

Friends' Influence on Adolescents' First Sexual Intercourse

CONTEXT: Social-psychological theories of health behavior suggest that adolescents' sexual behaviors are influenced by the sexual attitudes and behaviors of their friends.

METHODS: Data on 2,436 participants in the National Longitudinal Study of Adolescent Health (Add Health) who were sexually inexperienced at Wave 1 (1994–1995) were analyzed to examine whether friend-related variables predicted initiation of vaginal intercourse by Wave 2 (1996). Analyses also assessed whether predictive relationships varied by level of involvement with friends. Odds ratios were generated by logistic regression analysis.

RESULTS: In the 9–18 months between Waves 1 and 2, 18% of participants initiated intercourse. In analyses controlling for gender, family structure and romantic relationships, the higher the proportion of a youth's friends who were sexually experienced, the greater the odds of sexual debut (odds ratio, 1.01); the odds also were elevated among youth who believed that they would gain their friends' respect by having sex (1.2). Relationships between friend variables and sexual initiation did not vary by level of involvement with friends.

CONCLUSIONS: To maximize the likelihood of success, programs focused on delaying teenage sexual intercourse should address norms for sexual behavior among adolescents' close friends as well as the perceptions, skills and behaviors of individual youth.

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The proportion of adolescents who are sexually experienced has decreased in recent years,¹ but 34% of ninth graders and 61% of 12th graders report ever having had sexual intercourse, and 7% of high school students say they first had intercourse before age 13.² Every year, approximately 900,000 females aged 15–19 become pregnant³ and three million adolescents (one in four sexually active teenagers) acquire an STD.⁴ Adolescents who initiate sexual activity at young ages tend to have more sexual partners and to use condoms less than those who initiate sex later, and are at increased risk for STDs and pregnancy during the teenage years.⁵ Therefore, understanding influences on early initiation of intercourse and identifying possible strategies for delaying first sex have important implications for adolescent health.

Social-psychological theories of health behavior⁶ and empirical research⁷ suggest that timing of first sexual intercourse is influenced by a broad array of individual and social environmental factors. Among the most powerful sources of social influence are parents, siblings, sexual partners and friends.⁸

Reviews of recent research highlight aspects of adolescents' friendships that are key influences on their sexual risk behaviors: friends' sexual behaviors, adolescents' perceptions of friends' behaviors and attitudes, and level of involvement with friends.⁹ A consistent finding across studies of young black teenagers, and of urban sixth graders from diverse ethnic backgrounds,¹⁰ is that young, sexually ex-

perienced adolescents are more likely than their sexually inexperienced counterparts to report that their friends are also sexually experienced. Longitudinal studies have found that adolescents who perceive that their friends favor postponing sexual intercourse are themselves more likely than others to do so.¹¹ These perceptions may be shaped by a combination of friends' attitudes and adolescents' own attitudes.¹² Adolescents who are highly involved with their friends may find themselves in social contexts that encourage early dating and entry into romantic relationships,¹³ which have been linked to earlier sexual initiation.¹⁴ In addition, an individual's close circle of friends may influence sexual debut more than a single best friend does, possibly because an immediate network of friends is more stable over time than a specific best friendship.¹⁵

To date, very few studies have prospectively tested the relative power of multiple forms of friend influence on adolescents' initiation of sexual intercourse. And few have examined how various forms of friend influence may operate jointly. In addition, many studies have been based exclusively on adolescents' perceptions of friend attitudes and behaviors, which may bias estimated associations with sexual debut because of a "false consensus" effect.¹⁶ Some studies examining relationships between friend variables and adolescent sexual activity have not controlled for other known influences on sexual debut; therefore, observed associations may be confounded by unmeasured factors. Finally, the generalizability of many studies has been limited

by the age range, geographic location or sex of the adolescent sample.

The purpose of our study was to examine forms and pathways of friend influence on adolescents' sexual debut. We were guided by a conceptual model derived from the theory of triadic influence, which posits that a complex set of social, attitudinal and intrapersonal factors influence individuals' health-related behaviors.¹⁷ The theory assumes that individuals' behaviors are shaped, in part, by their perceptions of the health-related attitudes and behaviors of others. It further assumes that individuals are especially motivated to adopt attitudes and behaviors of others with whom they have strong social bonds, such as their immediate circle of friends.

