The Influence of Parental Monitoring on Adolescent Sexual Initiation

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Objective: To explain the influence of parental monitoring on adolescent sexual initiation within the context of a cognitive behavioral model.

Design, Setting, and Participants: Virginal youth (N=307) recruited from a health maintenance organization adolescent medicine clinic were interviewed at baseline and at 6 months about parental monitoring and other known cognitive factors associated with the initiation of sexual behavior. Participants were followed up at 6 months and potentially at 12 months to assess the initiation of sexual intercourse.

Results: Adolescents reporting successful parental monitoring (accurately knowing the adolescents’ whereabouts and activities outside the home) significantly expressed cognitions less favorable of initiating intercourse, while adolescents reporting more unrestricted time were more likely to express cognitions that favored initiating intercourse. In adjusted analysis, cognitions (attitudes, perceived peer behaviors, and subjective norms) that favored intercourse significantly predicted a greater intention to engage in intercourse. However, adolescents who reported successful parental monitoring significantly expressed less sexual intention, and successful parental monitoring moderated the effect of attitude on the intention to initiate intercourse among female subjects. Overall, behavioral intention was the only significant predictor of actual sexual onset.

Conclusions: These findings are useful in directing further research and in designing interventions to delay the onset of sexual intercourse in adolescence. More research is required to understand how attitudes toward sexual initiation are formed during adolescence and how parents may facilitate the formation of these attitudes. Parental interventions that promote successful communication and support effective parental monitoring may be an important component of interventions designed to delay sexual initiation during adolescence.

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Despite a decline in the prevalence of some adolescent sexual risk behaviors in the last decade, an increase in the percentage of adolescents engaging in sexual intercourse and a decrease in the age at sexual initiation have occurred during the past 30 years.1-4 Although sexuality is a normal part of healthy adolescent development, early initiation of sexual intercourse is associated with subsequent high-risk sexual behaviors and may be associated with harmful and unintended health outcomes.5 Therefore, behavioral interventions designed to reduce the incidence of human immunodeficiency virus, sexually transmitted diseases, and pregnancy among adolescents often attempt to delay the onset of sexual behavior.6 Because researchers have identified the importance of parental behaviors in influencing adolescent sexual behavior, such interventions have increasingly involved parents.7-10

Prior cross-sectional and longitudinal studies11,12 have established a significant relationship between parental monitoring and the initiation of sexual intercourse. Although it lacks a uniform definition, parental monitoring has been measured by adolescents’ perceived parental knowledge of where they go and what they do, along with the amount of unrestricted or unsupervised time that they experience. Lower levels of perceived parental monitoring have been associated with several risk behaviors among adolescents, including an earlier onset of sexual activity.13

Despite this association, the mechanism by which parental monitoring may work to delay sexual onset is unclear. We posit that parental monitoring may delay initiation of intercourse through its effect on adolescent intention. According to the theory of planned behavior,14 intention is the mechanism by which one’s attitude to perform a behavior and one’s perceptions of social pressures to perform or not...
to perform that behavior are translated into action. Other studies\textsuperscript{15-20} demonstrate intention to have intercourse, influenced by attitudes and normative perceptions, to be a strong predictor of sexual initiation. We propose 3 possible mechanisms by which parental monitoring may operate within this theoretical framework to reduce the likelihood of initiating intercourse. First, parental monitoring may prevent adolescents from acting on their intention by reducing the opportunity to engage in sexual behavior, thus moderating the effect of intention to have sex on actual behavior. Second, parental monitoring may create a milieu that attenuates adolescents’ attitudes toward initiating sexual intercourse by imparting parental attitudes and beliefs regarding sexual behavior to children. Finally, parental monitoring may limit adolescents’ exposure to high-risk peers, thus influencing their perceptions of normative peer behavior.

This study advances our understanding of adolescent sexual behavior by examining the influence of parental monitoring on sexual initiation within a cognitive behavioral model. We examine the effect of parental monitoring on prospective sexual behavior and on the cognitions associated with the initiation of sexual intercourse.

