = 3,160

Figure 5 illustrates that if drinking and steady dating behaviors are known to be happening at one point in time, one can know with reasonable accuracy the likelihood of transition from virgin to non virgin status up to one year later. It is apparent from this illustration that prevention efforts will do well to pay attention to other risk behaviors, with alcohol use and early/frequent/steady dating as two important ones specifically. It is also quite possible that there is a common factor basic to both the drinking, steady dating, and subsequent transition to sexual activity.

Other factors also have a significant relationship to sexual activity, as illustrated in Figure 6. This chart demonstrates the effect of one factor, the teenagers own sexual values on the transition from virgin to non-virgin status up to one year later in the students life.

Figure 6. Relationship of sexual values to transition rates.

GENERAL TRANSITION RATES
GROUPED BY AFFIRMATION & REJECTION VALUES
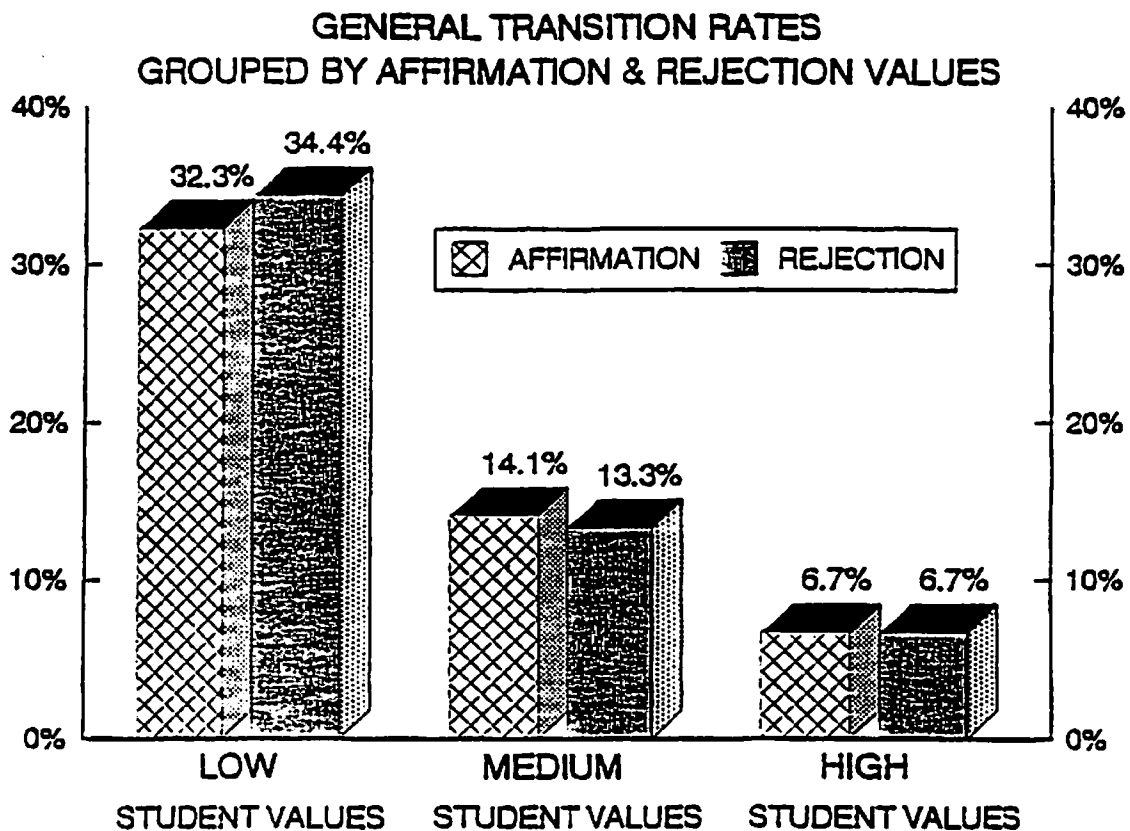
Percent making transition from virgin to non-virgin status
(Combined H.S. (10TH - 11TH) & J.H. over one year period)

24

As can be observed in Figure 6, there is a direct and strong relationship between the students' value system and their transition to sexually active status. The measure of sexual values used in figure 6 is a scale developed empirically with extensive testing. This scale has proven to be a very reliable and consistent measure of sexual values in a variety of settings, and is now being used in several projects in other parts of the country. The scale development work was originally done with a non-Utah sample[4], and the scale properties were reexamined with this data set and sample. See Appendix A for a detailed description. The test-retest reliability coefficient for affirmation and rejection was .82 (using a three week time span similar to the pilot program time span). While this measure by itself is not the only factor to consider, it does provide an important measure of short term program influence due to its direct and strong link to sexual activity in general and for transition from virgin to non-virgin status specifically.

The items which constitute the two sexual values scales are as follows:

AFFIRMATION OF ABSTINENCE Scale items:

- It is against my values for me to have sexual intercourse while I am an unmarried teenager.
- Having sex before marriage is against my own personal standards of what is right and wrong.
- A teen who has had sex outside of marriage would be better off to stop having sex and wait till marriage.
- Even if there is no pregnancy, having sex can cause a lot of problems for unmarried teenagers.
- The best way for young people to avoid an unwanted pregnancy or a sexually transmitted disease is to wait until they are married before having sex.
- With all the problems of a possible pregnancy and the dangers of AIDS and other sexually transmitted diseases, it just doesn't make sense for teenagers to have sex before they're married.

REJECTION OF PERMISSIVENESS Scale items:

- Having sexual intercourse should be treated as just a normal and expected part of teenage dating relationships.
- Having sex with a boyfriend or girlfriend is a good way to show how much you care for them.
- Teens who have been dating for a long time should be willing to go along and have sexual intercourse if their partner wants to.

- It is all right for teenagers to have sex before marriage if they are in love.
- I think it is OK for unmarried teenagers to have sexual intercourse if they use birth control.

The items in these scales use a standard 5 point agree/disagree response format. To simplify the graph, students were grouped into the low, medium, and high categories based on the distribution of scores for the total sample.

While the student's values and certain risk behaviors will tell part of the story, additional factors may be equally important and call for the same kind of attention. This study also examined several other sources of influence, including peers, parents, and several personality variables (personal efficacy, vulnerability, risk taking and rebelliousness, etc.) The following tables examine a few combinations of these sources in terms of their impact on transition rates.

Table 2   Transition Rates by Peer influence, Sexual Values, and Gender

GENDER	PEER ENVIRON.	HIGH AFFIRM.	MEDIUM AFFIRM.	LOW AFFIRM.
Female	Peer Pos.	4.3%	5.3%	13.6%
Male	Peer Pos.	6.8%	8.3%	20.1%
Female	Peer Neg.	9.7%	11.8%	27.14%
Male	Peer Neg.	14.6%	17.6%	37.3%

Note: data for this table is based on both 1st and 2nd cohorts, pre- follow-up linked data, N = 3,021

As is evident from table 2, the combined factors of gender, values, and peer environment make a considerable difference in the transition rate. Peer environment was measured with a scale comprised of items that address peer sexual behavior, support from peers to abstain from sex, and pressure from peers to be involved is sex. This measure was dichotomized on the basis of its

distribution into positive and negative peer environment conditions. The gender difference was evident in Table 1, and Table 2 demonstrates the combined effect of peer environment and sexual values (affirmation). Recall from Table 1 that the average transition rate was 13% in one year. Those who score high on the affirmation scale *and* who have basically positive peer influences are *less* likely to make the transition from virgin to non-virgin status during the next year than the average. Those who score low on the affirmation scale and have negative peer influences are *more* likely to make that transition. The influence of single factors can also be examine from this table. For example, female virgins who score low on the affirmation scale at pre-test time are three times *more* likely to have made the transition to non-virgin status than those who scored high (13.6% vs 4.3% for positive peer condition, 27.1% vs 9.7% for negative peer condition). Female virgins who are in a negative peer environment twice as likely to make the transition to non-virgin status than are those in the negative peer influence condition (9.7% vs 4.3% in the high affirm condition and 27.1% vs 13.6% in the low affirm condition). For both males and females, the combination of factors indicates a six fold (600%) difference between the most favorable and the least favorable combinations.

Table 3 combines the effects of drinking and dating with the peer and value factors from Table 2. By combining additional variables, we get a more complete picture of the important factors and conditions that influence the transition from virgin to non-virgin status. The ability to predict transition from virgin to non-virgin status is increased by looking at the *combination* of peer and value factors. In this table, the PAST and NOW categories of steady dating discussed earlier were combined to yield a dichotomy between those who had and had not been involved in steady dating relationships. Similarly, the PAST and RECENT categories of alcohol experience were collapsed to yield a dichotomy between those who reported prior intoxication and those who did not. We observe a dramatic increase in the transition rate as the related risk behavior, peer environment, and value variables are combined. The rate of increase in transition from virgin to non-virgin moves from 4.5% in the most favorable

The ability to predict transition from virgin to non-virgin status is increased by looking at the *combination* of peer and value factors. We observe a dramatic increase in the transition rate as the related risk behavior, peer environment, and value variables are combined. Students in the least favorable condition are *ten times more* likely to make the transition than those in the most favorable condition.

Table 3   Peers, Values, Drinking, and Steady dating as a predictor of transition to non-virgin status.

PEER ENVIRON.	STEADY DATING	EVER DRUNK	HIGH AFFIRM.	MEDIUM AFFIRM.	LOW AFFIRM.
Peer Pos.	No	No	4.6%	5.4%	12.3%
Peer Pos.	No	Yes	7.4%	8.7%	19.0%
Peer Pos.	Yes	No	8.3%	9.8%	21.1%
Peer Pos.	Yes	Yes	13.2%	15.4%	31.0%
Peer Neg	No	No	9.2%	10.8%	23.0%
Peer Neg.	No	Yes	14.5%	16.8%	33.2%
Peer Neg.	Yes	No	16.2%	18.8%	36.2%
Peer Neg.	Yes	Yes	24.4%	27.8%	48.7%

condition (low risk behaviors and high values) to 48.7% in the least favorable condition (high risk situation and low score on the values scale). Students in the least favorable condition are *ten times* more likely to make the transition than those in the most favorable condition. An examination of the other combinations of variables in table 3 reveals that each variable makes some incremental contribution to the transition rate. For example, by looking at the adjacent cells in columns, one can predict the increase in the risk of transition for the "drunk" variable.

This demonstrates in more detail that a combination of key factors explains the transition from virgin to non-virgin status with a high degree of accuracy. The implications for intervention become increasingly apparent -- programs that focus on the wrong factors or on a constricted set of factors will not produce the intended or hoped for effect in the lives of students.

There are both advantages and limitations to the kind of analysis which is summarized in tables 2 and 3. The advantage is that several key variables can be examined simultaneously with respect to their impact on the transition rate. Both the cumulative and unique impact of those variables can be examined, and

the impact can be assessed in terms of a very interpretable measure, i.e., the percent of students who make the transition from virgin to non-virgin status under specific combinations of conditions. The disadvantage is that unless the sample size is extremely large, one cannot incorporate all of the potential variables of influence or look at fine gradations of each variable because it would make the resulting cell sizes too small for reliable interpretation. By combining this analysis with multivariate cross sectional and longitudinal regression models we can have greater confidence that the key variables are being identified, and that we better understand their relative importance.

This demonstrates in more detail that a combination of key factors explains the transition from virgin to non-virgin status with a high degree of accuracy. The implications for intervention become increasingly apparent — programs that focus on the wrong factors or on a constricted set of factors will not produce the intended or hoped for effect in the lives of students.

Figure 7.   Working Model with cross sectional data

Institute for Research & Evaluation: *WORKING MODEL – 1990 DATA*
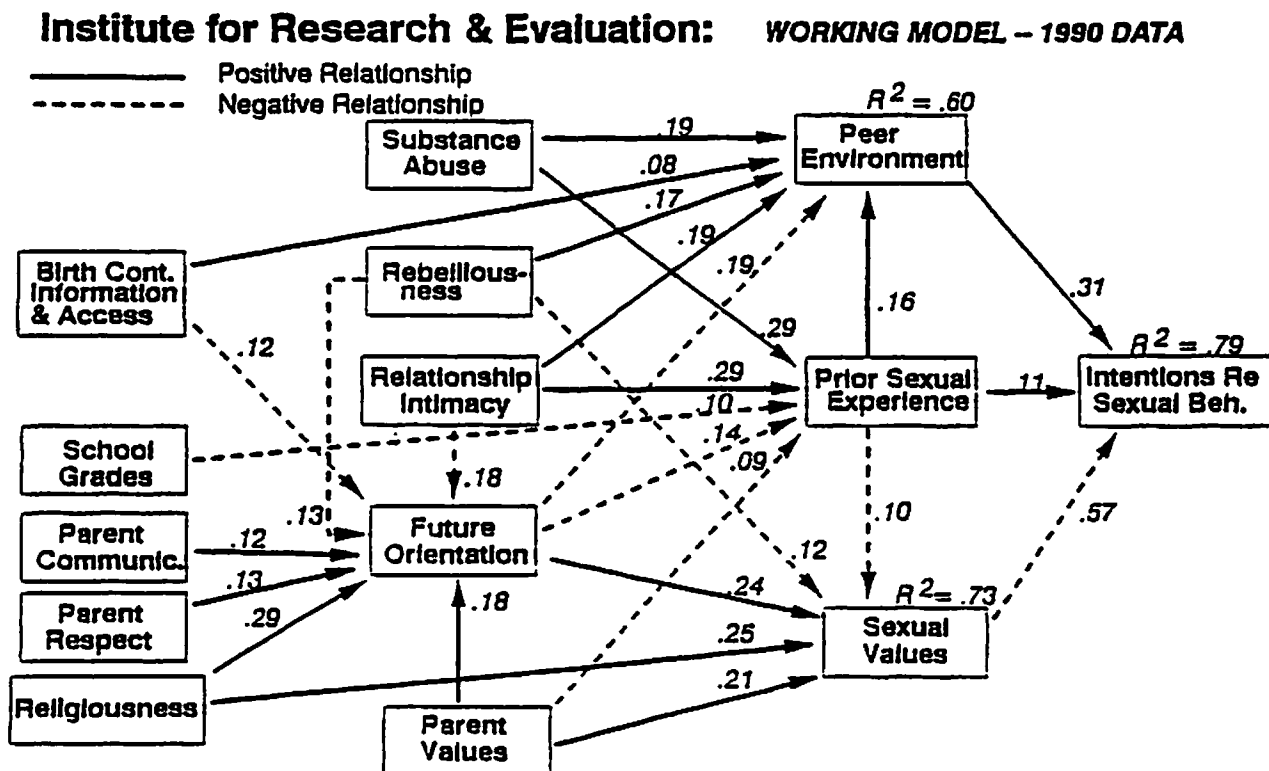
Note: Path Values are standardized Beta Coefficients
R^2 values represent the variance explained by the combined predictor variables

Sample Size = 3705
Utah Students
7th, 8th, 10th Grade

29

Figure 7 combines several variables simultaneously and establishes their relative weight in accounting for the students behavioral intentions with regard to sexual behavior. This diagram relies on cross sectional data and multiple regression analysis, and provides a picture of the important factors to look for in effective prevention/sex education programs. It also identifies key short term measures to examine when looking for program impact. For this population, the factors and dynamics depicted in the working model were quite consistent when run for males vs. females and older vs. younger students. It was also very similar with a data set from the northwestern states (See the 1991 year-end report to OAPP for the Teen-Aid program).