Our model examines the impact of four forms of friend influence on adolescents' initiation of vaginal intercourse. First, the model suggests that the prevalence of sexual experience among close friends will have a direct impact on adolescents' sexual debut. Second, it posits that close friends' attitudes about sex will have a direct impact on adolescents' sexual initiation. Third, it holds that prevalence of sexual experience among friends and friends' attitudes about sex will be related to adolescents' perceptions of gaining respect from friends for having sex, which will have a direct impact on sexual debut. And fourth, our model suggests that the magnitude of influence associated with friends' sexual behavior and attitudes will be strongest among adolescents who are highly involved with their close friends.

We used longitudinal data to investigate friend influence, measured at study baseline, on adolescents' first vaginal intercourse over a follow-up period of 9–18 months. This strategy assures that these relationship dynamics precede first sexual intercourse, rather than resulting from it. We tested four hypotheses: Adolescents with higher proportions of sexually experienced close friends are more likely to initiate sexual intercourse than others; adolescents whose close friends hold positive attitudes related to sex have an increased likelihood of initiating intercourse; close friends' sexual behaviors and attitudes influence initiation of intercourse by influencing adolescents' perceptions about gaining friends' respect by having sex; and the proposed associations are strongest among teenagers who are highly involved with their close friends.

METHODS

Data Source

Data came from the first two waves of the National Longitudinal Study of Adolescent Health (Add Health). During the 1994–1995 school year, approximately 90,000 students in grades 7–12 at 134 junior and senior high schools completed in-school surveys, and a randomly selected subsample of 12,105 completed additional in-home surveys (Wave 1). Participants who had been in grades 7–11 at baseline were again surveyed at home 9–18 months later, in 1996 (Wave 2).

As part of the in-school survey, participants were asked to nominate up to five best male and five best female friends from a roster of all students at their school. In addition, par-

ticipants in the Wave 1 in-home survey were asked to nominate one best male and one best female friend. We used the Wave 1 friendship network data set to link each participant with all nominated friends whom the participant had not also nominated as a romantic or sexual partner.

In-home surveys included detailed questions about sexual attitudes and behaviors, romantic relationships, and a range of other health behaviors and personal characteristics. Many questions related to sexual attitudes were asked only of participants aged 15 or older. For sensitive portions of the in-home survey, adolescents listened to questions through earphones and directly entered their responses into a laptop computer, thereby reducing the potential for interviewer or parent effects.¹⁸ Further details of the Add Health study are available elsewhere.¹⁹

Sample

Our sample consisted of 2,436 students in grades 9–11 who completed both Wave 1 and Wave 2 in-home surveys, reported on the Wave 1 in-home survey that they had never had vaginal intercourse, provided data at Wave 2 on initiation of intercourse and nominated at least one friend who also completed the Wave 1 in-home survey. Eight percent of youth meeting the other eligibility criteria were excluded because usable data were not available from at least one nominated friend. To ensure that data related to each nominated friend were used only once in the analysis, we cross-checked friends nominated in the in-school and in-home surveys. Participants nominated 1–10 friends from their school (mean, 5.9). On average, 2.2 friends per participant completed Wave 1 in-home surveys and thereby contributed information to our study.

Of note, this study did not include data from friends who were not in school because of the Add Health sampling frame. Such friends may be more likely to be sexually experienced, and students on the verge of first sex may be more likely than other sexually inexperienced students to nominate friends who are not in their schools. Within our sample, the number of out-of-school friend nominations was small, averaging less than one per participant (mean, 0.8). More importantly, the proportion of out-of-school friends did not differ between participants who initiated intercourse between interviews and those who did not. Therefore, the assumption that adolescents who initiated intercourse and those who did not have friendship groups located within schools seems reasonable.

Compared with the cross section of sexually inexperienced participants in grades 9–11 completing the Wave 1 survey, our sample had significantly greater proportions of students who were female, white and from families with two biological parents, and a significantly smaller proportion of students from families receiving public assistance. Equal proportions of youth in both groups had had romantic relationships in the previous 18 months. Thus, youth in our sample were at somewhat lower risk for sexual debut than the broader group of sexually inexperienced students in grades 9–11 who completed the first survey.

Fifty-one percent of the study sample were excluded from multivariate analyses because of missing data on one or more independent variables. These adolescents were similar to those who were included with regard to gender, family structure, family receipt of public assistance and romantic relationship in the past 18 months. The two groups differed significantly in racial or ethnic mix ($p \leq .01$). For example, 11% of the full study sample were black, compared with 13% of the multivariate sample. In addition, 21% of those included in the multivariate analysis had had vaginal intercourse by Wave 2, compared with 16% of those in the full sample ($p = .002$).