### METHODS

#### PARTICIPANTS

Between June 1, 1996, and May 3, 1998, participants were recruited from a health maintenance organization teen clinic in San Francisco. A research assistant approached adolescents in the waiting area before their visit with the clinician. Eligible participants were sexually inexperienced, English speakers between 14 and 18 years of age. We excluded all clinic attendees who presented to the clinic for a major psychological issue or were acutely ill at the time of their visit. Adolescents who met all enrollment criteria were informed of the study, invited to participate, and offered $25 as compensation for their participation. Participants aged 18 were asked to provide written consent, and parental consent was required of all participants younger than 18. A research assistant conducted a structured baseline (T1) interview in a private room after the clinical visit, lasting approximately 45 minutes. After the initial interview, subjects were followed up by telephone in 6 months (T2). At that time, adolescents who had not initiated sexual intercourse completed an interview similar to the baseline survey and were then recontacted in 6 months (T3) to assess whether they had initiated sexual intercourse. The study protocol was approved by the University of California, San Francisco, Committee on Human Research and by the Kaiser Permanente Institutional Review Board, San Francisco.

#### MEASURES

In our proposed model, intention to have sex, composed of attitudinal and normative beliefs, directs sexual behavior. Parental monitoring may influence sexual onset by moderating the relationship between intention to have sex and sexual initiation, or parental monitoring may indirectly influence sexual behavior by shaping the attitudes or subjective norms that comprise intention. To conduct this analysis, we collected sociodemographic information on the age, sex, and race and ethnicity of the participants, as well as the behavioral, cognitive, and parental monitoring factors described in detail herein.

### SEXUAL INITIATION

The behavioral measure of interest was the initiation of sexual intercourse. This measure was obtained at the follow-up telephone interviews (T2 and T3). The adolescent was asked to respond (yes or no) to the question “Have you had sexual intercourse with anyone in the last 6 months?”

### INTENTION TO INITIATE SEXUAL INTERCOURSE

A 4-item scale measured the strength of the intention to initiate sexual intercourse and the perceived likelihood of enacting the intention. Adolescents were asked, “Do you plan to have sex in the next 6 months?” (response range, definitely not to definitely yes), “How likely is it that you will have sex in the next 6 months?” (response range, not at all likely to extremely likely), “What are the chances out of 100 that you will have sex in the next 6 months?” and “How likely is it that you will not have sex in the next 6 months?” (response range, not at all likely to extremely likely). The mean of these responses provided an overall intention score (Cronbach $\alpha = .93$ at baseline).

### ATTITUDE TOWARD SEXUAL INTERCOURSE

A 3-item scale measured a general attitude toward initiating sexual intercourse in the next 6 months. Adolescents responded to the following: “How good or bad would it be to have sex in the next 6 months?” (response range, very bad to very good), “How much do you like or dislike the idea of having sex in the next 6 months?” (response range, dislike very much to like very much), and “I think it is OK for me to have sex in the next 6 months?” (response range, definitely not OK to definitely OK). The responses were based on 4- or 5-point Likert scales. The mean of the responses generated a general attitude measure (Cronbach $\alpha = .91$ at baseline).

### SUBJECTIVE NORM

A 2-item scale measured a general subjective norm. Adolescents were asked how much they agree or disagree with the following statements: “People important to me think I should have sex in the next 6 months” and “People important to me think it’s OK for me to have sex in the next 6 months.” Responses were based on a 5-point Likert scale ranging from “definitely not OK” to “definitely OK” for the former statement and from “definitely should not” to “definitely should” for the latter statement. The mean of the responses provided an overall score of general subjective norm (Cronbach $\alpha = .79$ at baseline).