While the data presented here is cross sectional, we have also tested the key relationships using longitudinal path models, and find that the relationships depicted here are a reasonable representation of direction and sequence. In addition, an examination of these same factors as to their influence on actual behavior one year later confirms that several factors are operating simultaneously to affect the behavior in question. It also demonstrates the role that peer sexual environment and values play in that transition, and illustrates the more salient role played by the related risk behavior variables (dating, drinking, etc.) in the longitudinal model as compared to the cross sectional model. Details of this analysis are contained in a separate article.

An important lesson for prevention programs is that if only one variable is addressed, the potential for impact on sexual activity will be constrained by the strength (or amount of change) of the other variables that also contribute to the outcome. Programs that incorporate several of these important factors simultaneously and effectively will produce more impact than those that are focused on only one or two. For example, programs that produce *large and enduring* differences in sexual values hold promise for being effective preventive

Programs that produce *large and enduring* differences in sexual values hold promise for being effective preventive measures in terms of transition into sexual activity. However, if the other important factors are not also addressed, lasting impact will be limited. If significant shifts on sexual values occurs in the right direction, but at the same time the peer influence, steady dating, or alcohol use move in the wrong direction, one can accurately predict the outcome. Optimal impact will only occur if positive movement occurs simultaneously on all the major factors.

measures in terms of transition into sexual activity. However, if the other important factors are not also addressed, lasting impact will be limited. If significant shifts on values occurs in the right direction, but at the same time the peer influence, steady dating, or alcohol use move in the wrong direction, one can accurately predict the outcome. Optimal impact will only occur if positive movement occurs simultaneously on all the major factors.

In summary, it is clear that a combination of key factors explains the transition from virgin to non-virgin status with a high degree of accuracy. Some of those key factors have been identified. The implications for intervention become increasingly apparent -- programs that focus on the wrong factors or on a constricted set of factors will not produce the intended or hoped for effect in the lives of students.

Classification Scheme for significant factors

A classification scheme for the various factors that influence intention and transition is presented here as a way of grouping sets of variables together. In addition to past or related risk behavior, we have identified four additional areas that help describe the context and dynamics of sexual experimentation and behavior. They are grouped as follows for purposes of simplification:

Related risk behaviors and activities: Drug and alcohol use, early, frequent, and steady dating, skipping school, etc.

Personality system: those traits and characteristics of individuals that seem to play a part in explaining the behavior in question, including personal efficacy, risk taking propensity, rebelliousness, future orientation, need for affiliation and acceptance, and personal vulnerability.

Social system: Significant others in their lives which influence them in a variety of ways. Of particular importance is their family, peer groups, and if they are dating, their dating partners.

Value system: Their sense of what is important and not important, good and bad, and right and wrong.

Information system: How much students know -- their level of information, the quality and accuracy of their information, the degree of understanding about human sexuality and reproduction, physiology, etc.

31

These five categories and the factors in them appear to explain much of the variance between subjects, and within subjects over time, with respect to sexual activity, including transition from virgin to non-virgin status. It is not only important however to understand what factors make a difference, but also which factors make the biggest difference. The previous tables (Tables 2 & 3) and diagrams (Figures 7) provide significant help in making those determinations.

The value system is a strong predictor of both sexual intention and transition, and explains more of the variance than the other single factors. The social system (peer and parent factors) and related risk behaviors are similar to each other in their degree of influence, and are a very close second to the value system. The personality variables have a modest impact by comparison. As pointed out earlier in this report, the level of information is not strongly or directly related to behavior and is the weakest predictor of the five categories. This provides some explanation for the failure we have seen in the typical sex education programs that are information focused. An important question then is how effectively these factors are addressed in program interventions, and how do the programs compare in terms of producing changes in students on these key measures.

An important question then is how effectively are these factors addressed in program interventions, and how do the programs compare in terms of producing changes in students on these key measures.

3. How well do the pilot programs incorporate those factors, and to what extent can we observe program influence or impact on key measures?

Having determined several of the key factors that are significant to the behavioral choices of teens, we have a reliable basis for assessing intervention programs. First, does the program give adequate attention to any or enough of the key factors, and second, does it make a significant and meaningful difference on those factors?

We have examined these various factors, and for now will concentrate on the Values measure as an important short term effect. Given the strong and direct relationship that it has with behavior, and the fact that the three pilot programs address this factor as part of their intervention. it is instructive to compare the program results in terms of their influence on this variable. Items for this scale were reviewed previously, as were the psychometric properties.

It should be pointed out that only the Teen-Aid program has a separate

course designed for both Jr. and Sr. High students. The Sex Respect program and the Values & Choices were originally targeted for 7th through 9th grade. They were both used with 10th grade students in this project as well as with 7th and 8th graders.

Group Analysis

Comparing programs with respect to their general impact on key measures first of all requires that we treat the jr. high students separate from the sr. high students. This is important because of the point made earlier about two of the programs having curriculum targeted for the jr. high level (Sex Respect and Values & Choices) but being used with 10th grade students. If there is any potential for program results being confounded by grade level, it is important to account for that by analyzing jr. & sr. high students separately.

In addition, if the populations are different on measures that also influence the dependent variable, it is important to control for those differences. Even though these populations are very similar, there were some differences with respect to family composition, church attendance, alcohol use, and dating behavior. These variables are also related to the dependent variable. In order to account for these differences, and thereby increase our confidence that observed differences between programs are not due to these other factors, we used a repeated measures analysis of covariance, with *time varying* covariates. This procedure takes into account the influence of these variables at the pretest, as well as the change that may occur in the variable from pretest to post test.

Finally, the pre- post comparison for the non-program group demonstrates the change one would expect on the same measures without any intervention. The details of this analysis are contained in Appendix H. None of the dependent measures showed significant pre-post change for the non-program school. This comparison demonstrates that there was no group movement whatsoever for the comparison school students in a similar three week time period. Given this pre-post stability, the following analyses compare just the three programs with each other. The F values will be somewhat different but demonstrate the same pattern of results. Differences between teachers were also accounted for, and this procedure is described in the next section. In general, it would appear that we are safe in attributing the differences in the dependent variables to actual differences in the programs rather than to some other confounding factor.

Figures 8 and 9 illustrate the impact of the three test programs on one of the key measures -- sexual values. Figure 9 is the high school comparison. and

the size of the F values indicate that all of the programs produced change in the expected direction on the *Affirmation of Abstinence* scale. Significant effects were seen for Sex Respect (F = 66.88, p = .000), Teen-Aid (F = 41.84, p = .000), and Values & Choices (F = 9.42, p = .002). Figure 9 illustrates the general impact of the programs on the *Rejection of Permissiveness* scale for high school students. Significant effects were seen for Sex Respect (F = 40.64, p = .000), and Teen Aid (F = 14.64, p = .000). However, the effect for Values and Choices was not significant (F = .99, NS). It is interesting to note that movement on the Rejection Scale seems to be more difficult to produce. Also worth noting on Figures 8 and 9 is the program by test interaction effect. This indicates that the visual differences apparent in the slope of the lines are statistically significant, and that the programs differ in their ability to produce change on these measures.

Figure 8. Program comparison on Affirmation of Abstinence, 10th grade

PRE- POST CHANGE ON AFFIRMATION OF ABSTINENCE
HIGH SCHOOL DATA -- 1989-1990

ADJ. MEANS. REP. MEAS. ANAL OF COV (4) [GOOD TA TEACHERS]

Figure 9.   Program comparison on Rejection of Permissiveness, 10th grade

PRE- POST CHANGE ON REJECTION OF PERMISSIVENESS
HIGH SCHOOL DATA – 1989-1990

MEAN

$F = .99, p = NS$

$F = 14.64, p = .000$

IMPROVEMENT

$F = 40.64, p = .000$

PROGRAM BY TEST
$F = 3.60$, $p = .028$

SEX RESPECT TEEN-AID VALUES & CHOICES

PRE-   POST

ADJ. MEANS (GOOD TA TEACHERS) REP. MEAS. ANAL. OF COV (4)

35

Figures 10 and 11 compare the jr. high students across the three programs. The general pattern for this age group is similar to that seen for the tenth graders. The program by test interaction effect was also significant, indicating significant differences in the effects of the three programs.

Figure 10. Program comparison on Affirmation of Abstinence, Jr. High

PRE- POST CHANGE ON AFFIRMATION OF ABSTINENCE
JUNIOR HIGH SCHOOL DATA -- 1989-1990

MEAN

IMPROVEMENT

PROGRAM BY TEST
$F = 4.84$, $p = .008$

$F = 66.89$, $p = .000$

$F = 7.24$, $p = .007$

$F = 43.31$, $p = .000$

SEX RESPECT   TEEN-AID   VALUES & CHOICES

PRE-   POST

ADJ. MEANS (GCCD TA TEACHERS) REP. MEAS. ANAL. OF COV. (4)

36
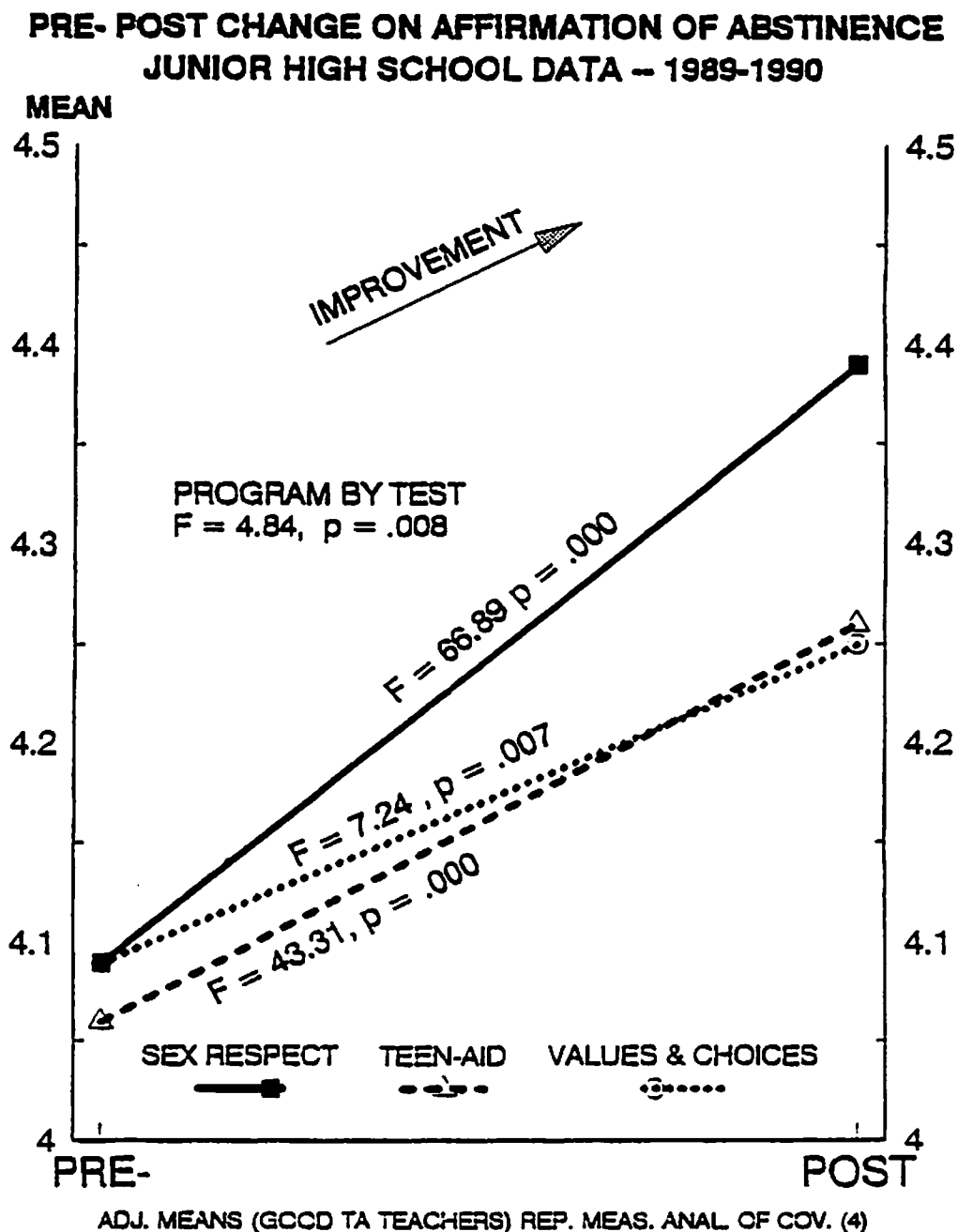
Figure 11. Program comparison on Rejection of Permissiveness, Jr. High

PRE- POST CHANGE ON REJECTION OF PERMISSIVENESS
JUNIOR HIGH SCHOOL DATA -- 1989-1990

MEAN

$F = 4.18, p = .041$

$F = 1.30, p = NS$

$F = 48.54, p = .000$

PROGRAM BY TEST
$F = 10.32, \ p = .000$

SEX RESPECT   TEEN-AID   VALUES & CHOICES

ADJ. MEANS (GOOD TA TEACHERS) REP. MEAS. ANAL. OF COV.(4)
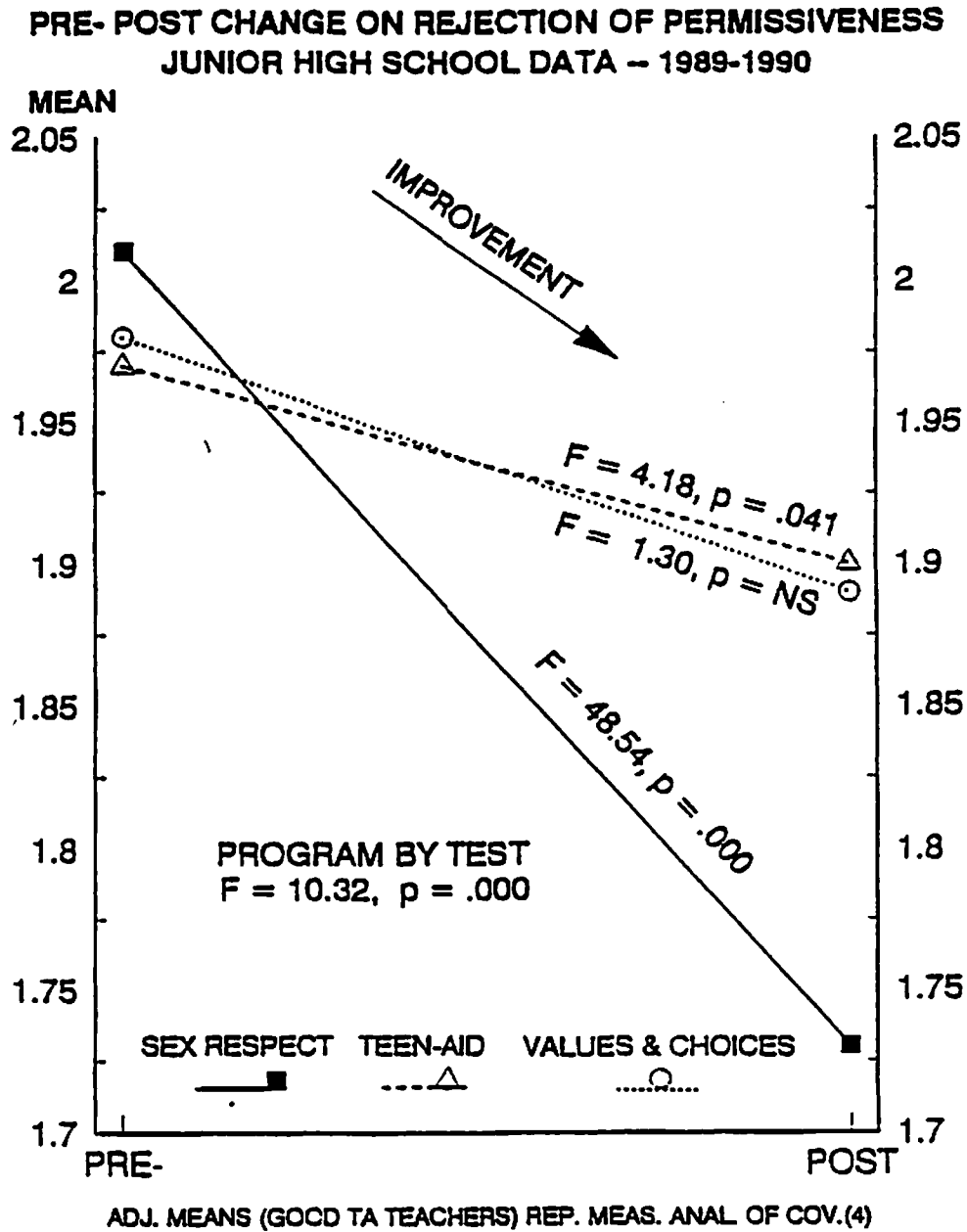
In general, the pattern for pre-post change is quite consistent when looking at the groups as a whole. Paired t-tests and corresponding standardized effects size measures are presented in Table 4 for each program at both grade levels — junior high (7th & 8th grade) and high school (10th grade).