Measures

• **Dependent variable.** Our outcome of interest was initiation of vaginal intercourse between the Wave 1 and Wave 2 surveys. Participants were asked in both waves if they had ever had vaginal intercourse and, if so, the month and year in which they had had intercourse for the first time.

A key inconsistency involved 51 participants who said at Wave 1 that they were sexually inexperienced but at Wave 2 gave a date of first intercourse that was up to three months before the first survey. In comparisons of baseline behavioral and demographic indicators, we found no significant differences between this group and participants who said in both surveys that they were inexperienced at Wave 1. Given these findings and research documenting measurement error among adolescents asked to recall specific dates of first intercourse,²⁰ we considered the 51 participants who gave inconsistent responses to have initiated sex between survey waves.

• **Independent variables.** Perceived respect from friends for having sex was measured with a Wave 1 item asking participants how much they agreed with the statement "If you had sexual intercourse, your friends would respect you more." Possible responses ranged from 1 (strongly disagree) to 5 (strongly agree).

Level of involvement with friends was based on how many of the following activities a participant reported having engaged in with each nominated friend during the past week: going to the friend's house, meeting the friend after school, spending time with the friend over the weekend, talking with the friend about a problem and talking with the friend on the telephone. An average friend involvement score was created by summing activities with each nominated friend completing a Wave 1 in-home survey and dividing this sum by the number of nominated friends with in-home surveys. Possible scores ranged from 0 (no activities with any nominated friends in the past week) to 5 (highest level of activities with all nominated friends in the past week).

The prevalence of sexual experience among friends represents the proportion of nominated friends completing in-home surveys who reported at Wave 1 that they had ever voluntarily had sexual intercourse.

The measure on friends' attitudes about sex was based on friends' responses to a five-item scale regarding perceived benefits of having sexual intercourse: "You would feel guilty,"

"it would give you a great deal of physical pleasure," "it would make you more attractive to men/women," "you would feel less lonely" and "it would relax you" (Cronbach alpha=0.72). Following an approach developed by Jussim and Osgood,²¹ we averaged the scores of nominated friends with in-home data to derive an index of friends' attitudes. Possible values ranged from 0 (all nominated friends reported minimum benefits of having intercourse) to 20 (all nominated friends reported maximum benefits of having intercourse).

Analysis

The first step in our analysis was to identify variables to serve as covariates in our multivariate models. In a preliminary logistic regression analysis including five demographic variables, we selected those that were significantly associated with sexual initiation ($p < .05$) to use as covariates in our multivariate models: family structure, participant gender and involvement in a romantic relationship in the past 18 months. (Youth from families with two biological parents had a significantly lower risk of sexual initiation between survey waves than youth from families with other structures; females and youth with a history of recent romantic involvement had significantly elevated risks of sexual initiation.) In addition, we included the number of nominated friends providing study data as a covariate, because in preliminary analyses, several independent variables were more strongly related to sexual initiation among participants with three or more friends contributing data than among those with one or two friends in the data set.

The second step was to identify Wave 1 friend-related variables that had significant bivariate relationships with sexual initiation, using chi-square tests. These variables were then included in a final, main-effects multivariate logistic regression model testing our first two hypotheses (that sexual initiation is influenced by friends' sexual behavior and attitudes). This model included the proportion of participants' friends who were sexually experienced, friends' attitudes about sex, perceived respect from friends for having sex, level of involvement with friends and the above-mentioned covariates.* In all of the multivariate models, the standard errors were adjusted for Add Health's clustered sampling design.²²

To test our third hypothesis, that perceived respect from friends for having sex mediates relationships between friend variables and adolescents' initiation of sexual intercourse, we used a strategy assessing mediation described by Baron and Kenny, and Ennett and Bauman.²³ In general, a given variable can be said to be a mediator when a previously sig-

*To assess for collinearity between predictors, we analyzed first-order correlations. The following correlations were found: $r = .28$ for friends' attitudes about sex and proportion of sexually experienced friends; $r = .14$ for friends' attitudes and perceived respect from friends for having sex; $r = .07$ for sexually experienced friends and perceived respect; $r = .03$ for friends' attitudes and level of friend involvement; $r = -.02$ for perceived respect and friend involvement; and $r = -.01$ for sexually experienced friends and friend involvement. Correlations of these magnitudes are not likely to cause multicollinearity problems. (Source: Kleinbaum D, Kupper L and Muller K, *Applied Regression Analysis and Other Multivariate Methods*, second ed., Boston: PWS-KENT, 1988.)