### PEER BEHAVIOR

The influence of perceived peer behavior on intention to initiate sexual intercourse was assessed by 2 questions regarding peer sexual behavior. These questions were adapted from an earlier study\textsuperscript{20} that included questions about friends’ sexual behavior. Adolescents were asked (response range, none to all), “How many of your close friends have had sex?” and “How many of the teens your age have had sex?” These 2 questions provided a summed score of peer sexual activity (Cronbach $\alpha = .72$ at baseline).
PARENTAL MONITORING

Eight items based on a Strictness/Supervision Scale21 were used to assess adolescent perceptions of parental monitoring. Adolescents were asked how much their parents or guardians try to know and how much they really know about where they are most afternoons after school, what they do during their free time, and where they go in the evenings. Response options ranged from “nothing at all” (score, 1) to “the most they can” (score, 5) on a 5-point Likert scale. To assess restrictions on unsupervised time, respondents were also asked about the time they were allowed to remain out in the evenings on weekends and school nights. We performed factor analysis with orthogonal rotation on these 8 survey items. Three components had eigenvalues greater than 1, explaining 77.2% of the variance. The retained items that loaded greater than 0.50 on a rotated factor solution were used to create the following 3 scales: parental monitoring (3 items pertaining to how much parents allow them to remain out in the evenings on weekends and school nights), successful monitoring (3 items pertaining to how much parents really know about adolescents’ whereabouts and activities outside the home, Cronbach α = .82), and unrestricted time (2 items pertaining to how late parents allowed them to remain out in the evenings, Cronbach α = .84). A mean score was generated for each belief scale.

STATISTICAL ANALYSIS

Initial exploratory analysis described the sociodemographic characteristics of the sample. Measures of bivariate associations (ie, Pearson product moment correlations) were then used to describe the relationships among all pairwise combinations of the demographic (age and sex), cognitive (attitudes, peer behaviors, and subjective norms), and parental monitoring (monitoring effort, successful monitoring, and unrestricted time) variables. We conducted simple and multiple linear regression analyses to determine the relative effects of the demographic, cognitive, and parental monitoring variables on the outcome of intention to have intercourse. Factors associated with intention by simple linear regression (P < .05) were included in the multivariable analysis, and separate regression models were analyzed for male and female subjects if significant sex differences were observed. We also introduced interaction terms to test for a moderating effect of parental monitoring on the significant variables associated with sexual intention. Finally, multivariable Cox proportional hazards regression analyses were conducted to determine the relative contribution of parental monitoring and intention to initiate sexual intercourse on the behavioral outcome of sexual initiation. Cox proportional hazards regression was used because this method allows for the analysis of right-censored data (not all subjects sexually active at T2 or T3) and the inclusion of a variable (intention to initiate sexual intercourse) measured at multiple time points (T1 and T2).

RESULTS

PARTICIPANTS

Three hundred seven youth enrolled in the study at baseline (T1); the mean age of the sample was 15.8 years, and 57.7% were male. The sample reflected the diverse racial and ethnic mix that is seen by the health maintenance organization, namely, 14.7% African American, 25.1% white, 17.3% Latino, 30.0% Asian, and 12.9% mixed race and other. No significant differences existed between subjects who remained in the study and the 15 subjects who were lost to or unavailable for follow up during the study in terms of sex, age, or race and ethnicity. We also found no significant differences in attitudes, subjective norms, intention to have sex, or parental monitoring. However, those who remained in the study perceived greater peer sexual behavior. At the 6-month follow-up, 23 youth reported having had intercourse, and an additional 24 youth reported having had intercourse at the 12-month follow-up. Male subjects tended to be more likely to have initiated intercourse than female subjects (Pearson χ² = 3.1; P = .08). There were no significant differences in age or race and ethnicity between those who had or had not initiated sexual intercourse.

BIVARIATE CORRELATIONS

We first examined the bivariate correlations among the demographic, cognitive, and parental monitoring variables (Table 1). As expected, older adolescents reported more favorable cognitions toward initiating sexual intercourse, and they were significantly more likely to report less parental monitoring by all 3 measures. Male subjects were significantly more likely to report attitudes and subjective norms that favored sexual intercourse and more unrestricted time relative to their female counterparts.

