

Social Bonds and Outcomes of Sexual Activity Among Teenage Women

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ABSTRACT Although many American teenagers receive sex education and have access to contraceptive services, early sexual activity and teen pregnancy remain issues of concern for social researchers, educators, and policy makers. Data on teen women aged 14-19 ($n=213$) who received comprehensive private health insurance coverage were used to identify important social bonds and to explore their impact on women's reproductive outcome; deliver, abort and contracept. Results demonstrated that a prevention strategy aimed at reducing negative reproduction outcomes among teenage women should not only include classroom instruction and access to contraceptive methods, but also focus on strengthening women's social bonds.

INTRODUCTION

The overall US teen birthrate is declining, due in part, to widespread adolescent exposure to formal school instruction about sexuality education, abstinence strategies, and contraceptive methods (Goldfarb, 1997; Weinbender and Rossignol, 1996). While increasingly fewer teen women still have access to providers of abortion, many teens have relatively easy access to various community-based pregnancy prevention programs and contraceptive services (Ravoiara, 1990; Ventura et al., 1997). Teen pregnancy prevention researchers and practitioners have been instrumental in this encouraging decline in teen pregnancy due to their collective work toward a better understanding of the antecedents, correlates, consequences, and social demographics concerning this costly personal and public health issue. However, in spite of recent public optimism, early teenage sexual activity and pregnancy continue to persist as issues of great concern for individual families, health educators, health care providers, and policy makers (Desmond, 1994).

This study was intended to expand on the newer, more holistic research related to teen

pregnancy and to explore young women's social bonds and networks and their impact on contraceptive behaviors and reproductive outcomes in order to further the current positive trend, and to offer new insight to populations where the teen birthrate has remained stagnant. The study adopted the Social Bond Theory as its primary analytical framework in order to better understand the role of social network in preventing adverse reproductive outcomes among teenage women and identifying social risk factors to prevent unplanned pregnancy among teenagers (Hirschi, 1969; Jessor and Jessor, 1975; Cherry, 1985). The study tested the hypothesis that sexually active adolescents with strong social bonds are less likely to engage in high-risk sexual behaviors leading to an early unplanned pregnancy, and that such adverse reproductive outcomes are related to a weak social network (Esminger, 1987; Marcos et al., 1986).

METHODS

Study Population

The participants in this study were teenage women who delivered, aborted or successfully contracepted and had comprehensive health insurance coverage with a large IPA-model health maintenance organization in central New England. To identify potential study group participants for a panel study design, all of the HMO's payment claims records for an 18-month time period were reviewed. Potential participants included all HMO members, aged 14-19 during the selected time period, who met the following criteria: (1) those who delivered babies either by vaginal or Cesarean delivery; (2) those who had elective abortions; and, (3) those without a diagnosis of pregnancy and a record of an abortion procedure who received contraceptive

management services. Claims records were individually cross-referenced with procedure codes (The American Medical Association, 1991) and diagnostic codes (United States National Center for Health Statistics, 1992) to further insure proper stratification of potential participants into either the deliver, abort or contraceptive study group.

Instrumentation and Telephone Survey

A survey instrument, composed of fifty questions, was developed and utilized to measure the respondents' social bonds and demographic/descriptive characteristics. To identify potential social bond differences between the outcome groups, questions were included to measure different aspects of respondents' 1) attachment to significant others, 2) commitment to conventional lines of action, 3) involvement with conventional activities, and 4) belief in a common value system (Hirschi, 1969).

Three trained female telephone interviewers collected the research data from 213 young women in the study sample. Both the survey questionnaire and sample were computerized utilizing a computer assisted telephone interviewing (CATI) system. There were 213 completed questionnaires out of a total of 284 eligible subjects, yielding a response rate of 75%. Outcome group sample sizes were unequal, with a range of 43 to 94. The original intent of this study was to obtain a randomly selected sample of up to 100 participants from each of the three outcome groups. Real-life constraints (smaller than expected group sample sizes and financial considerations) made it necessary to randomly sample each of the three study groups until either a sample of 100 was obtained per group, or, the greatest possible number obtainable less than 100 was reached (Table 1).