Table 4   Effect size comparison by program and grade level

ITEM DESCRIPTION		S.R. Jr. 392	S.R. Sr. 314.	T.A. Jr. 564	T.A. Sr. 470	V.C. Jr. 224	V.C. Sr. 198
Affirmation Scale	t	-8.14	-9.07	-5.94	-5.62	-2.58	-3.32
	p	.000	.000	.000	.000	.011	.001
	eff	-.41	-.51	-.25	-.26	-.17	-.24
Rejection Scale	t	5.31	4.69	2.89	1.60	1.23	(-.30)
	p	.000	.000	.004	.109	.222	.767
	eff	.27	.26	.12	.07	.08	(-.02)
Behavioral Intention	t	3.70	3.91	.75	2.19	.45	.23
	p	.000	.000	.455	.029	.656	.818
	eff	.19	.22	.03	.10	.03	.02

Note: Effect size is calculated by dividing the difference between the pretest and post test means by the standard deviation of this difference. Effect sizes over .10 are significant, over .20 are moderately strong, and .30 are very strong. The t values in parentheses are in the wrong direction. Shaded values are significant.

This table summarizes the effect of the three programs for both Jr. and Sr. high school. Sex Respect produced the largest effect for affirmation, rejection, and intention, similar to that observed in the repeated measures analysis of covariance procedure. In addition, it is somewhat easier to compare the relative magnitude of the impact across the three programs by looking at the effect size. Each row of the table labeled **eff** (for "effect size") provides a comparable measure across programs and grades for each scale.

Other important program effects were also measured. with particular attention paid to those measure that have an important role to play in predicting sexual involvement or the intention to be sexually involved. For example, the peer sexual environment factor (positive peer support and/or peer pressure to engage in sex), future orientation. parent-child communication. and parent respect and approachability were all examined for each program and grade level. There were some significant program influences, but the pattern of results were not always clear and consistent. The Future Orientation measure showed the

most dramatic movement and difference between programs, with significant changes for Sex Respect and Teen-Aid (F = 175.35, p = .000 and F = 192.59, p = .000 respectively) but not for Values & Choices (F = .06, p = .650). The following table (Table 5) summarizes those comparisons for 10th grade students, and 7th - 8th grade students.

Table 5. Program comparisons on Parent, Peer, and Future Orientation measures.

HIGH SCHOOL	SEX RESPECT	VALUES & CHOICES	TEEN AID	ALL PROGRAMS	PROGRAM BY TEST
PEER SUPPORT	F=1.13 P=.288	F=2.02 P=.155	F=5.60 P=.018	F=7.07 P=.008	F=.25 P=.782
PEER PRESSURE	F=1.55 P=.213	F=.21 P=.650	F=.48 P=.487	F=.00 P=.954	F=1.12 P=.326
FUTURE ORIENTATION	F=175.35 P=.000	F=.06 P=.799	F=192.59 P=.000	F=180.86 P=.000	F=39.86 P=.000
PARENT RESPECT/APPROACH	F=5.31 P=.021	F=4.31 P=.038	F=20.56 P=.000	F=23.05 P=.001	F=15.71 P=.000
PARENT COMMUNICATION	F=.02 P=.896	F=21.45 P=.000	F=12.38 P=.000	F=22.65 P=.000	F=7.07 P=.001

JUNIOR HIGH	SEX RESPECT	VALUES & CHOICES	TEEN-AID	ALL PROGRAMS	PROGRAM BY TEST
PEER SUPPORT	F=10.26 P=.001	F=1.20 P=.273	F=.01 P=.906	F=6.03 P=.014	F=3.23 P=.040
PEER PRESSURE	F=2.25 P=.134	F=1.75 P=.186	F=2.98 P=.085	F=6.39 P=.012	F=.02 P=.980
FUTURE ORIENTATION	F=251.58 P=.000	F=4.91 P=.027	F=102.62 P=.000	F=131.70 P=.000	F=64.04 P=.000
PARENT RESPECT/APPROACH	F=11.43 P=.001	F=.04 P=.850	F=.08 P=.776	F=3.32 P=.069	F=4.09 P=.017
PARENT COMMUNICATION	F=49.69 P=.000	F=14.05 P=.000	F=1.93 P=.165	F=50.31 P=.000	F=10.64 P=.000

Note: Shaded areas highlight significant pre-post changes.

Notice that the Junior High pattern is somewhat different. with Sex Respect influencing parent communication and peer support quite strongly in jr. High but not in sr. high. while Teen-Aid did better with 10th graders than it did with jr. high students on the parent factors. Values and Choices produced no significant change on peer support or on peer pressure at either level. some change on Future Orientation in jr. high but not high school. and significant change for sr. and jr. high school on parent communication.

In summary, the short term program effects for a variety of measures were used for program comparison purposes. On every measure, the comparison schools showed no significant pre-post change, as expected. It should be pointed out that these measures of program effect fall into three general categories based on two criteria: 1) how difficult they are to change in an adolescent population, and 2) where they fall in terms of salience and potency in the working model (see figure 7). For example, the Future Orientation measure is much easier to produce change on than the rejection of permissiveness measure. Sexual values are easier to change than behavioral intention, and intention is easier to change than actual behavior. Furthermore, the working model places sexual values and peer sexual environment (peer pressure and peer support) as being more salient and potent as a predictor than Future orientation or parent-child communication, for example. Therefore, some short term measures are better indicators of program success than others. The following list represents a reasonable hierarchy of three categories of program outcome measures used in this study.

I. Sexual Behavior
    One year Transition rates (virgin to nonvirgin status)

II. Key or significant short term outcome measures
    Behavioral Intention
    Rejection of Permissiveness
    Affirmation of Abstinence
    Peer Pressure
    Peer Support

III. Less significant short term outcome measures.

    Future Orientation
    Parent Respect and Approachability
    Parent-Child Communication

A reasonable comparison of the three programs can be made by ranking them in order of the magnitude of pre-post change for each measure. This is meaningful only when the amount of pre-post change differs significantly for the three programs as indicated by a **program by test interaction effect** that is significant. That is, the slope of the lines for pre-post change differ significantly from one another. In addition, we can examine effect sizes as indicated earlier. Using this strategy, and focusing for now on the short term measures (categories II. & III.) we see the following:

Table 6 Program Ranking on short term outcomes, High School, 2nd Cohort

	Sex Respect Ranking	Teen-Aid Ranking	Values & Choices Ranking	Prog. X Test Interaction effect Significant?
Category II. Measures				
Behavioral Intention	1^{***}	2^{*}	3^{ns}	yes
Rejection of Permissiveness	1^{***}	2^{**}	3^{ns}	yes
Affirmation of Abstinence	1^{***}	2^{***}	3^{**}	yes
Peer Support	3^{ns}	1^{*}	3^{ns}	____
Peer Pressure	$—^{ns}$	$—^{ns}$	$—^{ns}$	____
Category III. Measures				
Future Orientation	1^{***}	1^{***}	3^{ns}	yes
Parent Respect/approach.	2^{*}	1^{***}	2^{*}	yes
Parent-child Communication	3^{ns}	2^{***}	1^{***}	yes

*** Indicates that pre-post change was significant at the .001 level
** Indicates that pre-post change was significant at the .01 level
* Indicates that pre-post change was significant at the .05 level
^{ns} Indicates that the pre-post change was not-significant

41

Table 7 Program Ranking on short term outcomes, Jr. High, 2nd Cohort

	Sex Respect Ranking	Teen-Aid Ranking	Values & Choices Ranking	Prog. X Test Interaction effect Significant?
Category II. Measures				
Behavioral Intention	1***	3^{ns}	3^{ns}	yes
Rejection of Permissiveness	1***	2*	3^{ns}	yes
Affirmation of Abstinence	1***	2***	3**	yes
Peer Support	1***	—*	—^{ns}	yes
Peer Pressure	—^{ns}	—^{ns}	—^{ns}	no_
Category III. Measures				
Future Orientation	1***	2***	3*	yes
Parent Respect/approach.	1***	3^{ns}	3^{ns}	yes
Parent-child Communication	1***	3^{ns}	2***	yes

*** Indicates that pre-post change was significant at the .001 level
** Indicates that pre-post change was significant at the .01 level
* Indicates that pre-post change was significant at the .05 level
^{ns} Indicates that the pre-post change was not-significant

TEACHER AND POPULATION DIFFERENCES

Three important considerations must be addressed in order to better understand the data. In making the comparison between programs, it is important that the comparisons be based on similar conditions -- that is, that the differences we observe between the program results can legitimately be attributed to program differences rather than differences in the population, differences in levels of program implementation, or differences in teacher characteristics. This study has taken each of these factors into account.

5. What is the effect of the teacher in terms of program outcomes?

Accounting for Teacher Differences

A major consideration in comparing programs is the potential difference between teachers and the related dimension of implementation levels. While it is common knowledge that teachers make an important difference on student outcomes in any educational program, it is important in this context to know more specifically about those differences and why they occur. In addition, the comparison between programs and the observed differences can only be attributed to programs if we take into account and control for differences between teachers.

In order to determine the effect of teachers on program outcomes, 39 of the 41 program teachers were interviewed during the summer of 1990. Twenty one of these were at the high school level, and 18 were middle or junior high teachers. All of the teachers were relatively new to teaching these three specific programs, and on the average had two semesters of experience with the material. About one third had previously taught another Sex Education course.

The original intent of the interviews was to understand the challenges and successes of implementation, and to receive feedback from the teachers about their program experience --what seemed to work, where they had problems, what changes the teachers would recommend, etc. In addition, information about the teachers themselves was collected. It included length of time as a teacher, prior experience with sexuality education courses, the interviewers perception of their ability to relate to and gain the confidence of the students, the consistency between their own philosophy and that espoused by the program, etc. Most of these teachers had merely taught a single unit on maturation, reproduction or venereal disease; only one teacher had previously taught an abstinence-based program. All of these teachers indicated that the current (pilot) program was

more complete and superior to the previous curricula they had used.

The data was also used to provide a general grouping of teachers according to the criteria mentioned above. Teachers differed with respect to levels of implementation, program commitment, administrative support, student rapport, classroom control, consistency with program philosophy, and level of respect and credibility with students. Obviously, some teachers would be high on one dimension and low on another. It was possible to categorize teachers into three groups equal in size based primarily on the criteria of program commitment, level of implementation, and their consistency with program philosophy. These last three criteria were highly correlated and provided a fairly normal distribution of teachers for grouping purposes. Those high on these dimensions were compared with teachers who were medium or low on the same dimensions.

The general pattern evident in the interview data was that the district with the largest pool of teachers (the Teen-Aid program) had the greatest variation among teachers. The two smaller districts had all of their teachers in the high group, with only one exception. By comparing student results for the three groups of teachers in the large district, we learn a great deal about the influence of teachers on program results within the same program. **Figure 12** demonstrates the important effect that teachers have on student short term outcomes. As can be seen, the top or stronger group of teachers produced strong and significant pre-post differences, whereas the low or weaker group of teachers had no impact on this measure. **Figure 13** makes a similar point by comparing short term program results for each of the three groups of teachers (group 1 is strong, group 3 is weak). This figure compares the t-test values, and takes into account the direction as well as the size of the shift. As can be seen, the group three teachers actually produced negative results on the sexual intention measure. Several additional analyses using the teacher as an independent variable were also conducted. The evidence consistently demonstrates the impact that the teacher has independent from the course material. This is of course important in this particular program because in many ways program implementation is at the discretion of the teacher. A good

The evidence consistently demonstrates the impact that the teacher has independent from the course material. A good program without the right teacher will not produce consistent, positive results. In fact, it is possible for the students to move in a direction that was not intended by the program, school administrators, parents, etc.

44

program without the right teacher will not produce consistent, positive results. In fact, it is possible for the students to move in a direction that was not intended by the program, school administrators, parents, etc.

Figure 12. Comparison between teachers, within program for Affirmation (anal. of cov.)