TABLE 1. Percentage distribution of a sample of students in grades 9–11 who participated in the Wave 1 and Wave 2 in-home surveys of the National Longitudinal Study of Adolescent Health, by selected characteristics

| Characteristic | % (N=2,436) |
|---|----------------|
| Gender | |
| Female | 56.4 |
| Male | 43.6 |
| Race/ethnicity | |
| Non-Hispanic white | 70.2 |
| Black | 11.5 |
| Hispanic/Latino | 11.2 |
| Other | 7.0 |
| Family receives public assistance† | |
| Yes | 6.5 |
| No | 93.5 |
| Family structure† | |
| Both biological parents | 65.1 |
| Other | 34.9 |
| Had romantic relationship in past 18 mos.† | |
| Yes | 45.0 |
| No | 55.0 |
| Initiated sexual intercourse between Wave 1 and Wave 2 | |
| Yes | 18.1 |
| No | 81.9 |
| Total | 100.0 |

†Measured at Wave 1. Notes: Wave 1 was conducted in 1994–1995; Wave 2, in 1996. The sample includes only participants who were sexually inexperienced at Wave 1.

nificant relationship between an independent and a dependent variable is no longer significant, or is substantially less significant, after adjustment for a proposed mediator. Mediation analyses consisted of three steps. First, we examined bivariate associations between selected friend variables (i.e., friends' sexual experience, friends' attitudes about sex) and the proposed mediator (i.e., perceived respect from friends for having sex). Second, we regressed Wave 1 covariates and each selected friend variable on adolescent sexual initiation by Wave 2. Third, we repeated the analysis, adding the proposed mediator as an independent variable. The standardized regression coefficients from the second and third analyses indicate, respectively, the total and direct effects of the friend variables on sexual initiation; the difference between the total and direct effects is the indirect effect. To determine the percentage indirect effect, we divided the indirect effect by the total effect and multiplied the result by 100.

To examine our fourth hypothesis, that relationships between friend variables and initiation of intercourse are strongest among teenagers who are highly involved with their close friends, we included interaction terms in multivariate models to determine if each relationship varied by level of involvement. Interaction terms were tested using friend involvement both as a continuous variable and as a dichotomous variable (in which adolescents were defined as being highly involved with their friends if they had scores in the upper 25% of involvement scores).

RESULTS

Characteristics of Participants and Friends

The sample consisted of 2,436 adolescents. Fifty-six percent were female (Table 1). The majority (70%) were white, and the rest were about evenly divided among blacks (12%), Hispanics (11%) and youth of other races or ethnicities (7%). Seven percent said that a parent or a parent's partner had received public assistance in the past year. Almost two-thirds lived with their two biological parents. Slightly fewer than half of the adolescents had been involved in a romantic relationship in the 18 months before the Wave 1 survey. In the interval between Waves 1 and 2, 18% initiated vaginal sexual intercourse.

On average, 31% of the friends of participants were sexually experienced at Wave 1. Among friends of participants, the mean score for attitudes about sex was 8.7. Although these scores varied widely (from 0 to 20), on average, friends perceived a modest level of benefits associated with having intercourse. The mean score for perceived respect from friends for having sex was 2.2, indicating that adolescents tended to disagree that their friends would respect them more if they had intercourse. Students reported an average of 2.1 shared activities per friend in the past week.

Friend Variables and Sexual Debut

On average, 28% of friends of adolescents who did not initiate intercourse between surveys were sexually experienced at Wave 1, compared with 42% of friends of initiators; in bivariate analyses, the difference was statistically significant (Table 2). Relative to their inexperienced counterparts, initiators had friends who reported more benefits of sex, and they themselves held stronger beliefs that they would gain friends' respect by having sex. Adolescents who initiated sex between waves were more highly involved with their friends at Wave 1 than were those who remained inexperienced.