Table 1: Number of women who completed telephone survey by outcome group and age category

Outcome group and age category	n
Total Deliver	76
Deliver (age 14-16)	26
Deliver (age 17-19)	50
Total Abort	43
Abort (age 14-16)	16
Abort (age 17-19)	27
Total Contracept	94
Contracept (age 14-16)	44
Contracept (age 17-19)	50
Total	213

RESULTS

Data Analysis

Frequency and chi-square analysis was conducted in order to characterize the 213 telephone survey respondents by outcome group. Factor analysis was conducted to make a gross estimation as to which questionnaire items should be grouped together for each social bond scale. Pearson's correlation analysis was then used to examine the associations among the variables grouped by factor analysis. The identification of distinct social bond clusters enabled the construction of eight social bond scales. Data from these scales, representing social relations with *Mother, Father, friends, education, future, school activities, family, and religion*, are reported here. A univariate nonparametric analysis was performed to identify differences in social bonds between the three outcome groups (deliver, abort, and contraceptive), and the three pairs of outcome groups (deliver and abort, abort and contraceptive, and contraceptive and deliver). Additionally, this analysis generated three multiple regression models which allowed for comparison of differences between pairs of outcome groups by social bond scale scores, accounting for two confounding demographic variables.

Results of Demographic Analysis

The 213 respondents to the telephone survey were between the ages of 14 and 19 during the study time-frame. Almost half of these young women grew up in central New England towns with populations less than 10,000. More than half of the respondents from each outcome group remember that their parent(s) knew where they were *always* when they were away from home.

Table 2 shows the frequency of the 213 respondents' race/ethnicity by outcome group. Whites comprised 89% of the entire study group, 33% of which were in the deliver group and 47% were in the contraceptive group. Among the 24 (just 11% of the total study sample) non-white respondents, the majority (54%) were members of the deliver group and 21% were members of the contraceptive group. Respondents who were white were significantly more likely to have successfully contracepted, or chosen abortion over delivery if they had become pregnant, than non-white respondents.

Table 2: Frequency of respondents' race/ethnicity by outcome groups

Race/Ethnicity	Deliver n (row/col%)	Abort n (row/col%)	Contracept n (row/col%)	Total n (row/col%)
Hispanic/Latina	7 (58/9)	3 (25/7)	2 (17/2)	12 (100/6)
Native American Alaska native	3 (50/4)	2 (33/5)	1 (17/2)	6 (100/3)
Asian/Pacific Islander	0 (0/0)	1 (100/2)	0 (0/0)	1 (100/1)
African American	2 (50/3)	0 (0/0)	2 (50/2)	4 (100/2)
White, non-Hispanic	63 (433/83)	37 (20/86)	89 (47/95)	189 (100/89)
Other	1 (100/1)	0 (0/0)	0 (0/0)	1 (100/1)
Total	76 (36/100)	43 (20/100)	94 (44/100)	213

The young women who delivered babies in this study population were the most likely to be engaged to be married and living apart from both parents. The respondents who aborted were the most likely to be in a serious relationship or married. The young women who used contraception were the most likely to be single, not involved in a relationship, and live at home with one or both parents.

The more economically disadvantaged women represented the majority in the deliver group and the more economically advantaged young women represented the majorities in the abort and contraceptive groups. The majority of respondents (83%) reported a total household income level of \$45,000 and below, with 42% reporting incomes of less than \$25,000 (Table 3). The majority (59%) of the deliver group came from families with annual incomes of less than \$25,000, while just 8% of this same outcome group reported incomes of more than \$45,000. The majority of the abort group (55%) and 42% of the contraceptive group fell within the \$25,000 to \$45,000 annual income level range. Looking solely at respondents from the highest income level (>\$45,000), 18% delivered, 18% aborted and 64% contracepted. The higher the income level, the more likely a respondent was to be a contraceptive and the lower the income

level, the more likely a respondent was to be a teenage mother.