COMPARISON OF TEACHER DIFFERENCES
UTAH HIGH SCHOOL 1989-90 DATA
TEEN-AID PROGRAM — AFFIRMATION

ADJ. MEANS. REP. MEAS. ANAL. OF COV. (4)
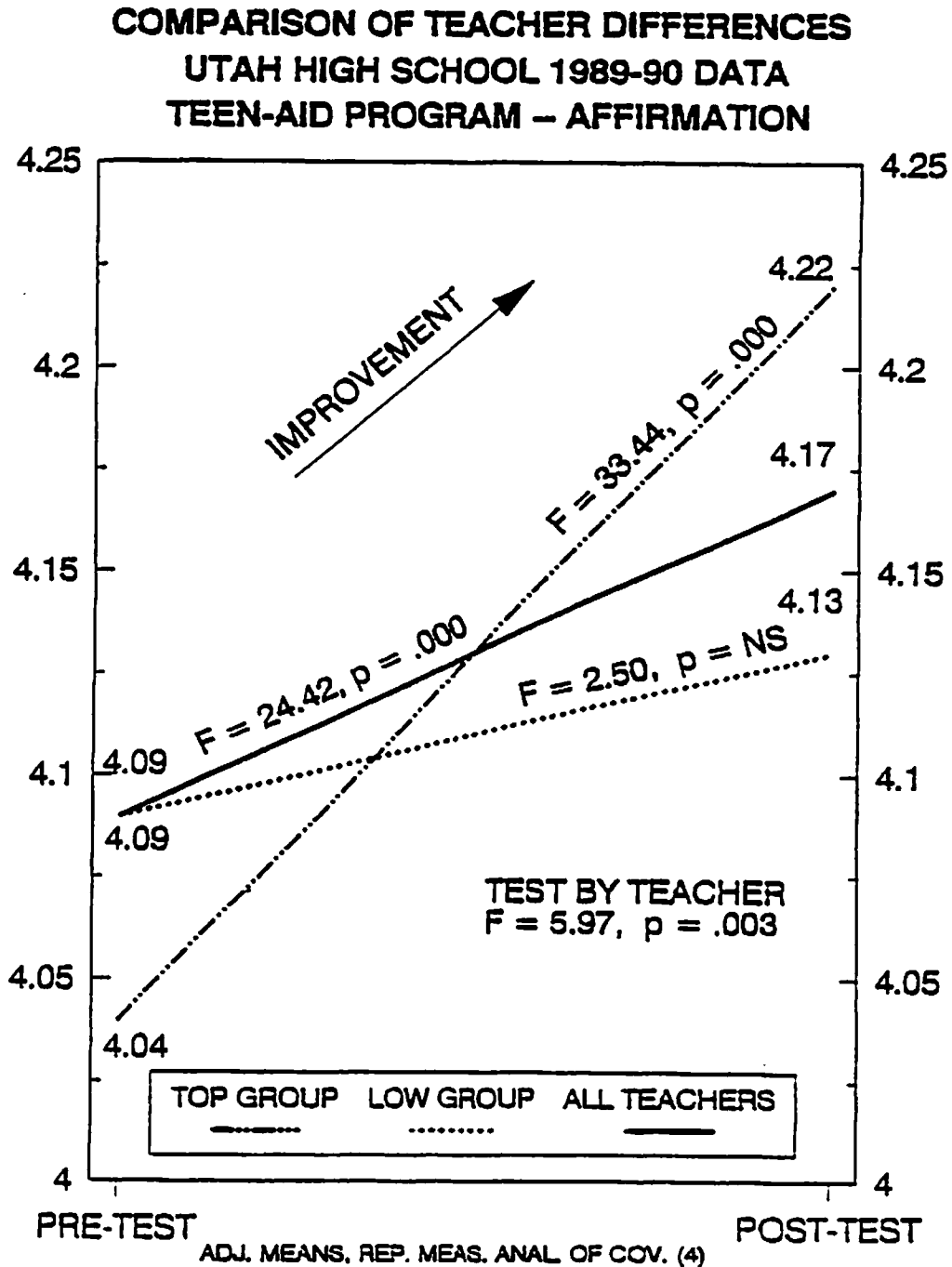
Figure 13. Comparison between teachers, within program (t-tests)

t VALUES FOR TEEN-AID BY TEACHER GROUPING
UTAH HIGH SCHOOL 1989-90 DATA
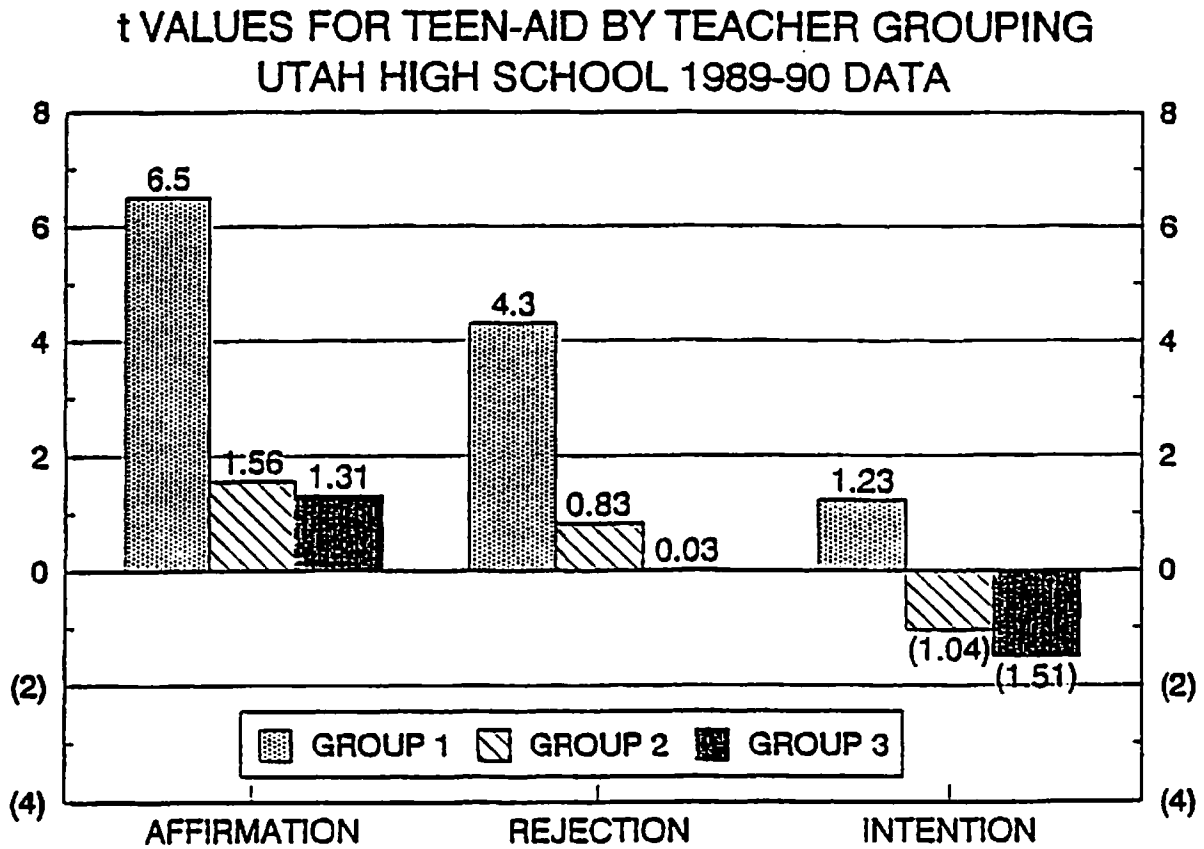
In looking at comparisons between programs, it of course requires that we hold the teacher differences constant in some way in order for the program differences to be uncontaminated by teacher differences. The data presented in the previous figures control for teacher differences by using the student data generated in those settings where the teachers were high on levels of implementation, program commitment, administrative support, student rapport, classroom control, and level of respect and credibility. This increases our confidence that the differences we observe between program effects are in fact due to program differences rather than teacher differences.

Accounting for Population Differences

The students that participated in the pilot project came from populations that were very similar. Demographic comparisons of the three populations illustrate this high degree of similarity. Four variables were identified which did

vary somewhat across the three school districts and which were also related to the dependent variables. Accounting statistically for these population differences was discussed in a previous section and accounted for in the analysis so that the comparisons between program effects would reflect more accurately program differences after controlling for population differences. This increases our confidence that the aggregate differences we observe between program outcomes are in fact due to program differences rather than population differences.

4. How do the programs compare with respect to population subgroups, particularly male vs. female, older vs. younger, and virgin vs. non-virgin?

Subgroup Analysis (Males & Females, Virgins & Non-Virgins)

The next four figures illustrate graphically the program effects for the population subgroups of Males and Females, Virgins and Non-Virgins. In general, the patterns were quite consistent. The pre-post differences indicate that high school males start somewhat lower on the affirmation scale than females, but move about the same amount from pre- to post with the exception of the Values and Choices program where the pre-post change for high school males was not significant. On the rejection of permissiveness scale, Teen-Aid and Sex Respect high school males showed similar and significant shifts ($F = 15.59$, $p < .000$), whereas Values & Choices showed no significant pre-post change.

For high school females, all programs showed significant pre-post change on the affirmation of abstinence measure, but only the Sex Respect program showed significant pre-post change on the rejection of permissiveness scale ($F = 15.11$, $p < .000$), similar to that which was seen for the males. As with the affirmation scale, high school females started in a more favorable position to begin with than did the males.

Figure 14. Program Effects for Males

PRE-POST PROGRAM BY MALES
REJECTION OF PREMARITAL SEX
HIGH SCHOOL 1989-90 DATA

IMPROVEMENT

F = .81, p = NS

F = 15.59, p = .000

F = 15.74, p = .000

PROGRAM BY TEST (MALES)
F = 1.97, p = NS

SEX RESPECT   TEEN-AID   VALUES & CHOICES

PRE-TEST
POSTTEST
ADJ. MEANS (GOOD TA TEACHERS) REP. MEAS. ANAL. OF COV. (4)

2.18
2.1
2.03
2.29
2.24
2.23

PRE-POST PROGRAM BY MALES
AFFIRMATION OF ABSTINENCE
HIGH SCHOOL 1989-90 DATA

IMPROVEMENT

F = 26.78, p = .000

F = 2.84, p = NS

F = 20.74, p = .000

PROGRAM BY TEST (MALES)
F = 2.20, p = NS

SEX RESPECT   TEEN-AID   VALUES & CHOICES

PRE-TEST
POSTTEST
ADJ. MEANS (GOOD TA TEACHERS) REP. MEAS. ANAL. OF COV. (4)

4.09
4.02
3.91
3.86
3.82

Figure 15. Program Effects for Females

PRE-POST PROGRAM BY FEMALES
REJECTION OF PREMARITAL SEX
HIGH SCHOOL DATA 1989-90

PRE-POST PROGRAM BY FEMALES
AFFIRMATION OF ABSTINENCE
HIGH SCHOOL DATA

The high school virgin vs. non-virgin comparisons were instructive as well. In general, all of the programs had a significant effect for virgins and non-virgins on the affirmation scale, but the movement in value scale scores for non-virgins was consistently greater than for virgins (See Figures 16 & 17). The non-virgins started lower on the scale to begin with, and never actually caught up to the virgins, but did in fact move more as a group than did the virgin students. We cannot determine how much of the difference in pre-post movement between virgin and nonvirgin is due to a ceiling effect for virgins. However, the fact that the virgins still showed significant change suggests that not all of the virgin-nonvirgin difference can be attributed to a ceiling effect. The Sex Respect program achieved the best overall effect for both virgins and non-virgins, particularly on the rejection of permissiveness scale. An encouraging note from this latter analysis is that the group thought to be the most resistant to an abstinence message actually had the greatest pre-post change.

An encouraging note from this latter analysis (program effect on virgins vs. non-virgins) is that the group thought to be the most resistant to an abstinence message actually had the greatest pre-post change.

Figure 16.   Program Effects for Virgins (Affirmation of Abstinence)

PRE-POST PROGRAM BY VIRGINS

AFFIRMATION OF ABSTINENCE

HIGH SCHOOL 1989-90 DATA

Figure 17. Program Effects for Non-Virgins

PRE-POST PROGRAM BY NON-VIRGINS
AFFIRMATION OF ABSTINENCE
HIGH SCHOOL 1989-90 DATA

We have looked so far at the connection between several factors and the transition from virgin to non-virgin status. Given the strong link between sexual values and transition to non-virgin status, and the fact that the abstinence programs target those value systems, we have used changes in sexual values as a reasonable short term measure of program effects. We have also demonstrated that the three programs produce different results on students in general, and that for specific subgroups (males & females, virgins and non-virgins) there are differential program effects.

51

Accounting for Individual Student Differences

Another consideration requiring attention has to do with the students themselves, and the individual differences that they may bring to the program experience. We have already discussed the population differences, and the importance of using very similar populations in order for fair comparisons to be made between programs. In addition, however, the individual differences *within* a sample population are of potential significance since the same program may affect some students one way and other students in another way. We partially address this earlier when we compared males and females, virgins and non-virgins, etc. These comparisons, however, were based on group means which have some inherent limitations. A limitation with analysis procedures which use group averages (such as t-tests, analysis of variance, etc.) is that much information is hidden in the group averages. For example, if a group of students on the average moved 5 points on a ten point scale, it cannot be determined from just the mean or average score whether all of the students moved 5 points, or if half of them moved 10 points and the other half did not move at all. Nor could it be determined whether some went in the negative direction, some in the positive, and the rest remained unchanged. To overcome this limitation, another series of analyses were run in order to determine who moved, how far, and in which direction.

In summary, an examination of individual movement of students on the sexual values measure was made by assessing the direction of movement from pre- to post test. For example, did the student move from agree to strongly agree (a positive one point movement on the scale) or from agree to not sure (a negative one point movement on the scale)? By counting those who moved positively, negatively, or did not change, we have a more detailed assessment of program impact than the aggregate mean scores can provide. The following chart (Figure 18) illustrates this movement for a single item ("Even if there is no pregnancy, having sex can cause a lot of problems for unmarried teenagers.")

Figure 18. Positive, Negative, and Net Gain Scores, Single Item.

POSITIVE, NEGATIVE & NET-GAIN MOVEMENT
Single Item: "Even if there is no pregnancy, having sex can cause a lot of problems for unmarried teenagers"
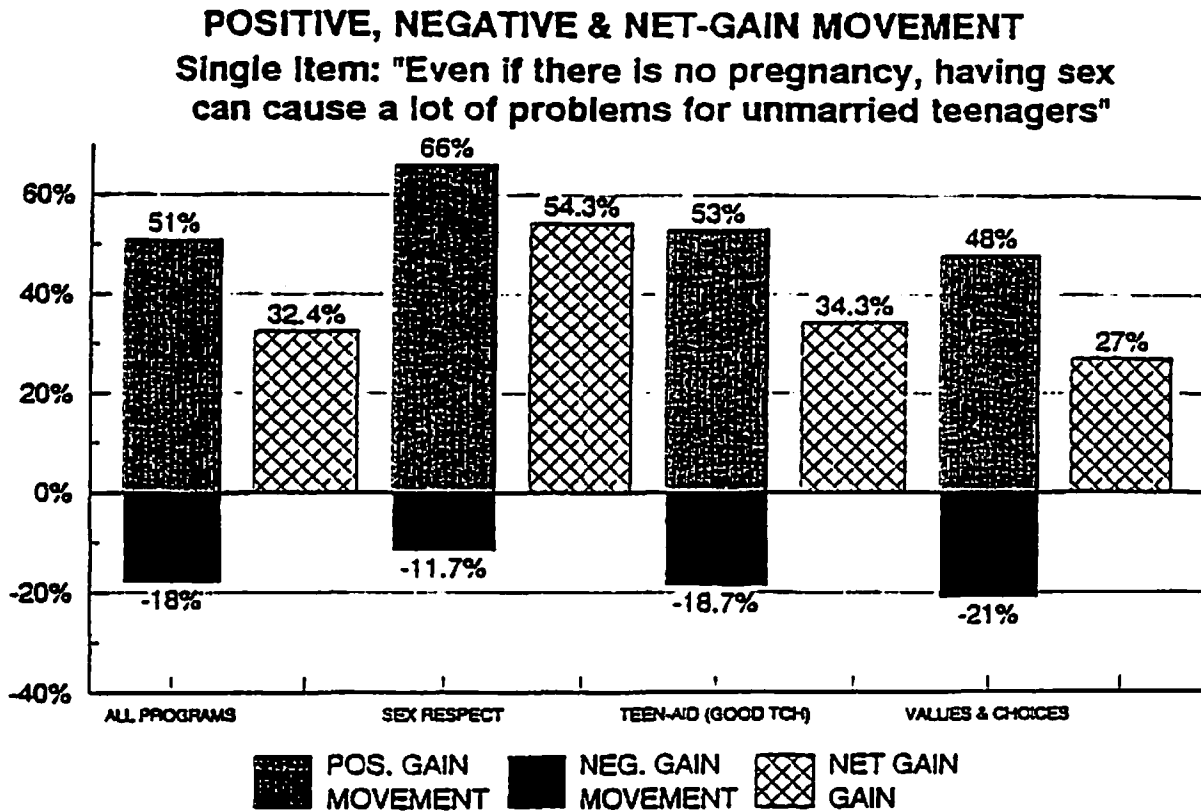
This procedure was further refined by using the total frequency distribution to establish cutting points based on the amount of change required to meet significance test requirements (p < .001). In other words, if .2 or .3 scale units are needed to produce aggregate change using pre-post mean scores, then that amount of change is used as a guide to judge how much movement is real movement in this net gain analysis. Only movement beyond that range was considered "real" movement. Movement beyond the second cutting point was weighted to reflect the distance as well as the direction of movement. Greater movement receives greater weight. The weighted net gain score is the difference between the positive and the negative weighted movement.