TABLE 2. Measures of selected variables related to adolescents' friends at Wave 1, by adolescents' sexual initiation status at Wave 2

| Variable | N | % or mean |
|--|-------|-----------|
| % of friends who are sexually experienced | | |
| Initiated sex between waves | 284 | 42.1 |
| Did not initiate sex between waves | 1,135 | 28.3*** |
| Friends' attitudes about sex (mean)† | | |
| Initiated sex between waves | 272 | 9.08 |
| Did not initiate sex between waves | 1,078 | 8.59* |
| Perceived respect from friends for having sex (mean)‡ | | |
| Initiated sex between waves | 405 | 2.32 |
| Did not initiate sex between waves | 1,763 | 2.16** |
| Level of involvement with friends (mean)§ | | |
| Initiated sex between waves | 442 | 2.32 |
| Did not initiate sex between waves | 1,994 | 2.06*** |

*p≤.05. **p≤.01. ***p≤.001. †Possible range: 0 (all nominated friends reported minimum benefits of having sex) to 20 (all nominated friends reported maximum benefits of having sex). ‡Possible range: 1 (strongly disagree that having sex would bring respect from friends) to 5 (strongly agree that having sex would bring respect from friends). §Possible range: 0 (no activities with any nominated friends in past week) to 5 (highest level of activities with all nominated friends in past week).

TABLE 3. Odds ratios from multivariate analyses assessing associations between selected variables at Wave 1 and sexual initiation by Wave 2

| Variable | Odds ratio (N=1,215) |
|---|----------------------|
| % of friends who are sexually experienced | 1.01*** |
| Friends' attitudes about sex | 1.01 |
| Perceived respect from friends for having sex | 1.19* |
| Involvement with friends | 1.00 |
| No. of friends with in-home data | 1.00 |
| Female | 1.38* |
| Live with both biological parents | 0.62** |
| Had romantic relationship in past 18 mos. | 2.50*** |

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

In analyses controlling for participants' gender, family structure, romantic relationship history and number of friends providing study data, the greater the proportion of friends who were sexually experienced at Wave 1, the higher the odds of sexual debut by Wave 2 (Table 3). The odds ratio (1.01) suggests that for every 1% increase in sexually experienced friends at Wave 1, the odds that young people initiated sex by Wave 2 increased by 1%. This finding supports the hypothesized relationship between friends' sexual behavior and the likelihood of sexual initiation.

The multivariate findings provided mixed support for a relationship between friends' attitudes about sex and sexual initiation, our second hypothesis. The more respect adolescents perceived they would gain from friends by having intercourse, the higher their odds of sexual intercourse (odds ratio, 1.2). However, friends' own attitudes about sex were not significantly associated with initiation of intercourse.*

Adolescents' Perceptions as a Mediator

In the first step of the mediation analysis, bivariate analyses confirmed that perceived respect from friends for having sex, the proposed mediator, was significantly associated with the proportion of sexually experienced friends ($r = .07$; $p = .015$) and with friends' attitudes about sex ($r = .14$; $p < .001$). In the multivariate models assessing total effects, both the proportion of sexually experienced friends and friends' attitudes about sex were significantly related to the likelihood of adolescents' sexual initiation. In a model that included perceptions of friend respect, the standardized regression coefficient associated with sexually experienced friends remained unchanged, suggesting that adolescents' perceptions do not mediate the relationship between prevalence of sexual experience among friends and initiation of sexual intercourse. In contrast, the coefficient associated with friends' attitudes about sex was no longer significant after adjusting for adolescents' perceptions of friend respect. One-third (33%) of the total effect of friends' attitudes on sexual initiation by Wave 2 was indirect, mediated by adolescent perceptions of friend respect.

Friend Involvement as a Moderator

The final multivariate models included three interaction terms—*involvement by proportion of friends who were sexually experienced*, *by friends' attitudes about sex* and *by*

perceived respect from friends for having sex. None of these interaction terms were significant. Thus, we find no support for our hypothesis that relationships between friend variables and adolescent sexual initiation are most pronounced among teenagers who are highly involved with their friends.

DISCUSSION

In keeping with the theory of triadic influence,²⁴ our findings suggest that the timing of adolescents' first intercourse is determined, in part, by the norms for sexual behavior and the perceived values of youths' friendship groups. Previous research has documented relationships between young adolescents' reports of their friends' sexual attitudes and behaviors and their own subsequent initiation of sexual intercourse.²⁵

Findings from this study extend empirical understanding in several ways. First, our findings suggest that normative sexual behavior among friends predicts transition to first intercourse during the middle adolescent years. This relationship does not appear to be mediated by adolescents' perceptions that they will gain friends' respect by having intercourse. Second, our findings suggest that perceived values of friends regarding sex have a stronger direct relationship with sexual initiation than do friends' reported attitudes about sex. Adolescents' perceptions of gaining the respect of their friends by having sex appears to mediate the relationship between friends' attitudes about sex and adolescents' initiation of intercourse.