An additional indicator of social class considered in the present study involved the use of public assistance by the respondent's family-of-origin. Although 34% of the total group of respondents reported that their family-of-origin had utilized public assistance to some extent in the past, 9% of the deliver group reported frequent use of public assistance, while no respondents from either the abort or contraceptive groups gave this response (Table 4). Similarly, 19% of the deliver group reported sometimes using public assistance compared to 7% and 6% of the abort and contraceptive groups, respectively. Looking at one-time use of public assistance, figures of 30%, 23% and 10% were reported from the deliver, abort and contraceptive respondents. Forty-two per cent of the deliver group said that their family had never used public assistance, while 70% of the abort group and 84% of the contraceptive group gave a similar response.

Social Bond Scale Scores

To determine whether age was significantly related to each of the eight social bond scale scores, nonparametric analysis for the social bond variables by age was conducted. When using $p \leq .05$ to delineate statistical significance,

Table 3: Frequency of respondents' family-of-origin's level of annual income by outcome group

Income	Deliver n (row/col%)	Abort n (row/col%)	Contracept n (row/col%)	Total n (row/col%)
<\$ 25,000	36 (54/59)	10 (15/30)	21 (31/31)	67 (100/42)
\$ 25-45,100	20 (30/33)	18 (27/55)	28 (42/42)	66 (100/41)
> \$ 45,000	5 (18/08)	5 (18/15)	18 (64/27)	28 (100/17)
Total	61 (38/100)	33 (20/100)	67 (42/100)	161

Pearson chi-square = 16.16, d.f. = 4, $p < 0.1$

Table 4: Frequency of respondents' family of origin's use of public assistance by outcome group

Use of Public assistance	Deliver n (row/col%)	Abort n (row/col%)	Contracept n (row/col%)	Total n (row/col%)
Not used	32 (23/42)	30 (21/70)	78 (56/84)	140 (100/66)
Used	44 (61/58)	13 (18/30)	15 (21/16)	72 (100/34)
Total	76 (36/100)	43 (20/100)	93 (44/100)	212

Pearson Chi-square 34.15, df = 4, $p < .01$

none of the social bond scale scores were significantly different due to age. This finding made it possible to eliminate age from further analysis and allow for just three outcome groupings: deliver, abort and contracept. Mean scores for eight social bond scales are presented by outcome group in table 5.

Table 5: Mean social bond scores by outcome group (1 = Strongest bond, 4-Weakest bond)

Social Bond scale	Deliver	Abort	Contracept
Mom	1.811	1.744	1.582
Dad	2.092	2.270	2.145
Friends	1.471	1.427	1.397
Education	1.702	1.829	1.645
Future	2.368	2.279	1.968
School Activities	2.684	2.581	2.303
Family	1.917	2.008	1.720
Religion	2.482	2.953	2.695

To determine whether there were statistically significant differences between social bond scale scores and outcome groups, nonparametric analysis of variance tests were conducted to examine similarities of medians between outcome groups and for pairwise comparison of all possible outcome pairs; deliver vs. abort, abort vs. contracept and deliver vs. contracept. For pairwise comparisons of three possible pairs of outcomes, the Bonferroni adjusted significance level for three multiple comparisons is calculated to be $p \leq .017$.