It is important to recognize that the student's own value system is in a state of development and flux. and is being pushed and pulled in different directions each day. The comparison group data was analyzed to determine how much movement might occur in a similar time period for students not involved in a program but who are still subjected to the positive and negative forces in their environment. The following chart illustrates the movement that occurs in the comparison group -- some due to those general forces operating daily, some due

53

to the student's own vacillation and uncertainty, some due to measurement error, etc (See figure 19). Notice that the net gain is zero, but that there are students who move up and some who move down. This analysis establishes the boundaries for fluctuation that occurs without systematic intervention. Movement above the upper (positive movement) boundary can reasonably be attributed to program influences. A reduction in the negative movement, or a mitigation of the expected negative slide, would also be attributable to program influence.

Figure 19. Positive, Negative, and Net Gain scores, weighted movement for the comparison group.

POSITIVE, NEGATIVE & NET-GAIN WEIGHTED MOVEMENT
CONTROL GROUP — General Movement & boundaries
UTAH HIGH SCHOOL 1991 DATA: REJECTION SCALE
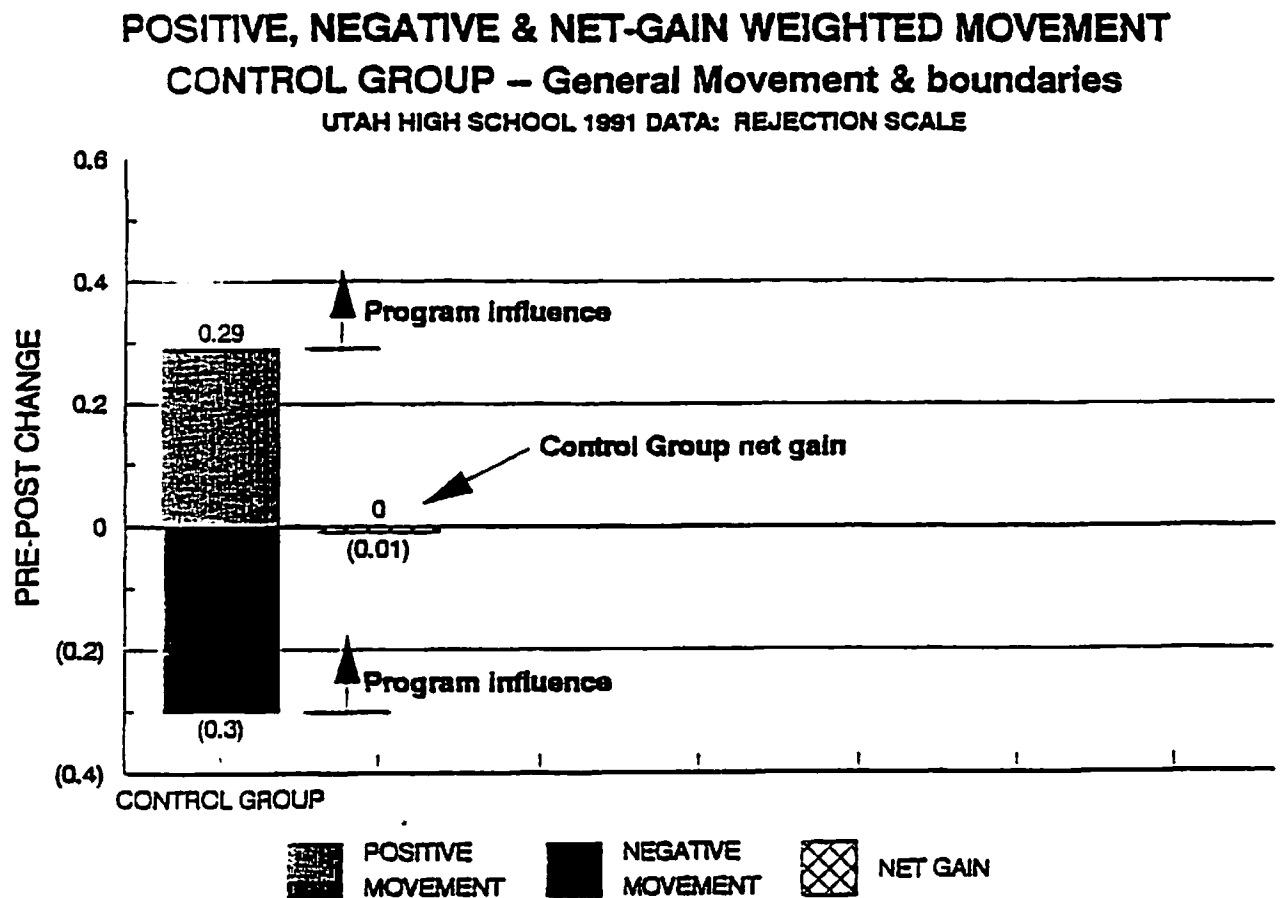
Figure 20 illustrates the amount of positive, negative, and net gain movement for each program, with the numbers representing a weighted proportion. Using the boundaries established with the comparison group data, it is evident how much movement occurs beyond those boundaries that can be attributed to program influences. One can see some clear differences between the programs with respect to positive or negative movement and net gain. The pattern for the net gain scores is similar to that which was observed in the

54

analysis of covariance procedure as well as the t-test analysis. Sex Respect produced the most net gain, and Values & Choices the least. It is notable that the programs differ in terms of their consistency of impact -- Sex Respect produced more positive gain, and

Figure 20. Positive, Negative, and net gain movement, by program

POSITIVE, NEGATIVE & NET-GAIN WEIGHTED MOVEMENT
THREE PROGRAM COMPARISON
UTAH HIGH SCHOOL 1991 DATA: REJECTION SCALE
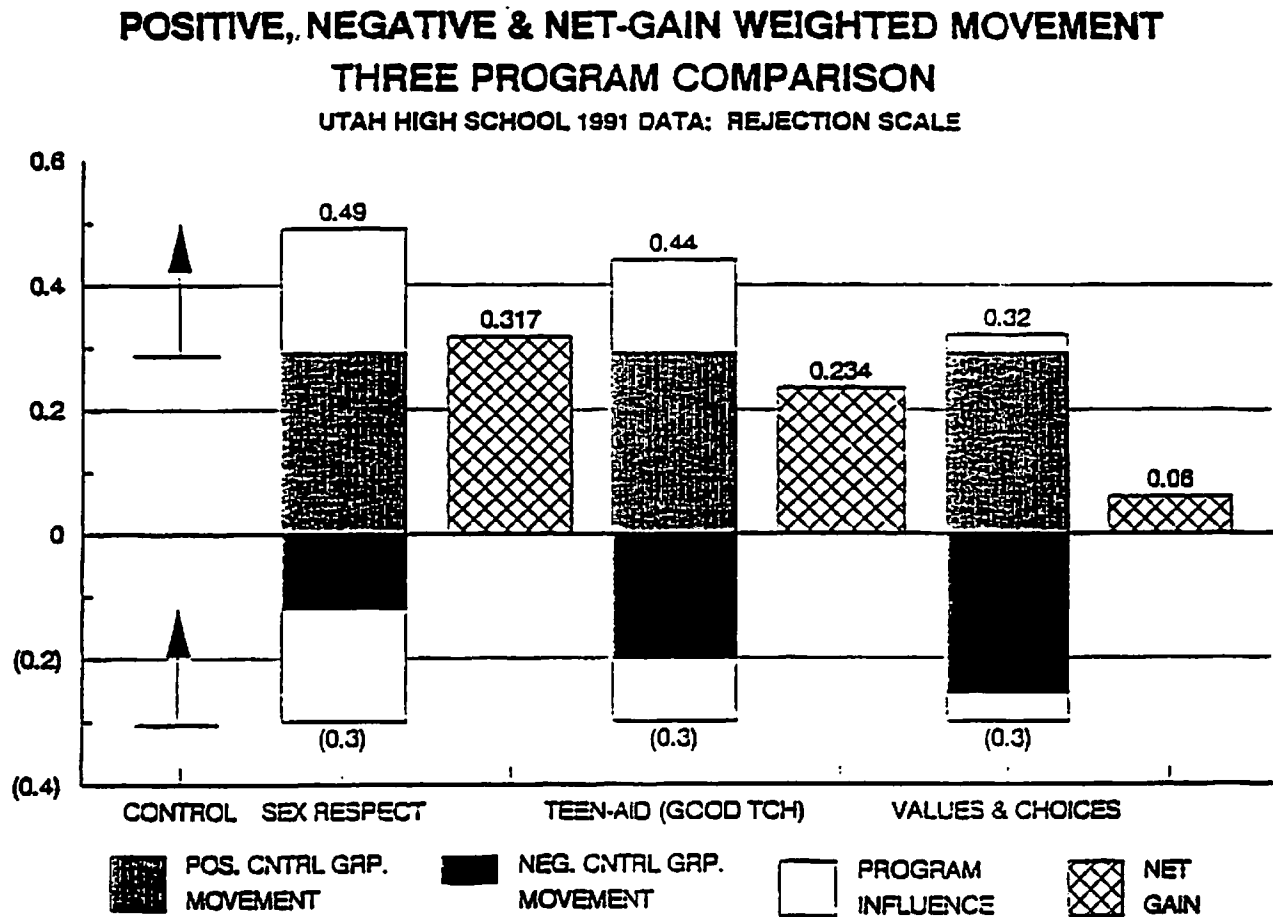
mitigated more of the normal or expected negative slide. Values & Choices produced some positive gain, but did not mitigate the normal or expected negative slide. Teen-Aid (with good teachers) was more in the middle, similar to the earlier analysis of covariance results.

A similar analysis is done to compare movement according to the different groups of teachers (Figure 21). As can be seen. what appeared earlier to be no significant movement for the weak teachers within one of the programs is in fact

55

a combination of positive, negative, and no movement.

Figure 21. Movement and Net Gain Scores for Teacher Groupings

POSITIVE, NEGATIVE & NET-GAIN WEIGHTED MOVEMENT
TEEN-AID TEACHERS BY GROUP - ALL STUDENTS
UTAH HIGH SCHOOL 1989-90 DATA: REJECTION
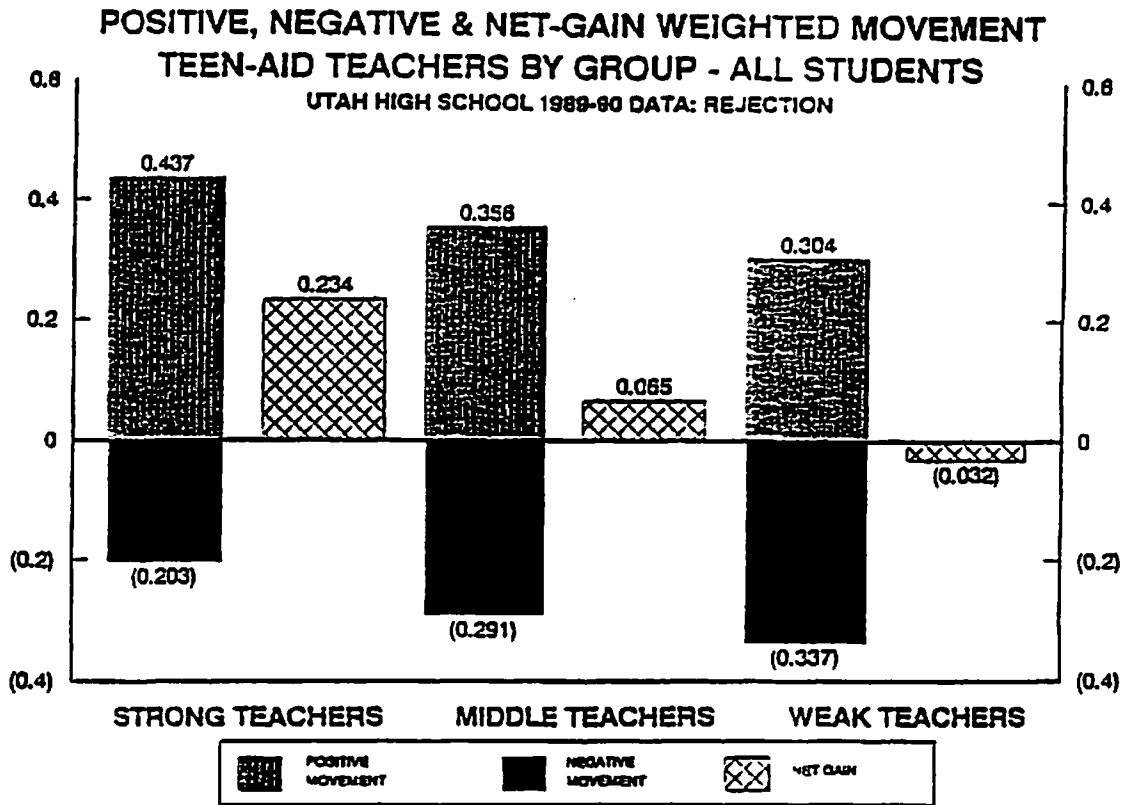
In addition to differences between programs and between teachers, it is also essential to look at the differences between students. Each student brings a different background, experience, value system, etc. to the program. It is important therefore to understand not only what the program effects are in general, but what they are specifically depending on the type of student who is participating.
Figure 22 looks at program effects for three different groups of students: Those with high values, those with medium values, and those with lower values. The comparison group boundaries are established as before, using the expected change for each of the three value groups. It is important to notice

56

that all three programs do fairly well with the lower values group and move them in the right direction. The biggest difference between programs is with the high values group, where mitigation of the expected negative slide does not occur equally across programs. A comparison of these three groups of students is provided in Appendix D with respect to a variety of demographic and other measures.

Figure 22. Positive, Negative, and Net Gain Scores for students grouped by value categories.