Significant correlations were demonstrated among the 3 parental monitoring variables. Monitoring effort positively correlated with successful monitoring, while unrestricted time negatively correlated with monitoring ef-

Table 1. Correlations of Age, Attitudes, Peer Behaviors, Subjective Norms, and Parental Monitoring at Baseline

<table>
<thead>
<tr>
<th>Factor</th>
<th>Age</th>
<th>Attitude</th>
<th>Peer Behavior</th>
<th>Subjective Norm</th>
<th>Successful Monitoring</th>
<th>Monitoring Effort</th>
<th>Unrestricted Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>-0.036</td>
<td>-0.335*</td>
<td>0.091</td>
<td>-0.284*</td>
<td>0.062</td>
<td>0.142</td>
<td>-0.139†</td>
</tr>
<tr>
<td>Age</td>
<td>0.138†</td>
<td>0.225*</td>
<td>0.131†</td>
<td>-0.191‡</td>
<td>-0.146†</td>
<td>0.437*</td>
<td>0.437*</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.349*</td>
<td>0.591*</td>
<td>-0.183‡</td>
<td>-0.090</td>
<td>0.304*</td>
<td>0.304*</td>
<td>0.304*</td>
</tr>
<tr>
<td>Peer behavior</td>
<td></td>
<td></td>
<td>0.210*</td>
<td>-0.078</td>
<td>0.094</td>
<td>0.18‡</td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td></td>
<td></td>
<td>-0.134†</td>
<td>-0.085</td>
<td>0.312*</td>
<td></td>
</tr>
<tr>
<td>Successful monitoring</td>
<td></td>
<td></td>
<td></td>
<td>0.447*</td>
<td>0.447*</td>
<td>-0.178‡</td>
<td>-0.228*</td>
</tr>
<tr>
<td>Monitoring effort</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P<.001.
†P<.05.
‡P<.01.
fort and successful monitoring. In relation to the cognitive variables, more successful monitoring correlated with less favorable attitudes toward intercourse \( (r = -0.18; P = 0.02) \) and with subjective norms less likely to favor intercourse \( (r = -0.13; P = 0.02) \). Parental monitoring effort was not significantly correlated with any of the cognitive variables, but unrestricted time showed positive correlations with attitudes \( (r = 0.18; P < 0.01) \), peer behaviors \( (r = 0.18; P < 0.01) \), and subjective norms \( (r = 0.31; P < 0.001) \) that favored intercourse.

**REGRESSION ANALYSIS**

All cognitive and parental monitoring variables (except for monitoring effort) significantly predicted intention to have intercourse by simple linear regression analysis (Table 2). Male subjects were significantly more likely to express greater intention to initiate intercourse, as were adolescents with more unrestricted time and those reporting attitudes, subjective norms, and peer behaviors favoring sexual initiation. Successful parental monitoring was associated with less intention to initiate intercourse.

Significant factors \( (P < 0.05) \) were subsequently entered into a stepwise multiple regression to determine their relative effects on sexual intention. In the first step of the regression, sex and age explained 6.9% of the total variance associated with intention to initiate sexual intercourse \( (F_{2,285} = 10.78; P < 0.001) \), with male subjects significantly more likely to report greater intention to initiate intercourse. The second step of the regression included the cognitive and parental monitoring variables, yielding an overall model that explained an additional 54.2% of the variance associated with intention to initiate sexual intercourse \( (F_{5,284} = 79.06; P < 0.001) \). In this model, adolescents with more favorable attitudes toward sexual intercourse \( (\beta = 0.593; P < 0.001) \), greater perceived peer sexual behavior \( (\beta = 0.200; P < 0.001) \), and more favorable perceived subjective norms \( (\beta = 0.14; P = 0.03) \) reported a greater intention to initiate intercourse (Table 2). In addition, more successful parental monitoring had a significant direct effect on lowering the intention to initiate intercourse \( (\beta = -0.118; P < 0.01) \), while the amount of unrestricted time reported by adolescents did not retain significance in the adjusted analysis. When analyzed separately by sex, the effect of successful parental monitoring on minimizing sexual intention was greatest among female adolescents.