In the present study, outcome status in terms of deliver, abort, or contracept did not appear to be significantly related to either *Mother* ($p \leq .08$), *Father* ($p \leq .65$) or *Friends* ($p \leq .44$). There was a significant chance that outcome status was related to *Future* (Table 6). Pairwise comparisons showed a significant difference in the *Future* scores with the deliver and contracept groups ($p \leq .001$). For *School Activities*, the Kruskal-Wallis p -value for all outcome three groups was significant at the $p \leq .008$ level. For this pairwise

Table 6: Nonparametric one-way Analysis of variance tests between outcome groups and nonparametric t-Test for pairwise comparisons of eight social bond scale

Social Bond Scales	Kruskal-Wallis p -value	Mann-Whitney U p -value
<i>Mom</i>	0.088	
Deliver vs Abort		0.975
Abort vs Contracept		0.062
Deliver vs Contracept		0.067
<i>Dad</i>	0.659	
Deliver vs Abort		0.345
Abort vs Contracept		0.495
Deliver vs Contracept		0.819
<i>Friends</i>	0.449	
Deliver vs Abort		0.950
Abort vs Contracept		0.350
Deliver vs Contracept		0.256
<i>Education</i>	0.459	
Deliver vs Abort		0.457
Abort vs Contracept		0.222
Deliver vs Contracept		0.553
<i>Future</i>	0.001*	
Deliver vs Abort		0.475
Abort vs Contracept		0.034**
Deliver vs Contracept		0.001**
<i>School Activities</i>	0.008*	
Deliver vs Abort		0.528
Abort vs Contracept		0.064
Deliver vs Contracept		0.003**
<i>Family</i>	0.041*	
Deliver vs Abort		0.504
Abort vs Contracept		0.024
Deliver vs Contracept		0.059
<i>Religion</i>	0.008*	
Deliver vs Abort		0.002**
Abort vs Contracept		0.079
Deliver vs Contracept		0.081

* $p \leq .05$

** Bonferroni adjusted significance level for three multiple comparisons is $p \leq .017$ (.05/3).

comparison, the deliver and contracept groups retained a significant difference in scores when subject to Mann-Whitney U nonparametric t -test analysis ($p \leq .003$). The *School Activities* variable yielded a significant p -value of $p \leq .04$ for all outcome groups, however, further pairwise comparisons did not demonstrate these differences

to be statistically significant. For *Religion*, the Kruskal-Wallis nonparametric analysis of variance test revealed a probability value of $p \leq .008$ for all outcome groups. Closer analysis of pairs showed that p -values for all three pairs were low, with deliver vs. abort having a statistically significant value of $p \leq .002$.

Confounding Demographic Variables

For this research, it was important to understand whether demographics played an influential role in better explaining or negating, the significant relationships already established through nonparametric analysis of social bond scale scores and contraceptive status. The use of *Public Assistance* was significantly related ($p \leq .05$) to the social bond scale scores intended to measure bonds with *Mother*, *Father*, *Friends*, *Future*, *School Activities*, *Family* and *Religion*. *Ethnicity* was significantly related ($p \leq .05$) to the social bond scale scores intended to measure the bond with *Friends*. Accordingly, these two variables were included into the stepwise regression analysis.

Logistic Regression Analysis

A statistical software package (SYSTAT/LOGIT) allowing for stepwise regression analysis was utilized in order to permit reexamination, at every step, of the variables incorporated in the regression model in previous steps. Using this method, a variable that enters at an early stage may become insignificant at a later stage due to its new relationship with other variables (including confounding variables) currently in the model. The SYSTAT/LOGIT software program computes a Wald test statistic derived from the Wald goodness-of-fit test for the significance of the coefficients. This involves formulation and testing of a statistical hypothesis to determine whether the independent variables in the model are significantly related to the outcome variable. Specifically, this test computes the maximum likelihood estimate of the slope in relation to an estimate of its standard error. The resulting ratio, under the hypothesis that the slope equals zero, will follow a standard normal distribution (Hosmer and Lemeshow, 1989; Kleinbaum et al., 1988).

Stepping parameters were set to allow sig-

nificance to include into the final model: $p \leq .05$, and significance to remove from the final model: $p \geq .10$. To insure that the constant was included in the final model, one effect was forced and the maximum number of steps was set at 10 for the first two tests and 9 for the final test. The reduction in the number of variables for the third analysis (deliver vs. contracept) was necessitated because when trying to enter the variable *Father* into the deliver vs. contracept model, the test would not run to conclusion, the variable continually cycled in and out of the model, disallowing for consideration of the remaining variables. It should be noted here that the p -value for this association under conditions of the univariate analysis was considered insignificant ($p \leq .819$). For these reasons, *Father* was not included in the stepwise regression analysis for the deliver vs. contracept pairwise comparison.