WEIGHTED NET GAIN (LOSS) BY VALUE LEVEL
PROGRAM & CONTROL GROUPS
REJECTION SCALE, WEIGHTED NET GAIN
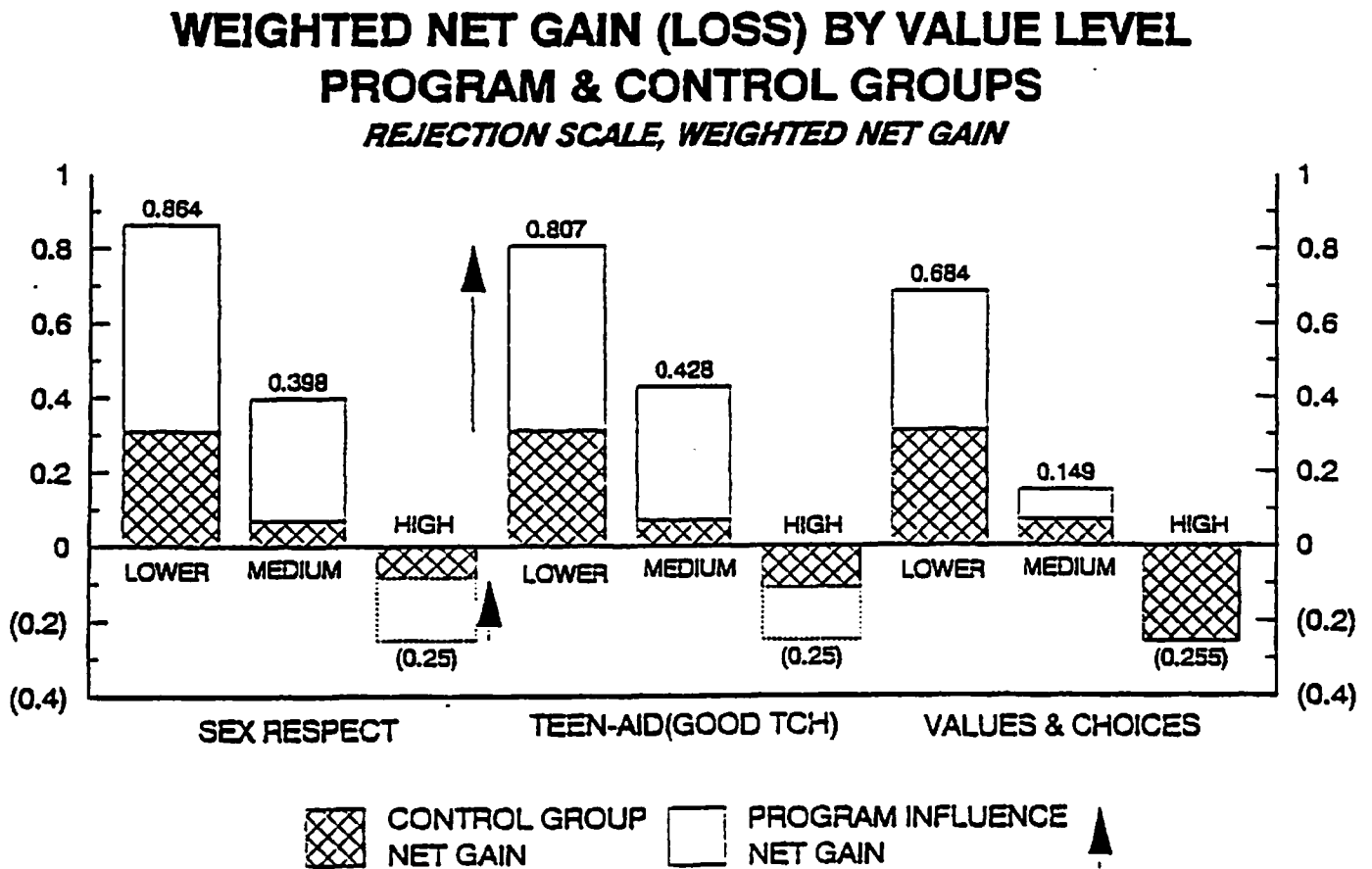
UTAH HIGH SCHOOL
1989-90 DATA   N = 3,700
PRE- POST CHANGE

57

PROGRAM IMPACT ON SEXUAL BEHAVIOR

Transition rate measures

Finally, it is important to determine whether program involvement accounts for differences in the initiation of sexual behavior. A basic and obvious objective of these abstinence programs is to reduce the rate of sexual activity by reducing the number of students who become sexually active. This constitutes a primary prevention strategy for abstinence programs. This report will use transition rates as an important indicator. Those students who were virgin status at time one, but one year later had become sexually active (using the global measure of having at least one experience of sexual intercourse) will be counted as making the **transition** from virgin to non-virgin status. Transition rates will of course be less sensitive to program influence than the short term measures since the transition measure is taken one year later after a multitude of influences beyond program involvement have occurred in the life of the student. Furthermore, one would not expect the program influences that do occur to continue having an affect for long time periods without some type of systematic and continuous reinforcement. Nevertheless, reduced sexual activity rates is a stated objective of each of the programs, and it is important to look for such effects.

Recall that these transition rates are based on the students who took the pre-test and who were part of the follow-up sample. These students were individually linked, so the data observed in this table is based on matched pre and follow-up questionnaires. This linking procedure provides an important advantage in terms of analysis and interpretation. It also deserves a cautionary note. Students who completed both the pre- and follow-up questionnaire tended to be less risk prone than those students who only took one or the other. For example, reported sexual activity rates at pre-test for the total sample was 18%, whereas the pre- follow-up linked sample was 14% at the pre-test. This indicates that the linked data set is not an exact representation of the total sample and therefore the transition rates for each of the groups will likely be a little lower than those for the total sample if the total sample would have been available for analysis.
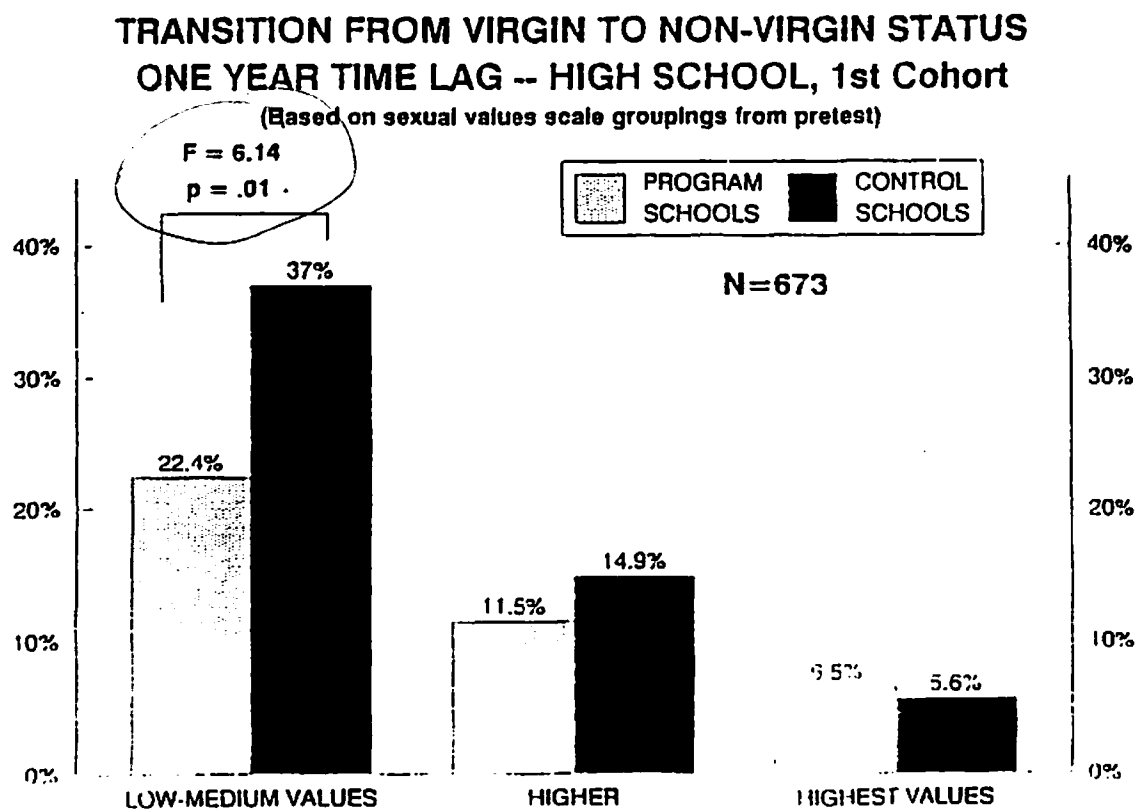
Global transition rates versus value grouping rates

When transition rates are examined for the entire high-school sample, program vs comparison groups look very similar (12.5% for program students, 13.2% for comparison schools). This analysis is based on the 1st Cohort, where

the comparison school longitudinal data was available. When student value difference are taken into account program effects are evident which were not observable in the aggregated sample. The grouping of students was based on the distribution of scores at pretest time on the rejection of permissiveness scale. In this population, the scores were skewed toward one end of the scale (stronger rejection of permissiveness) therefore the three groupings are not equal in size. In particular, the group that would be considered the most permissive was the smallest (n=336), and the group that was the least permissive was the largest (n=802). The middle group included 502 students. The analysis was done for the high school and jr. high groups separately.

Looking first at the high school students, the biggest difference between the comparison and experimental group was in the *low-medium values* group. The program student's rate of transition was 22.4% vs. the comparison school student rate of 37%, which is 40% lower in the program school rate as compared to the non-program school rate. For the *higher* values group, the difference was not as large (11.5% vs 14.8%, a 22% reduction) and for the *highest* values group students the transition rates were low and very similar in the program and comparison conditions. Figure 23 illustrates the one year transition rates (virgin to non-virgin status) for the comparison group versus the program participants for the three programs combined, where the students are grouped according to their beginning position on the rejection of permissiveness scale.

Figure 23. **Transition from Virgin to Non-Virgin Status, program vs control by value grouping, High school students, one Year Time Lag.**

TRANSITION FROM VIRGIN TO NON-VIRGIN STATUS
ONE YEAR TIME LAG -- HIGH SCHOOL, 1st Cohort
(Based on sexual values scale groupings from pretest)

F = 6.14
p = .01 .

| | PROGRAM SCHOOLS | CONTROL SCHOOLS |

N=673

- 40% — 37% (LOW-MEDIUM VALUES, control); 22.4% (LOW-MEDIUM VALUES, program)
- HIGHER: 11.5% (program), 14.9% (control)
- HIGHEST VALUES: 5.5% (program), 5.6% (control)

The differences observed between the program and comparison school students were tested for significance, partitioning the analysis to allow for comparison within the three value groupings. A linear probability model (MANOVA from SPSS) was used with transition rates as the dependant variable, and those who were virgin at pretest (1st cohort) as the sample. Table 6 contains the findings for the high school students.

Table 8 Analysis of Variance for transition rates: Program vs. Comparison schools by Value Grouping. (High School, 1st cohort)

Tests of Significance for TRANSITION RATE using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN CELLS	66.27	667	.10		
BETWEEN VALUE GROUPS	4.83	2	2.42	24.31	.000
PROG VS COMP WITHIN HIGHEST VALUES GROUP	.01	1	.01	.06	.800
PROG VS COMP WITHIN HIGHER VALUES GROUP	.05	1	.05	.53	.469
PROG VS COMP WITHIN LOW-MEDIUM VALUES GROUP	.61	1	.61	6.14	.013

The observed difference between program and comparison groups was significant for the low-medium values group ($F = 6.14$, $p = .013$) but not for the other two groupings.[5]

While the comparison and program schools were well matched, it is possible that within this low-medium values group there may have been some other variables that could explained the significant difference between the program and comparison groups. For example, even though they start out the same with respect to their position on the sexual values scale at pretest, these groups could differ with respect to dating behavior, drinking behavior, religiousness, peer pressure, family composition, etc. All of these variables are related to the transition rate as can be observed in the tables reported later. To test the possibility that it is these variables rather than the program involvement which is accounting for the difference, we controlled for these variables by including them as covariates in the analysis to see if the program effect would disappear. The program effect held up ($F = 5.58$, $p = .018$), providing evidence

that the difference in transition rates for these groups cannot be explained by differences on these other variables.

For the Junior high school students, the biggest difference between the comparison and experimental group was also in the *low-medium values* group. The program student's rate of transition was 26% vs. the comparison school student rate of 31%. For the *higher* values group, the difference was (9.9% vs 6.5%) and for the *highest* values group students the transition rates were low and very similar in the program and comparison conditions (7.5% vs 6.8%). Figure 24 illustrates the one year transition rates (virgin to non-virgin status) for the junior high comparison group versus the program participants for the three programs combined, where the students are grouped according to their beginning position on the rejection of permissiveness scale.

Figure 24.   Transition from Virgin to Non-Virgin Status, program vs control by value grouping, Jr. High students, one Year Time Lag.

TRANSITION FROM VIRGIN TO NON-VIRGIN STATUS
ONE YEAR TIME LAG -- JR. HIGH, 1ST COHORT
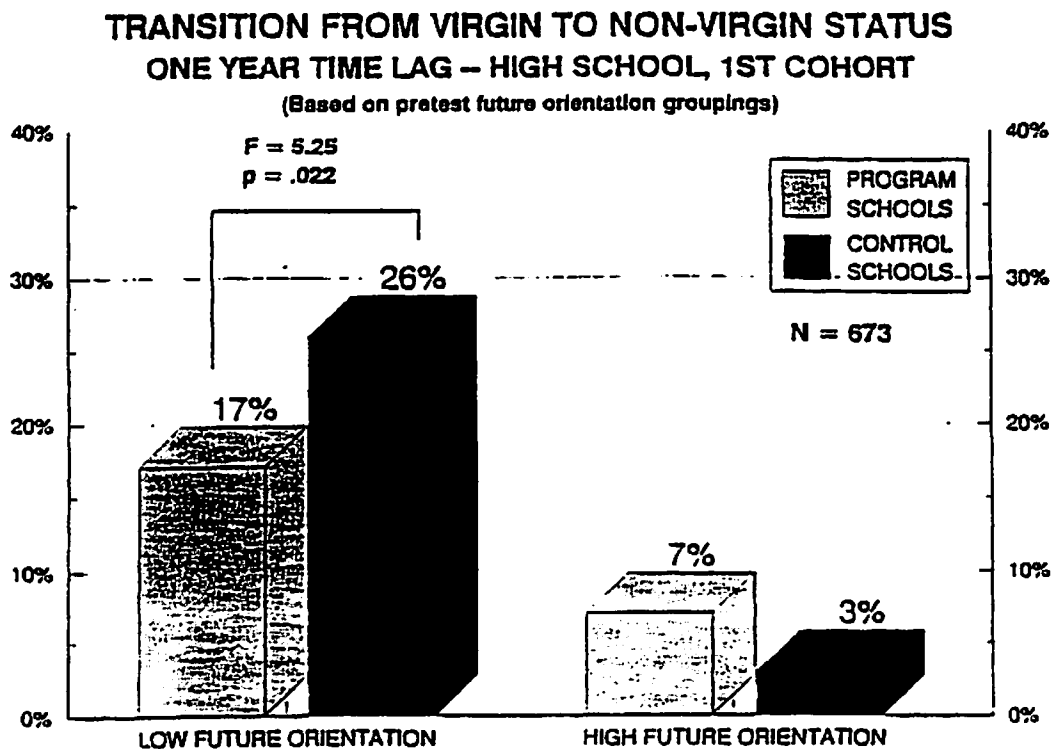(Based on pretest sexual values scale groupings)