Findings from our interaction analysis fail to support the theory of triadic influence's notion that individuals are most likely to adopt behaviors and comply with values of those with whom they have the strongest social bonds. Our measure of friend involvement was limited to shared social activities; it did not include indicators of emotional attachment or closeness to friends. To fully explore the influences of strong social bonds with friends, future studies of teenagers' first sexual intercourse should include indicators of emotional involvement with friends.

In addition to being influenced by group norms related to sexual behaviors, adolescent sexual behaviors likely vary with a range of risk and prosocial, or protective, behaviors among peers. In one study using Add Health data to examine first sexual intercourse among adolescent females, friends were characterized as either low-risk or high-risk, on the basis of their involvement in school and in risk behaviors, including drinking, fighting and difficulty getting along with teachers and schoolmates.²⁶ Having low-risk close friends protected against sexual debut; youth for whom 0–25% of close friends were categorized as low-risk friends were twice as likely to initiate intercourse as those for whom 75–100% of close friends were low-risk.

*In multivariate analyses excluding the 51 participants who reported inconsistent dates of first intercourse, the significance and magnitude of associations between the four friend variables and initiation of sexual intercourse were consistent with findings in multivariate analyses including these participants.

Study Limitations and Strengths

Our analysis has several limitations. First, because the data on adolescents' attitudes and behaviors were self-reported, they may be biased by the influence of social desirability. However, Add Health used audio computer-assisted interviewing for sensitive sections of the survey; the use of this technology may increase reporting on sensitive topics, such as sexual behavior.²⁷ Second, questions about sexual attitudes and beliefs were not asked of participants younger than age 15. Thus, our findings may not be generalizable to adolescents in that age-group. Third, 8% of youth meeting other eligibility criteria for this study were excluded because of a lack of usable data from at least one nominated friend. Friend data may have been unusable because the friends went to a school not sampled in Add Health, were not on the enrollment roster of included schools or did not complete a Wave 1 in-home survey. Add Health participants missing friend data differed significantly from those included in our study sample on many demographic and personal factors assessed in the surveys.* Finally, friends with usable data may not have been representative of a participant's entire group of nominated friends. However, adolescents tend to be involved with relatively homogenous friendship groups.²⁸

On the other hand, this study has several methodological strengths. Its longitudinal design tests the predictive power of friends' attitudes and behaviors on initiation of sexual intercourse. In addition, the measures used captured friends' attitudes both as perceived by adolescents and as reported by the friends themselves. Finally, the nationwide sample of students in grades 9–11 includes males and females from diverse racial and ethnic groups.

Conclusions

Our findings highlight the need for further research related to several themes in understanding peer relationships and adolescent health.²⁹ A first theme is that associations between adolescent sexual behaviors and peer relationships are multidimensional. Future research should simultaneously explore sexual and nonsexual pathways of peer influence on adolescent sexual behaviors. For example, what are the nature and magnitude of relationships between the overall social milieu of friendship groups,³⁰ the sexual behaviors of friends and adolescents' own sexual behaviors? How do friends shape adolescents' choices beyond sexual initiation, such as their choices about ongoing sexual activity and contraceptive use? A second theme is that friend influences on sexual behavior are embedded in a larger network of social influences. How do parents affect friend influences on adolescent sexual behaviors, or how do friends alter parent influences? How do peers and parents influence adolescents' choice of romantic partners? A third theme worthy of further study is the idea that relationships between friends' and adolescents' sexual behaviors may be re-

ciprocal. Do longitudinal relationships between friends' sexual experience and the sexual behavior of adolescents reflect processes of friend influence, friend selection or a combination of both?

Examining international trends, Larson and colleagues³¹ note that adolescents' interpersonal lives are undergoing dramatic societal changes, including greater interactions with peers, the development of a youth culture that reinforces the world of peers, and more involvement in romantic and sexual relationships. Talk, play and leisure activities with peers are becoming a more substantial forum for adolescents' preparation for adulthood. Given these changes, interventions and programs can play a role in reinforcing positive, prosocial experiences with peers as well as reducing negative peer dynamics to fully prepare adolescents for adulthood.³² To increase the likelihood of success, interventions focused on delaying sexual intercourse among adolescents should address group norms for sexual behavior as well as the perceptions, skills and behaviors of individuals. To impact group norms, interventions must target cohorts rather than exclusively focusing on individual teenagers. As perceived respect from friends for having sex appears to be a risk factor for sexual debut, programs can emphasize an array of prosocial behaviors (i.e., healthy alternatives to sexual intercourse) as ways to gain respect from friends, a desired goal.