Regression Model for Three Pairs of Outcome Groups

When eight social bond variables and two confounding demographic variables were entered into the logistic regression analysis for the deliver vs. abort groups, two variables emerged as statistically significant: *Religion* ($p \leq .001$) and *Public Assistance* ($p \leq .001$) emerged as the two statistically significant variables. For the abort vs. contracept groups, *Family*, emerged as the only statistically significant variable ($p \leq .02$). When seven social bond variables and two confounding demographic variables were entered into the logistic regression analysis for the deliver vs. contracept groups, four variables emerged as statistically significant: *Future* ($p \leq .005$), *Ethnicity* ($p \leq .015$), *School Activities* ($p \leq .018$) and *Religion* ($p \leq .023$) emerged as the statistically significant variables (Table 7).

DISCUSSION

The major goal of the data collection was to gather social bond data from sexually active teen women who previously chose to deliver, abort or contracept. The respondents to this survey represented a unique study population in the sense that they each had, at the time of outcome, access to comprehensive private health insurance coverage. The resulting study data show that a series of

Table 7: Stepwise logistic regression analysis of social bond variables and confounding variables for three pairs of outcome groups

<i>Outcome pairs and independent variables</i>	<i>Wald Test statistic</i>	<i>Chi-square p-value</i>
<i>Deliver vs. Abort</i>		
• Religion	11.456	0.001*
• Public Assistance	11.035	0.001*
• Family	1.485	0.223
• Dad	1.467	0.226
• School Activities	0.923	0.337
• Future	0.850	0.356
• Education	0.740	0.390
• Friends	0.335	0.563
• Mom	0.324	0.570
• Race/Ethnicity	0.016	0.899
<i>Abort vs. Contracept</i>		
• Family	5.400	0.019*
• Future	3.080	0.079
• Religion	2.666	0.103
• Education	2.593	0.107
• Race/Ethnicity	2.475	0.116
• School Activities	0.650	0.215
• Public Assistance	0.631	0.427
• Mom	0.067	0.795
• Friends	0.017	0.897
• Dad	0.001	0.980
<i>Deliver vs. Contracept</i>		
• Future	8.032	0.005*
• Race/Ethnicity	5.898	0.015*
• School Activities	5.580	0.018*
• Religion	5.137	0.023*
• Mom	1.390	0.238
• Education	1.346	0.246
• Family	1.235	0.266
• Public Assistance	0.304	0.582
• Friends	0.215	0.643

* $p \leq .05$

psychosocial scales based on Social Bond Theory could be used to measure different social bonds among sexually active young women.

Mother's Influence

Regarding the influence of *Mother* on teenage pregnancy, Singh (1986) observed high rates of pregnancy and abortion among white teenagers living in female-headed households. Seemark (1997) confirmed that pregnant teens are more likely to have a mother who had a teenage pregnancy and are more likely to continue their own pregnancies than teens who did not have a mother who had a teenage pregnancy.

Since social bonds are concerned with both the quantitative and qualitative aspects of a relationship, the three questions that comprise the *Mother* scale focus on the amount of time the

respondent reports to have spent with Mother while "growing up," the quality of the relationship with Mother and the respondent's ability to talk freely with her Mother in times of trouble. The contraceptive group had the strongest *Mother* scale score (mean=1.582) and the deliver group had the weakest *Mother* scale score (mean=1.811). Although these findings indicate that a stronger bond with Mother is associated with successful contraception and a weaker bond with Mother is associated with teen parenthood, none of the p-values derived from the univariate analysis meet the Bonferroni adjusted significance level for three multiple comparisons.