To test for a moderating effect of parental monitoring, we then examined the interaction between successful monitoring and the other significant variables on the outcome of sexual intention. Overall, the interaction terms entered into a third step of the regression were not significant. However, when analyzed separately by sex, a significant interaction between successful parental monitoring and attitude toward intercourse \( (\beta = -0.583; P = 0.04) \) explained an additional 2.9% of the total variance associated with intention to initiate sexual intercourse among female subjects \( (F_{2,112} = 3.71; P = 0.03) \). Among female subjects, increased successful parental monitoring reduced the effect of attitude toward intercourse on the intention to initiate sexual intercourse (Figure).

We next examined the association of intention to have intercourse and successful parental monitoring with the behavioral outcome of sexual initiation, using a 2-step multivariable Cox proportional hazards regression analysis (Table 3). Neither monitoring effort nor unrestricted time demonstrated an association with initiation, and neither was included in this analysis. Age and sex were entered first into a stepwise regression, yielding an overall model in which neither age nor sex was predictive of sexual initiation. The second step of the regression included intention to initiate sexual intercourse and successful parental monitoring, and this step yielded an overall model \( (\chi^2 = 72.6; P < 0.001) \) in which only intention was a significant predictor of sexual initiation (odds ratio, 2.56; 95% confidence interval, 1.99-3.30). After stratifying by sex, intention to initiate intercourse remained a significant predictor of sexual initiation for male and female subjects. We then tested for a moderating effect of parental monitoring by examining the interaction between intention to initiate sexual intercourse and successful parental monitoring in the third step of the regression. The interaction term, however, did not lead to an improved model.
We used a cognitive behavioral model to examine the relationship between parental monitoring and sexual initiation in a prospective study of male and female subjects aged 14 to 18 years. This model was useful in explaining the influence of parental monitoring on adolescent sexual initiation by elucidating the significant relationships between parental monitoring and adolescent cognitions and sexual behavior. Overall, the intention of virginal adolescents to initiate intercourse was the only significant predictor of actual sexual onset, but adolescents who perceived more successful parental monitoring expressed less intention to initiate intercourse. Although successful parental monitoring and limitations on adolescents’ unsupervised time were associated with less favorable attitudes and subjective norms regarding sexual initiation, it is important that further research explore how such cognitions are formed.

In this study, we compared adolescents’ perceptions of parental monitoring effort with successful parental monitoring. Parents who try to monitor their adolescents ought to be better at monitoring, and, as expected, these items were highly correlated. However, this correlation was not robust enough to indicate that the scales were redundant. Consistent with prior research, we found successful parental monitoring to be significantly associated with less favorable attitudes among adolescents toward initiating sexual intercourse and with lower social expectations to have sex (subjective norms). In contrast, increased parental efforts to monitor did not significantly correlate with any of the cognitive factors associated with sexual initiation. This difference may suggest the importance of adolescent communication as an essential component of successful parental monitoring, for parents can be successful monitors only if adolescents make known their whereabouts and with whom they associate. If adolescents do not disclose this information, parental monitoring has been found to be ineffective. Therefore, successful monitors in this study may facilitate parent-adolescent communication and therefore better impart their sexual beliefs and social expectations to their children.

We also found that adolescents with more unrestricted time had more favorable attitudes toward sexual activity, perceived more of their peers to be engaged in sexual activity, and perceived higher social expectations to have sex. Although unrestricted time had an indirect effect on the intention to have sex by simple linear regression analysis, we did not find this measure to be associated with intention in the expanded model. This may be because of the significant correlations of unrestricted time with attitudes and subjective norms. Because unrestricted time was inversely correlated with parental monitoring effort and successful monitoring, limitations on adolescent activity may be important components of parental monitoring and need to be encouraged and incorporated into interventions to improve parental monitoring and reduce adolescent risk behavior.