While sex education is vitally important to preparation for adulthood, it seems all the more critical that youth have opportunities to be involved in prosocial relationships and learn skills for managing the social relationships in which sexual behavior occurs.³³ As young people progress through adolescence, sexual intercourse becomes a normative behavior. To foster overall development and reduce the risk of unhealthy sexual behaviors, adolescents need sustained, high-quality relationships with friends, parents, siblings, mentors and other adults. Within these relationships, both formal and informal, adolescents can learn skills of negotiating trust, seeking support, managing conflict and expressing empathy—skills that are critical to the development of healthy romantic and sexual relationships.³⁴

REFERENCES

1. Kann L et al., Youth Risk Behavior Surveillance—United States, 1999, *Morbidity and Mortality Weekly Report*, 2000, 49(SS-05):1–94; and Grunbaum JA et al., Youth Risk Behavior Surveillance—United States, 2001, *Morbidity and Mortality Weekly Report*, 2002, 51(SS-04)1–62.
2. Grunbaum JA et al., 2002, op. cit. (see reference 1).
3. Henshaw SK, *U.S. Teenage Pregnancy Statistics with Comparative Statistics for Women Aged 20–24*, New York: The Alan Guttmacher Institute (AGI), 2001.
4. AGI, *Sex and America's Teenagers*, New York: AGI, 1994.
5. Coker AL et al., Correlates and consequences of early initiation of sexual intercourse, *Journal of School Health*, 1994, 64(9):372–377; Greenberg J, Magder L and Aral S, Age at first coitus: a marker for risky sexual behavior in women, *Sexually Transmitted Diseases*, 1992, 19(6):331–334; and O'Donnell L, O'Donnell CR and Stueve A, Early sexual initiation and subsequent sex-related risks among urban minority youth: the Reach for Health study, *Family Planning Perspectives*, 2001, 33(6):268–275.
6. Jessor R, Risk behavior in adolescence: a psychosocial framework

*Analyses comparing the study sample with Add Health participants with unusable friend data are available from the first author upon request.