Father's Influence

Most of the research on the relationship between father's influence and teenage pregnancy examines whether the father was present in the home during a daughter's childhood and adolescence (Pierre, 1997; Taub and Skinner, 1990). The general consensus among these researchers is that young women raised without fathers are more likely to engage in risky sexual activity at an early age. Henshaw (1992) reports that when fathers are present in the home, they are rarely told of their daughter's pregnancy if she plans to have an abortion.

The social bond variable intended to measure *Father*, centered on the quality of the long term relationship between a young woman and her father. The three questions that comprised the *Father* scale asked about the amount of time the respondent spent with her Father while "growing up," the quality of the relationship with her father, and the respondent's ability and interest in talking freely with her Father about problems in her life. Although none of the scores were statistically significant, the deliver group had the strongest *Father* scale score (mean=2.092) and the abort group had the weakest *Father* scale score (mean=2.270). The results from this study on the effect of *Father* on reproductive outcome are limited and difficult to interpret, however, it does appear that for sexually active teen women, stronger relationships with Father are more likely to lead to teenage parenthood.

Friends' Influence

Various aspects of the relationship between friends and peers have been frequently

associated with early adolescent sexual activity and teenage pregnancy (Newcomer et al., 1983). Hofferth (1987) observed that peer pressure is the single most blamed factor for teenage pregnancy by parents of pregnant teens. While many researchers over the past 20+ years have examined the effects of friend's opinions (Pierre, 1997), popularity with peers, peer attitudes, and peer pressure (Dryfoos, 1990; Morgan et al., 1995) on teenagers who become pregnant, few have investigated social bonds with peers as being potentially protective against teenage pregnancy. Social bond theorists argue that peer relationships are potentially strong social bonds that lead to social cohesion and integration, while the lack of these social connections would lead to alienation and anomie (Buchanan, 1991; Caldas and Pounder, 1990). This approach offers a reconceptualization of the influence of peer relationships which have been historically observed as both negative and antagonistic with parent-child relationships.

The five questions about friends that met scale inclusion criteria were designed to detect a positive effect that peers may exert on their sexually active counterparts. The questionnaire items centered on the importance of friends, agreement with friends, respect and praise offered by friends, and the ability to rely on friends in the time of crisis. Although the mean value for the *Friends* scale score for the contraceptive group indicated the strongest bond with friends, no significant differences in scale scores emerged from the three pairwise comparisons. This finding supports either a positive or a non-negative view of the influence of peer relationships during adolescence.

School's Influence

Many researchers have sought to understand relationships between school performance, early sexual activity, and resulting teenage pregnancy among adolescents. Success in school appears to play a major role in determining the age at which a young woman becomes sexually active (Langille et al., 1994). Similarly, problem behavior in school that requires disciplinary action is correlated with early sexual activity (Esminger, 1987). In a thirty-year retrospective study, Hofferth (1987) observed that teenage women receiving poor grades in school were more likely to have

early pregnancy than those receiving good grades.

In the present investigation, the questionnaire items selected for inclusion in the *Education* scale asked about each respondent's feelings toward school, the importance of getting good grades, and the specific kind of grades received in school. The contraceptive group had the strongest *Education* scale score (mean=1.645) and the abort group had the weakest *Education* scale score (mean=1.829). However, none of the p-values derived from the univariate analysis were statistically significant.

The similarity of scale score means for the deliver and contraceptive groups is in apparent opposition to Hirschi's (1969) comments about *playing by the rules* of society and thereby avoiding deviation or punishment. Apparently, either the deliver group did not lose their motivation to strive for conventional goals, before they got pregnant, or, they became motivated to strive for conventional goals after they became mothers. Another consideration is that while teenage motherhood may be considered deviant behavior by the larger society, it may not be considered a deviation from the social norm for this particular population of young women and their social contacts.