Successful parental monitoring, in contrast to the other parental monitoring measures, showed a significant association with intention to engage in intercourse, even after accounting for the influences of the other important determinants of intention, such as attitude and peer norms (behavioral and subjective). In addition to its direct effect on sexual intention, successful parental monitoring also minimized the effect of attitude on the intention to engage in intercourse among female adolescents expressing the most favorable attitude toward sexual activity. These findings indicate that adolescents perceiving their parents to be successful monitors may be more likely to consider the sexual attitudes and social expectations of their parents when determining their own likelihood of engaging in intercourse. This reasoning is consistent with other studies associating adolescent perceptions of parental disapproval with a later onset of sexual intercourse.

Also consistent with prior research, adolescent behavioral intention was found to be the strongest predictor of sexual onset. Within the cognitive behavioral model used to frame this study, we hypothesized that parental monitoring may work to delay sexual onset by limiting the opportunities for adolescents to act on their intention to engage in sexual behavior. However, our analysis did not suggest parental monitoring to have this effect. Successful parental monitoring did not significantly predict sexual initiation in adjusted analysis, nor did it moderate the effect of intention to initiate sexual intercourse on initiation. Although limiting the amount of time that adolescents spend unsupervised is a plausible mechanism by which parental monitoring may moderate the effect of intention on sexual behavior, the amount of unrestricted time reported by the participants in this study also failed to predict sexual initiation. This finding may be explained by the fact that sexual behavior occurs during unsupervised hours after school and in the evenings.

Table 3. Multivariable Cox Proportional Hazards Regression Analysis of Initiation of Sexual Intercourse on Successful Parental Monitoring and Intention to Initiate Sexual Intercourse*

<table>
<thead>
<tr>
<th>Factor</th>
<th>All Subjects‡</th>
<th>Male Subjects‡</th>
<th>Female Subjects‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful parental monitoring</td>
<td>0.84 (0.62-1.12)</td>
<td>0.72 (0.50-1.02)</td>
<td>1.22 (0.68-2.12)</td>
</tr>
<tr>
<td>Intention to initiate sexual intercourse</td>
<td>2.56 (1.99-3.30)§</td>
<td>2.56 (1.87-3.50)§</td>
<td>2.58 (1.63-4.01)§</td>
</tr>
</tbody>
</table>

*Data are given as odds ratio (95% confidence interval).
†All models adjusted for age and sex.
‡All models adjusted for age.
§P<.001.
There are necessary limitations to consider when interpreting the results of this study. The low number of subjects who became sexually active, particularly female subjects and younger adolescents, may have contributed to insufficient power to detect important determinants of behavior. These findings are also limited by the self-reported measures of the study participants and by the measurement of parental monitoring at the initial interview only. In addition, the measure of intention captures the perceived likelihood of engaging in intercourse; teens may account for the degree to which parental monitoring will influence the likelihood of engaging in intercourse when they provide their estimates of intention. We also did not assess parent-adolescent communication. This may have helped distinguish the difference between parental monitoring and other forms of parenting. Finally, these findings represent a cohort of adolescents in one cosmopolitan area and may not be generalizable to all youth.

Despite these limitations, this research expands our understanding of the initiation of sexual intercourse in adolescence through elucidating the relationships between adolescent beliefs and attitudes, parental monitoring, and the onset of sexual intercourse. These findings may be useful in directing further research and in designing interventions to delay the onset of sexual intercourse during adolescence. Because attitudes may exhibit a strong influence on the intention to initiate intercourse and subsequent sexual behavior, more research is required to understand the process of how sexual attitudes are formed during adolescence. Parents who are successful in monitoring their children may also be more skilled in facilitating parent-adolescent communication, a necessary component of parental monitoring. Although more research is necessary to understand this process, it is important to promote successful communication and parental monitoring as essential components to interventions designed to delay the initiation of sexual intercourse.

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