- for understanding and action, *Journal of Adolescent Health*, 1991, 12(8):597–605; and Flay BR and Petraitis J, The theory of triadic influence: a new theory of health behavior with implications for preventive interventions, in: Albrecht G, ed., *Advances in Medical Sociology. Vol. IV: A Reconsideration of Models of Health Behavior Change*, Greenwich, CT: JAI Press, 1994.
7. Resnick MD et al., Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health, *Journal of the American Medical Association*, 1997, 278(10):823–832; Kirby D, *Emerging Answers*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 2001; and Manlove J et al., *Background for Community-Level Work on Positive Reproductive Health in Adolescence: Reviewing the Literature on Contributing Factors*, Washington, DC: Child Trends, 2001.
 8. Miller B, *Families Matter*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 1998; National Campaign to Prevent Teen Pregnancy, *What About the Teens? Research on What Teens Say About Pregnancy: A Focus Group Report*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 1999; Kirby D, 2001, op. cit. (see reference 7); and Manlove J et al., 2001, op. cit. (see reference 7).
 9. Brown BB and Theobald W, How peers matter: a research synthesis of peer influences on adolescent pregnancy, in: Task Force on Effective Programs and Research, National Campaign to Prevent Teen Pregnancy, *Peer Potential: Making the Most of How Teens Influence Each Other*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 1999; Manlove J et al., 2001, op. cit. (see reference 7); and Leigh WA and Andrews JL, *The Reproductive Health of African American Adolescents: What We Know and What We Don't Know*, Washington, DC: Joint Center for Political and Economic Studies, 2002.
 10. Jaccard J, Dittus PJ and Litardo HA, Parent-adolescent communication about sex and birth control: implications for parent-based interventions to reduce unintended adolescent pregnancy, in: Miller W and Severy L, eds., *Advances in Population: Psychological Perspectives*, London: Kingsley Publishers, 1999; and Kinsman SB et al., Early sexual initiation: the role of peer norms, *Pediatrics*, 1998, 102(5):1185–1192.
 11. Kinsman SB et al., 1998, op. cit. (see reference 10); Carvajal SC et al., Psychosocial predictors of delay of first sexual intercourse by adolescents, *Health Psychology*, 1999, 18(5):443–452; and VanOss Marin B et al., Older boyfriends and girlfriends increase risk of sexual initiation in young adolescents, *Journal of Adolescent Health*, 2000, 27(6):409–418.
 12. Wilcox S and Udry JR, Autism and accuracy in adolescent perceptions of friends' sexual attitudes and behavior, *Journal of Applied Social Psychology*, 1984, 16(4):361–374.
 13. Connolly J, Furman W and Konarksi R, The role of peers in the emergence of heterosexual romantic relationships in adolescence, *Child Development*, 2000, 71(5):1395–1408.
 14. Miller BC and Schvaneveldt P, The timing of sexual intercourse among adolescents: family, peer and other antecedents, *Youth and Society*, 1997, 29(3):54–83; and Brown BB and Theobald W, How peers matter: a research synthesis of peer influences on adolescent pregnancy, in: Task Force on Effective Programs and Research, National Campaign to Prevent Teen Pregnancy, *Peer Potential: Making the Most of How Teens Influence Each Other*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 1999.
 15. Bearman P and Bruckner H, Peer effects on adolescent sexual debut and pregnancy: an analysis of a national survey of adolescent girls, in: Task Force on Effective Programs and Research, National Campaign to Prevent Teen Pregnancy, *Peer Potential: Making the Most of How Teens Influence Each Other*, Washington, DC: National Campaign to Prevent Teen Pregnancy, 1999; and Brown B, Mory M and Kinney D, Casting adolescent crowds in a relational perspective: caricature, channel, and context, in: Montemayor R, Adams GR and Gullotta T, eds., *Advances in Adolescent Development, Vol. 6: Personal Relationships During Adolescence*: Thousand Oaks, CA: Sage Publications, 1994.
 16. Marks G and Miller N, Ten years of research on the false-consensus effect: an empirical and theoretical review, *Psychological Bulletin*, 1987, 102(1):72–90; and Brown BB and Theobald W, 1999, op. cit. (see reference 9).
 17. Flay BR and Petraitis J, 1994, op. cit. (see reference 6).
 18. Turner CF et al., Adolescent sexual behavior, drug use, and violence: increased reporting with computer survey technology, *Science*, 1998, 280(5365):867–873.
 19. Resnick MD et al., 1997, op. cit. (see reference 7).
 20. Upchurch D et al., Inconsistencies in reporting the occurrence and timing of first intercourse among adolescents, *Journal of Sex Research*, 2002, 39(3):197–206.
 21. Jussim L and Osgood DW, Influence and similarity among friends: an integrative model applied to incarcerated adolescents, *Social Psychology Quarterly*, 1989, 52(2):98–112.
 22. Chantala K, Introduction to analyzing Add Health data, Carolina Population Center, <<http://www.cpc.unc.edu/projects/addhealth/files/analyze.pdf>>, accessed June 10, 2005.
 23. Baron R and Kenny D, The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations, *Journal of Personality and Social Psychology*, 1986, 51(6):1173–1182; and Ennett S and Bauman K, Mediators in the relationship between parental and peer characteristics and beer drinking by early adolescents, *Journal of Applied Social Psychology*, 1991, 21(20):1699–1711.
 24. Flay BR and Petraitis J, 1994, op. cit. (see reference 6).
 25. Carvajal SC et al., 1999, op. cit. (see reference 11); Jaccard J, Dittus PJ and Litardo HA, 1999, op. cit. (see reference 10); and Kinsman SB et al., 1998, op. cit. (see reference 10).
 26. Bearman P and Bruckner H, 1999, op. cit. (see reference 15).
 27. Turner CF et al., 1998, op. cit. (see reference 18).
 28. Cairns RB and Cairns BD, *Lifelines and Risks: Pathways of Youth in Our Time*, New York: Cambridge University Press, 1994.
 29. Brown BB, Dolcini M and Leventhal A, Transformations in peer relationships at adolescence: implications for health related behavior, in: Schulenberg J et al., eds., *Health Risks and Developmental Transitions During Adolescence*, New York: Cambridge University Press, 1997.
 30. Bearman P and Bruckner H, 1999, op. cit. (see reference 15).
 31. Larson RW et al., Changes in adolescents' interpersonal experiences: are they being prepared for adult relationships in the twenty-first century? *Journal of Research on Adolescence*, 2002, 12(1):31–68.
 32. Hair EC, Jager J and Garrett S, Background for community-level work on social competence in adolescence: reviewing the literature on contributing factors, 2002, <<http://www.childtrends.org/PDF/KnightReports/Ksocial.pdf>>, accessed Dec. 7, 2005.
 33. Larson RW et al., 2002, op. cit. (see reference 31).
 34. Ibid.; and Hair EC, Jager J and Garrett S, 2002, op. cit. (see reference 32).

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