Influence of the Future

Personal commitment to a conventional line of action in the present implies that one will receive some sort of future benefit. A present commitment to work hard in school should garner the conventional reward: a college degree and a job or career that gives a lot of personal and material satisfaction. Although there is growing acceptance of the preventive value of *hope in the future*, there is a relatively small body of research to support the hypothesis that there is a positive relationship between avoidance of teenage pregnancy and a positive belief in the future (Jacobson and Wilkinson, 1994; Ravoira, 1990).

Questionnaire items used to measure the concern for future and its impact on reproductive outcome among respondents included an assessment of the highest grade in high school or college that the respondent thought she would "realistically" complete and a measure of future job or career satisfaction. Results from the deliver vs. abort and the abort vs. contraceptive pairs of outcomes were found to be statistically

non-significant. However, the difference seen for the deliver vs. contraceptive group was highly significant ($p \leq .001$) and suggested a different view of the future among respondents in the two outcome groups.

The data collected during this survey did not allow for establishing the proper time-order relationship for this variable. The question arises as to whether the difference seen for the deliver vs. contraceptive groups existed before the decision to deliver or contracept, or whether the difference is a reflection of those decisions. On the one hand, it is possible to assume that a discouraged view of the future would increase the potential for early sexual activity leading to teenage pregnancy and that a strong belief in a satisfying future would increase the potential for effective contraceptive utilization. On the other hand, it is equally possible to assume that the everyday reality of motherhood (compounded frequently by the ill effects of poverty) heavily shadows a young woman's once positive commitment to her dreams of a college education and meaningful career. What can be stated with some degree of certainty is that whatever the original intentions of the young women who eventually become pregnant, it is certain that teenage motherhood is shrouded with bleak expectations for the future.

Influence of Extracurricular School Activity

The bulk of research concerning extracurricular school activity seeks a better understanding of issues related to adolescent drug use and the social bonds that prevent certain teenagers from becoming eventual users or abusers (Buchanan, 1991; Taub and Skinner, 1990). Research examining teenage pregnancy has tended to focus on school performance issues like class attendance, behavior in school and grade point average (Atrash et al., 1987; Jacobson and Wilkinson, 1994; Furstenberg, 1987). The intention of this research was to quantify the time spent in school-related activities outside of the regular school hours and to determine the level of school involvement over the entire duration of time that the respondent attended junior and senior high school.

The contraceptive group had the strongest bond with *School Activities* scale scores (mean=2.303)

and the deliver group had the weakest bond with *School Activities* scale scores (mean=2.684). Comparison of the pair, deliver vs. abort, revealed no statistical difference in scores ($p \leq .528$). The abort vs. contraceptive pair did not meet strict statistical criteria for significance but, was still striking in the sense that the abort group was less involved with homework and extra-curricular activities than the contraceptive group ($p \leq .064$). The comparison of the deliver vs. contraceptive pair ($p \leq .003$), met the Bonferroni adjusted significance level for three multiple comparisons, and is perhaps one of the most important findings of this research from a community health education perspective. Increased involvement with school-related activities that take place either before or after the school day appears to be significantly related with successful contraception among a cohort of sexually active teenage women.

Influence of Family

A small body of public health research focuses on various aspects of family interaction and the relationship to adolescent sexuality and teenage pregnancy (Casper, 1990). In a study of family communication and teenager's contraceptive use, Furstenberg (1987) observed no significant relationship between increased family discussion on sex-related issues and the effective use of contraception by sexually active teenagers. By contrast, Ravoira (1990) observed a direct positive relationship between the strength of the family bond and a delayed initiation of sexual activity among teenagers. Similar results were observed by Zabin (1979) and Hayes (1987) who independently found that the age of first intercourse was positively related to the age of a young woman's first pregnancy.