N = 967
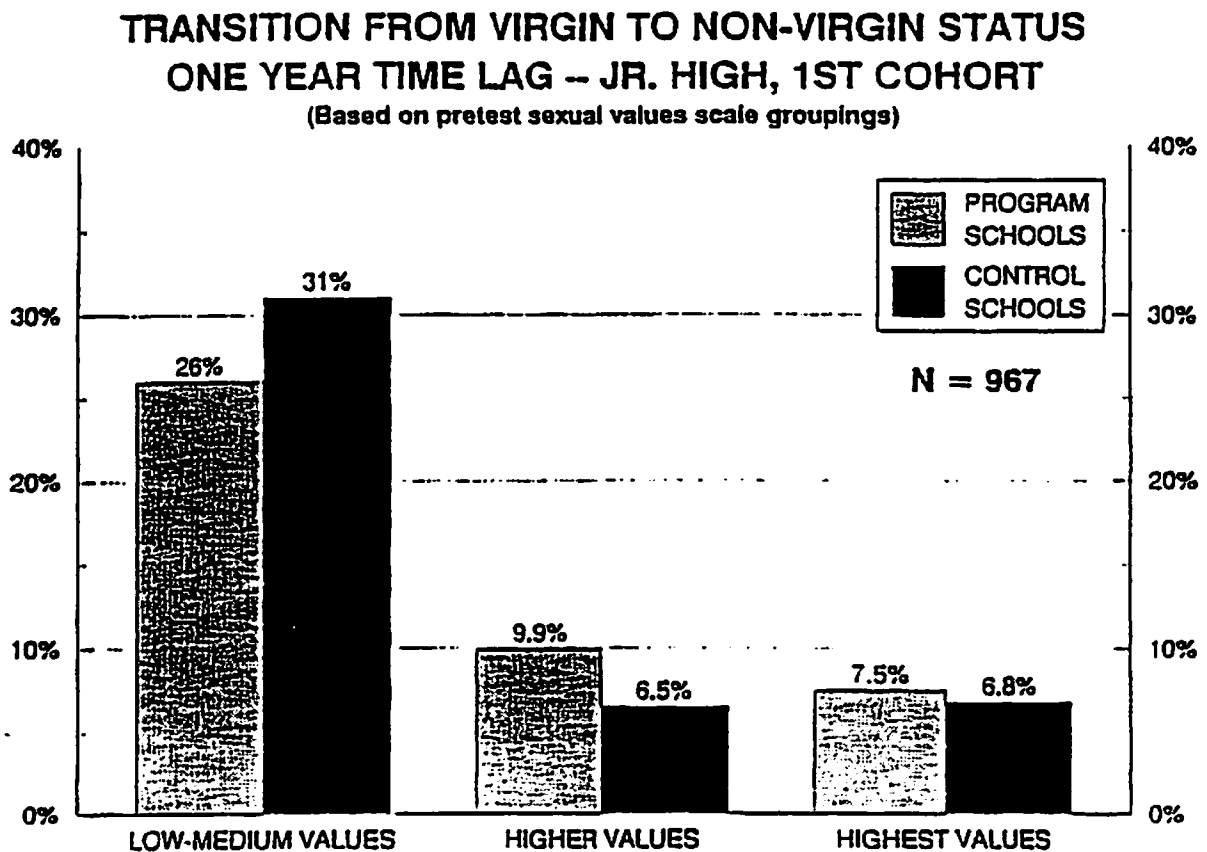
The observed differences between the program and comparison school junior high students were tested for significance, again partitioning the analysis to allow for comparison within the three value groupings. While the pattern for the Junior high students was similar to that of the high school students, the differences were not as large in the low-medium values group and did not turn out to be significant for this sample size.

Transition rates for program vs control by other sub-group categories

As demonstrated earlier, transition rates are influenced by a number of factors, and one could examine program vs non-program students in the context of these other factors just as was done with sexual values group. For example, students with high or low religiousness, males vs females, peer pressure groups, steady dating involvement, and future orientation. Using a similar analysis strategy, students were grouped into categories based on their pretest scores for each of these variables. None of these other program vs non-program differences were significant except for the Future Orientation variable. Figure 25 portrays this data.

Figure 25. Transition from Virgin to Non-Virgin Status, program vs control by Future Orientation grouping, High school students, one Year Time Lag.

TRANSITION FROM VIRGIN TO NON-VIRGIN STATUS
ONE YEAR TIME LAG -- HIGH SCHOOL, 1ST COHORT
(Based on pretest future orientation groupings)

$F = 5.25$
$p = .022$

PROGRAM SCHOOLS
CONTROL SCHOOLS

$N = 673$

26%

17%

7%

3%

LOW FUTURE ORIENTATION   HIGH FUTURE ORIENTATION

A test of significance for the apparent difference between program and control group students within the low Future Orientation group was conducted and the difference was significant (F = 5.25, p = .022). As was seen on the working model presented earlier in this report, Future Orientation is closely an directly related to the Sexual Values measure. Both are related to transition rates, and are important factors to address in prevention programs. It appears that these programs did that.

These analyses provide an important clue to program development, and demonstrates that effective interventions must take into account some key variables and address them effectively in order to have an impact on later sexual behavior. For example, the sexual values variable is not only an important predictor of transition rates, but that when it is influenced significantly by program intervention, it translates into behavior differences. This is also true of future orientation. It may also mean that programs must effect such factors as peer group influences, steady dating involvement, and future orientation simultaneously and dramatically in order to have a large and lasting effect on sexual behavior.

The program vs. comparison school differences suggests that the program effects on sexual behavior as measured by transition rates occurred for students in the low-medium values group. When program effects on transition rates are examined without regard to student differences on sexual values at pretest time, no significant differences between the programs surface. If there are any differences between programs with respect to sexual behavior as measured by transition rates, we might expect these program difference to show up in the low-medium values group. To examine this possibility, we examine transition rates for this particular group of students according to the program they were involved in. Recall that the N size for this sub group of students was the smallest of the three values groupings, and that the first cohort had the control group available for the longitudinal comparison. Using the transition rates for both the first and second cohort (transition rate patterns were similar), and combining jr high and high school students (their patterns were also similar) we end up with a large enough sub sample to look at transition rates by program.

Figure 26 depicts the transition rates for the low-medium values group according to program involvement. The pattern demonstrated by this graph is consistent with some of the short term program effects seen earlier -- Sex Respect and Teen-Aid producing somewhat stronger results than Values & Choices. When those beginning value positions are taken into account, transition rates by program type show some effect for the low-medium values group. The

number of students making the transition was not large to begin with, and when examined by the three value groups within the three programs, the cell sizes are not particularly large and should be interpreted with caution. While the pattern of results for the three programs is similar to that observed for sexual values, intentions regarding sexual involvement prior to marriage, the differences were not significant.

Figure 26. Transition rates by program for Low-Medium Values Group

Transition Rate Comparisons - HS & Jr. H.
Low-Medium Values group
N = 601
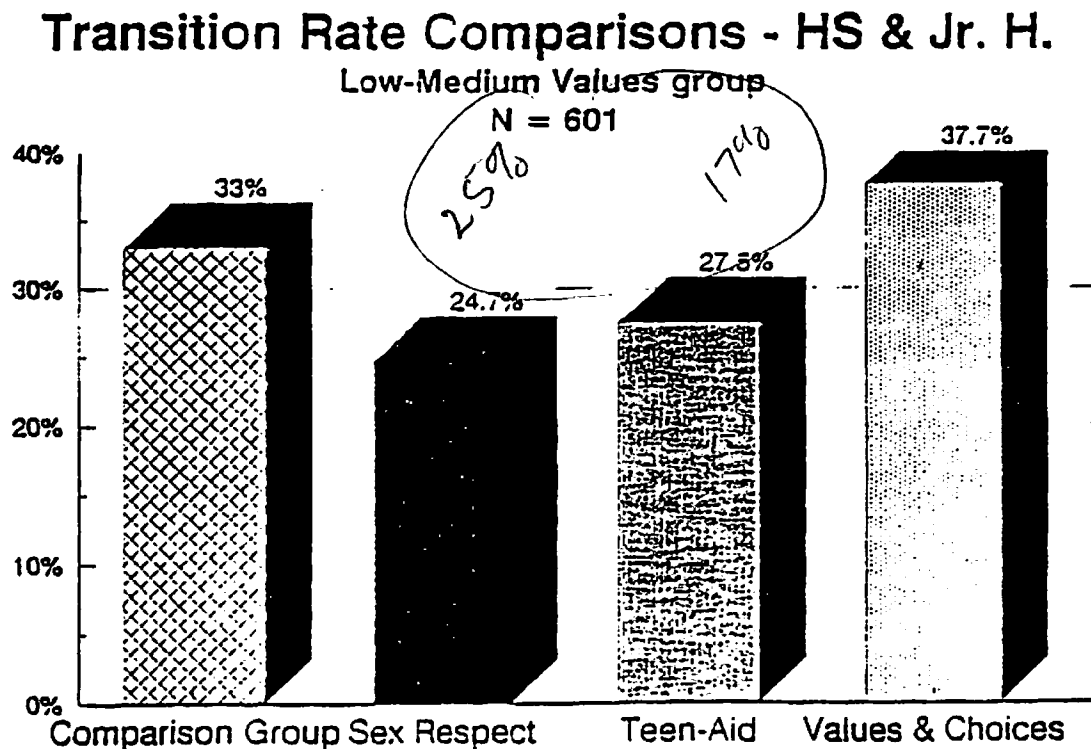
An important reminder in reviewing this data is that the program effects on transition from virgin to non-virgin status were evident for the low-medium values groups but not the other two groups of students. This is not surprising in light of the movement observed on other measures for this group. Finding that this group is not only receptive and responsive to the abstinence message in the short run, but that some influence on behavior is also occurring is notable in light of the body of evidence cited earlier in this report about the general lack of impact by the more typical sex education efforts which focus on knowledge at the expense of other important dimensions. Another important caution is that the

students in this low-medium values group are not necessarily the same demographically as what might be found in other settings. Examination of the profiles of the three groups as contained in Appendix D is useful if generalization of these findings to other geographical settings and populations is desired.

Transition rates for various subgroups

The next three tables demonstrate the transition rates for a variety of population sub-groups. It is essential to keep in mind that each of the categories of students represented below are overlapping in the sense that any one student belongs to several groups. In addition, each factor related to transition rates does not operate in isolation but in combination with other factors. A particularly strong combination of these factors was presented earlier in Table 3. Nevertheless, it is instructive to look at these transition rates as a way of exploring the influence of different factors in the students lives. Table 7 provides transition rates for family several family variables. Tables 8 & 9 provide transition rates for measures on school grades, truancy, religiousness, dating, drinking, and birth control access and information. Table 10 illustrates the relationship between several of the factors from the working model (See Figure 7) and transition rates. This table provides important validation of the factors identified in the working model. These factors are not only good predictors with cross sectional data as presented earlier (See Figure 7), but also demonstrate a strong relationship with behavior as measured by transition rates. Using these factors as short term measures of program effect provides a good way of assessing program potential early in the process of program evaluation.

Table 9   Transition Rates by family variables

Family Demographic subgroups	# Virgins at pretest	# Transition	% Transition
Family Structure			
Intact	2558	309	12.1%
Stepfamilies	253	44	17.4%
Single parent	214	37	17.3%
Other	34	8	23.5%
Fathers Education			
HS only	702	114	16.2%
Some college/trade	596	69	11.6%
College graduate	1530	186	12.2%
Mothers Education			
HS only	1066	159	14.9%
Some college/trade	702	74	10.5%
College graduate	1091	138	12.6%
Fathers employment			
Full-time	2753	355	12.9%
Part-time	122	20	16.4%
None	35	6	17.1%
Mothers employment			
Full-time	1194	172	14.4%
Part-time	866	118	13.6%
None	882	92	10.4%

Table 10   Transition rates by school, church, and dating variables

POPULATION SUBGROUPS	# Virgins at pretest	# Transition	% Transition
Grades in school			
Low	546	137	25.1%
Medium	1355	174	12.8%
High	1158	88	7.6%
School truancy (skipping classes & whole days)			
Never	2153	239	11.1%
Ever	900	158	17.6%
Church attendance			
Low	617	142	23.0%
High	2438	256	10.5%
Importance of religion			
Low	725	169	23.3%
High	2329	230	9.9%
Dating			
Never dated	1702	134	7.9%
Ever dated	491	69	14.1%
Steady dated	824	187	22.7%

Table 11   Transition rates by alcohol use and birth control information and access

Demographic subgroups	# Virgins at pretest	# Transition	% Transition
Drunk			
Never drunk	2630	269	10.2%
Ever drunk	329	96	29.2%
Recently drunk	93	33	35.5%
Birth control information received			
None	2178	235	10.8%
Some	455	75	16.5%
Much	360	83	23.1%
Birth control access difficulty			
Easy to get	1364	184	13.5%
Hard to get	1584	202	12.8%

Table 12   Transition rates by general program objectives

Program objectives subgroups	# Virgins at pretest	# Transition	% Transition
Intentions for future sexual activity			
High intentions	261	104	39.8%
Medium intentions	1059	200	18.9%
Low intentions	1740	94	5.4%
Abstinence values			
Low	288	101	35.1%
Medium	1257	185	14.7%
High	1515	112	7.4%
Future orientation			
Low	1398	264	18.9%
High	1651	134	8.1%
Peer pressure for sexual activity			
Low pressure	1640	113	6.9%
High pressure	1351	274	20.3%
Peer support for abstinence			
Low support	1304	271	20.8%
High support	1694	117	6.9%

PROGRAM CONTENT AND STRATEGY DIFFERENCES

We have seen in this study a consistent pattern of results using a variety of different analysis techniques, results which in fact seem to be attributable to differences in the programs themselves and not simply a function of differences between populations or teachers, measurement error, or other factors. How then are these program differences explained? What accounts for stronger program effects in one program over another?

Examination of the program content and teaching philosophy provides some important observations about the differences in program results. An outline of the course content is contained in the appendix. One must look a little more closely, however, in order to come up with some possible reasons why the content and teaching philosophy may be producing the different results we see across these programs. Closer examination suggests several possibilities.

Sex Respect

The *Sex Respect* approach to teaching abstinence takes a clear and firm position about premarital sexual intercourse, and promotes that position without apology. It does not spend much time trying to justify that position, but rather spends time convincing students to adopt that position. It further promotes that position by training students on the "how to" of sexual abstinence by providing typical scenarios and situations, and giving them clear direction on how to abstain when those situations arise. Self control, self respect, and respect for others are strong themes. The majority of the lessons are devoted to the abstinence message. The teacher is in a position of giving direction rather than a being neutral party without any vested interest in the outcome. The course material is written in a language that is age appropriate -- it speaks to students on their own level. While not particularly appealing to adults, the text is easy to read and follow; even entertaining. Language is not ambiguous, flowery, or excessive. The text has frequent stories and cartoons to help hold interest. And frequent "What do you think?" sections where students are encouraged to put the principles discussed into contexts of personal relevance. Given the clarity of the abstinence message to students, it may also be quite possible that there is some pre-screening of teachers. That is, teachers who do not have a clear or strong position themselves about abstinence for teens may be less inclined to teach the program to begin with. Hence, there is less likelihood that a teacher would be modifying or adapting the program along a different philosophical line. The program is not nearly so broadly based as is Teen-Aid, nor is it intended to be a

complete health curriculum. In its present form, it would be a well focused supplement to an existing health course provided that the existing health course is compatible in its philosophy.