The questionnaire items relating to family bonds that met scale inclusion criteria asked about parents' marital/relationship status, the degree of satisfaction with the amount of time the respondent spent with her family while growing up, and the number of special family activities that the respondent had participated in during the past ten years. Although none of the scores for the three groups of outcome pairs were found to be significantly different, it should be noted that the contraceptive group had the strongest bond with

Family scale scores (mean=1.720) and the abort group had the weakest bond with Family scale scores (mean=2.008). The highest probability of difference was $p \leq .504$ for the deliver vs. abort pair and the lowest probability of difference was $p \leq .024$ for the abort vs. contra-cept pair. Although statistically non-significant, these results suggest that while family bonds for the deliver and abort respondents are similar, the level of bond with family for the contraceptive group seems to be greater than for either the deliver or abort respondents. These results indicate that families who do remain intact and participate in special activities together are more likely to produce daughters who will avoid teenage pregnancy.

Influence of Religion

The majority of research concerned with the relationship between social bonds, teenage sexuality, and pregnancy investigates some aspect of the respondents' religion (Zabin et al., 1979). Religious behavior can be a measure of the strength of a person's religious belief in combination with a quantitative measure of church attendance. Church attendance and religious belief strength represent a measure of one's attachment to parents' beliefs, commitment to conventional goals, and the acceptance of conventional social norms (Dryfoos, 1990). According to Dryfoos, "low" religiosity is related to unstable family patterns, and predictive of many adolescent problem behaviors. Since the population under investigation was comprised solely of sexually active women, it was difficult to determine whether a high degree of religiosity among these teenagers was of preventive value in delaying, preventing, or minimizing sexual activity in the first place. At issue here was whether increased religiosity was correlated with pregnancy prevention (through contraception) once a young woman was sexually active and whether it was correlated with the decision to abort or deliver, once a pregnancy was sustained.

The three components of the *Religion* scale included questions related to the importance of religion in the respondent's life, the level of religious activity, and the importance of being able to seek religious counsel for help. The deliver group had the strongest bonds with *Religion* scale scores (mean=2.482) and the abort group had

the weakest bond with *Religion* scale scores (mean=2.953).

The difference between scores for just one paired comparison, deliver vs. abort, met the strict Bonferroni adjusted significance level for three multiple comparisons ($p \leq .002$). These results support the notion pregnant young women who have stronger religious beliefs and are more actively involved with religious activities and counsel are less likely to choose abortion over delivery. Although statistically non-significant, the p -values for the other pairs of outcomes (deliver vs. contraceptive, $p \leq .081$, and abort vs. contraceptive, $p \leq .079$) suggest a weak relationship between the religious bond and the outcome of sexual activity among teenagers.

RECOMMENDATIONS AND IMPLICATIONS

Social Bond Theory suggests that a more positive outcome of adolescence is best facilitated when youth are strongly attached to their social network, committed to prescriptive lines of action, involved in conventional activities and committed to beliefs accepted by the larger society. The critical findings generated from this research tend to substantiate the major tenets of this theory.

The harmful effects of early sexual activity among women-of-color have been well documented in previous research. The results of the present study suggest similar outcomes among young, primarily white women with access to private health insurance coverage. It is, therefore, suggested that in addition to the already established relationship between teenage pregnancy and ethnicity, future research on teenage pregnancy must be expanded to include class as an important variable influencing sexual activity and outcome among teenagers in the US.

Furthermore, in terms of study related to the primary prevention of teenage pregnancy and childbearing, it is becoming clear that simply providing school-age students with sex education and access to contraception is not an effective means to reduce the growing magnitude of this personal and public health problem. This study suggests that a prevention strategy should not only include classroom instruction and easy access to contraception, but also focus on

strengthening young women's social bonds. Additionally, it is recommended that schools should provide extensive opportunities for extra-curricular participation that appeal to the diversity of students' backgrounds, needs, and interests. Finally, this study lends research-based evidence to support the claim that the most effective teen contraception is hope for a real future. Health educators must advocate for guidance mechanisms that will provide young women with appropriate academic preparation and adequate financial resources for college or meaningful career training. These intervention programs and strategies must be made available to young women in order for them to presently hope and believe that they will participate in a meaningful future.

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