Values & Choices   *[handwritten: Per Directive]*

     Values & Choices takes the much more typical approach of providing information and promoting decision making. Abstinence is presented as one of the options that should be considered, but of course there are other options to choose from. The choice as to which option one ends up with is really self determined, without as strong a direction from the program as the other two curricula regarding the choice. As the authors stated "In writing this curriculum, we began with the premise that teenagers are choice-makers, and that they have the capability to choose wisely, if given help. As their teachers, parents, and friends we can offer that help. By giving honest, straightforward information and sharing our values, we empower teenagers to make good choices which will have a positive impact on their lives." It assumes a rational, thoughtful, decision making approach to sexual behavior on the part of teens, and that good decisions will be made by teens given adequate information. In this strategy, the teacher provides information rather than direction, and operates mostly as a facilitator of decision making. Much of the dialogue suggested in the manual is aimed at an open discussion of possibilities. The wording even in the slightly directional summaries of each lesson is very non-judgmental in tone. Specific conclusions are avoided. For instance the summary in Lesson 9 on "Pregnancy and Birth" says; "Because the mother's health affects the health of the developing baby, it is very important that she make responsible choices, especially about the use of potentially harmful substances." Another example comes from the section on teen pregnancy which concludes with the true but bland statement "Postponing pregnancy and parenthood until you can handle the responsibility is best." This is followed with a list of "The Choices" (Marriage & Parenthood, Single Parenthood, and Adoption). Then for two pages, reasons are listed why people choose or do not choose each of these options. The reasons are presented just as choices with no clear direction on which is better and no further conclusions relating to abstinence.

Teen-Aid

     Teen-Aid can be characterized as a total health program, certainly more broad and inclusive than the other two. While it does rely on the information/ decision making pedagogy, the decision making process is explicit about the best choice for teens. This places Teen-Aid somewhere between these other two with

respect to the clarity and strength of the abstinence message. Putting sexuality in the context of the rest of life is one of the major thrusts of the course, with particular emphasis on sexuality in the context of marriage. On page 8 of the preface the course is described as "an educational program which fully emphasizes the deep meaning of sexuality in the context of the family, self respect, respect for others, and respect and love for one's future spouse and children." Most of the Teen-Aid course provides a large amount of detailed background, with the idea that if you truly understand sexuality in the context of family and related matters, you will quite naturally accept that abstinence is the logical choice. While the theory seems good, the approach may be so broad that the central message could become overshadowed or diluted. It is true that all the logic and supporting material play a part in why abstinence is best, but getting teens to accept and integrate that much material is a major task. This would more likely be the case where there is an attempt to squeeze Teen-Aid into an already existing health curriculum and not give it adequate implementation time. Only about one and one-half units are specifically devoted to the abstinence message. Other accompanying messages in this comprehensive approach are setting dating standards, abstinence from drugs and alcohol and tobacco, as well as positive messages on overall emotional and physical health and exercise. As a specific example of the broad based nature of the course, the 20 page chapter on parenting includes such items as the teaching/learning process, parent/child responsibility, adult influence on a child's behavior, allergies, immunizations, and childhood diseases. There is a lot of material on many subjects included in the lessons, and if the curriculum is used as a basis for a very short course, the teacher will of necessity have to do a lot of picking and choosing, and will to a great extent have to chart his/her own course. If more time is available, there is material enough for a very complete health curriculum. This course would probably work best as a replacement for much of an existing health curriculum rather than an addendum. Under time constraints, the course material actually presented to the students is at the discretion of the teacher. Teacher differences in philosophy and implementation quality will consequently have great deal to do with the impact of the course on the students. As with the other programs, dosages of reinforcment would strengthen the results. The Teen-Aid program does offer a Jr. High and Sr. High version.

CONCLUSIONS AND RECOMMENDATIONS

Nature and Dynamics of the Problem

1. Utah students differ from national averages in significant ways with respect to sexual behavior, attitudes and values. These differences need to be accounted for when designing and implementing sexuality education programs. Administrators are in a very good position to promote abstinence as a primary prevention strategy that will be relevant to the large majority of the teenage population.

2. Several key factors, precursors to sexual involvement and all of its consequences, are identifiable. Some of these are subject to program intervention and hold promise for preventive efforts.

Program Evaluation

3. Programs, taken as a whole, have different effects, with Sex Respect showing the largest and most consistent short term movement on key measures (Affirmation of Abstinence, Rejection of Permissiveness, Intentions) with Teen-Aid a close second after accounting for teacher differences.

4. Teachers play a significant role in the quality of the student experience and in the nature of the program outcomes for students. A commitment to the program philosophy and an adequate level of implementation are necessary to produce positive results.

5. Program effects on sexual behavior as measured by transition from virgin to non-virgin status during the course of one year were also observed for high school students who started out in the low-medium values group at pre-test.

6. Individual student differences are important determinates to program effectiveness. These individual differences provide important information that is often lost in group averages. For example, the low to medium values group of high school program students had a transition rate (from virgin to non-virgin status) that was 40% lower than the comparison group students after one year. The students with very high values to start with (program vs. comparison group) were similar in their transition rates one

73

year later.

7. Short term program effects were also different for the students in the different values categories. This evaluation demonstrated the magnitude of the natural slide for high values students, and pointed out differential program effects in the mitigation of that natural slide. It also demonstrated the natural gain for the low to middle values students, and calibrated program effects above and beyond the natural gain. Students in the low to middle values category showed the most positive gain, and it was evident for all of the programs.

8. The programs used in this pilot project, while showing important and differing degrees of promise, could benefit from some specific adjustments in order to reach their full potential.

General

What comes through very clearly from this data is that the outcome of these programs is very much a function of not only what the program teaches, its style and philosophy, but also who the teacher is and what the student brings to the classroom. Results in the lives of students are a *combination* of these factors, and evaluating programs requires that we take all of them into account simultaneously. Students move up or down on key measures depending on their own background, the content and philosophy of the curriculum, and the manner in which the teacher handles the course. Some combinations of these factors produce positive results while other combinations produce negative results. It is also important to observe that while the programs did influence sexual behavior for a key segment of the population, optimal effect is going to require something more than a single, short term exposure. It is optomistic to presume that a two or three week course in anything will have a large and lasting effect on any kind of behavior. All three of these programs could profit by a longer term and repeated exposure to the intervention. None of the other basic course offered in education would expect meaningful results with just a two week participation.

A particularly helpful dimension of this study is the identification of significant factors that influence risky behavior with respect to sexual involvement, and the relationship of these factors to one another. The dynamics of the problem are not only more complex than typical interventions have assumed, but the important factors of sexual involvement have for the most part not been addressed effectively nor comprehensively. What some groups have labeled "comprehensive" sex education is apparently not comprehensive at all, but a narrow informational/educational approach based on human biology and medical technology. Typically ignored has been the social, psychological, related risk behaviors and value systems of the students. These factors carry significant weight in accounting for the targeted behavior and need careful attention if optimal results are to be realized.

The programs tested here all have shown some promise with regard to some of the key factors. Sex Respect tested well on more of the key factors than did Values & Choices, with Teen-Aid a close second to Sex Respect after accounting for teacher differences. Teen-Aid produced better results on the key parent factors, as did Values & Choices, and Teen-Aid also realized some movement on the peer scales. Sex Respect would benefit by a stronger peer and parent component, whereas Teen-Aid would benefit by a clearer and stronger focus on the abstinence message. Values & Choices could be strengthened by a greater emphasis on how to achieve the abstinence objective rather than simply

offering it as another option that students select from using selection criteria that don't seem obvious and compelling to the students. All of the programs should seriously consider the number of exposures needed over time and across grade levels in order to increase the magnitude and duration of their effect.

1.   See Kirby, D. Sexuality Education: A more realistic view of its effects. Journal of School Health, vol. 55 (10): pp.421-424 (1985). "Sexuality education has been proffered as a partial solution to a variety of adolescent sexual problems. Research demonstrates that programs increase knowledge, but have little direct impact on values and attitudes, actual sexual behavior, use of birth control, and teenage pregnancy. The research shows that sexuality education programs are similar to other educational programs in their effects; many programs increase knowledge and a few help clarify values, but most probably will not have much influence on the direction of sexual values or on sexual behavior. Alone, they will not dramatically reduce unintended pregnancy."

    See Dawson, D.A. The effects of sex education on adolescent behavior. Family Planning Perspectives, 18(4): pp. 162-170 (1986) "Overall, however, the existing data do not yet constitute consistent, compelling evidence that sex education programs are effective in increasing teenage contraceptive use and reducing adolescent pregnancy . . . . Neither pregnancy education nor contraceptive education exerts any significant effect on the risk of premarital pregnancy among sexually active teenagers -- a finding that calls into question the argument that formal sex education is an effective tool for reducing adolescent pregnancy."

    See Hansen, Ginsberg, and Meyers, Journal of Marriage and the Family, May 1987, pp. 250-251. "...neither of these variables (sex education and birth control knowledge) significantly affects the chances that a black or white teenager would have a child in the two-year period under study. . . Our findings suggest that knowledge, as measured by birth control knowledge and sex education courses, is not successful in reducing the chance of out-of-wedlock childbearing . . . These findings have important implication for programs and policies addressing teenage pregnancy and childbearing. Although sex education is often promoted as a way to reduce the incidence of early pregnancy, our results suggest that simply requiring more students to take more sex eduction, as it is currently provided, is not the answer.

    See MacDonald, N.E. et.al. High Risk STD/HIV Behavior Among College Students. Journal of the American Medical Association, June 20, 1990, Vol 263, No. 23, pp.3155-3159.

This study included 5500 college freshman in Canada where 74% of the men and 69% of the women had at least one experience with sexual intercourse. Forty percent reported this behavior as occurring often, and 40% of the men and 25% of the women reported at least 5 different partners. Overall the respondents' knowledge of HIV was reasonably good. However, neither the decision to be sexually active, the number of partners they had, nor the use of condoms was related to knowledge about HIV or STDs. "While the majority of these students know which sexual activities increase the risk of HIV transmission and also know. about safe sexual practices, many still engage in risky behavior ....Knowledge per se was not typically translated into safer behavior....The frequency of unprotected intercourse reported by these students was high, as was the rate of a previously diagnosed STD. Consistent condom use was uncommon, and tended to decline with increasing number of partners for female respondents."

See Kegeles, S.M., Adler, N.E., and Irwin, C.E. Sexually active Adolescents and Condoms: Changes over one year in knowledge, attitudes, and use. American Journal of Public Health 1988; 78:460-461. Study done in San Francisco with 320 sexually active teens. Information about AIDS prevention (including condom use) via television, newspapers, billboards, and on buses. Also, an AIDS unit was taught on AIDS in middle schools and High schools. "In general, adolescents believed that condoms are effective at preventing STDs, with females showing an increasingly strong belief in this by the second interview. There was a consensus among both males and females that using a contraceptive that prevents STDs is of great value and importance. Importance ratings decreased over the year among females. At both points of time females showed little intention to have their partners use condoms and were uncertain about whether or not their partners wanted to use them; they showed no change in these variables over time..." "These results are disquieting. Sexually active adolescents report placing high value and importance on using a contraceptive that protects against STDs and know that condoms prevent STDs, yet the females continued not to intend to have their partners use condoms and the males' intention to use condoms decreased. Although the study was conducted in a city with a high prevalence of AIDS, and where media and school coverage of the epidemic was increasing over the time studied, sexually active adolescents continued to have multiple sex partners and did not substantially increase their use of condoms, thus continuing to place themselves and their partners at possible risk for STDs, including HIV infection."

See Marsigllio, W. and Mott, F.L "The impact of sex education on sexual activity, contraceptive use and premarital pregnancy among

American teenagers." Family Planning Perspectives 1986, vol 18
(4): p 151-162. Using data from the National Longitudinal Survey
of Youth, which measured the key variables over a several-year
time period, they concluded: "The results of our study lead us to
conclude that contemporary sex education courses have ambiguous
effects on premarital pregnancy. Exposure to a course appears to
be associated with a slightly increased probability of subsequent
sexual activity among 15-16 year-olds. But sex education is also
associated with an increased likelihood of effective
contraceptive use. The impact of these two factors on premarital
pregnancy is extremely modest." The authors say "extremely
modest" because the relationship between premarital pregnancy and
sex education was not statistically significant, nor nearly as
important as the other variables that predicted adolescent
pregnancy -- church attendance, parental education, race, two-
parent families, etc.

See Stiffman, A.R., Earls, F., Dore, P. and Cunningham, R.
"Changes in Acquired Immunodeficiency Syndrome-Related Risk
Behavior After Adolescence: Relationships to Knowledge and
Experience Concerning Human Immunodeficiency Virus Infection"
Pediatrics Vol 89 No5 May 1992. This study tracked 602 inner-
city youth during their transition from adolescence to young
adulthood. Change in the total number of risk behaviors was
examined. They reported that "knowledge about AIDS or HIV
infection and its prevention was not associated with any change
in risk behavior, nor were the number of source of information
about the epidemic, acquaintance with those who are infected,
estimates of personal risk, or exposure to HIV-test counseling.
In fact, youths whose risk behaviors increased the most were more
likely to know someone who had died of AIDS and to estimate their
own risk as high. Most youths reported that they did not use
condoms regularly, disliked them, and had little confidence in
their protective ability. Changes in preventive strategies and
further research on the causes of behavior change are needed."
" . . . it is clear that knowledge does not improve risk level in
this population, nor does exposure to counseling, experience with
HIV-infected individuals, or awareness of one's own risk status.
. . . The findings reinforce the results of other studies that
find no association between knowledge and risk behaviors. . . .
It is apparent that neither information, nor the pertinency or
relevancy of that information, nor various interventions are
changing youths' behavior. . . . It is imperative to change
direction quickly , to find out what other aspects of the youths'
lives might be preventing them from absorbing this information or
might be predisposing them to receptivity so that they will
change their behavior, and it is time to implement preventive
interventions that focus on more than just presentation of
information. . . . We must consider immediately implementing
programs that will go beyond information dissemination and take
into account known correlates and causes of high risk behaviors."

2.   Stout, J.W., Rivara, F.P.   Schools and Sex Education: Does
It Work: PEDIATRICS, Vol. 83, No.3, March 1989

3.   Kirby, D., Bath, R., Leland, N. and Fetro, J.   Reducing the
Risk: Impact of a New Curriculum on Sexual Risk-Taking.   (This
paper evaluates an approach reportedly based on social learning
theory, social inoculation theory and cognitive-behavioral theory
as a more theory based approach that goes beyond those tried but
failed approaches of the past.   Overall, program results were not
significant.   Some sub-groups showed significant change, i.e. low
risk students and females.)

4.   See the 1989 year end report on the Teen-Aid program to the
U.S. Department of Health and Human services, Office of
Adolescent Pregnancy Programs.

5.   A corresponding log linear analysis was also done, and under
this approach the p value was .08).