Maternal Expectations, Mother-Child Connectedness, and Adolescent Sexual Debut

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Background: This study examined 3 hypotheses: (1) adolescents who perceive maternal disapproval of sexual activity will initiate sexual intercourse later than other adolescents; (2) adolescents who feel highly connected to their mothers will initiate sexual intercourse later than others; and (3) adolescents who perceive maternal disapproval of sexual intercourse are more likely than others to experience high levels of connectedness to their mothers, and to have mothers who state strong disapproval and talk more frequently with them about sex.

Design/Setting: The National Longitudinal Study of Adolescent Health (Add Health), a longitudinal study of US students in grades 7 through 12. The Add Health core in-home sample consisted of 12,105 students who completed in-school and in-home surveys at wave 1. Members of this sample completed a second in-home survey 9 to 18 months later at wave 2.

Participants: Wave 1 and wave 2 in-home surveys were completed by 3,322 core sample members who had reported being virgins at wave 1, and had resident mothers who completed wave 1 surveys.

Main Outcome Measures: Time to first sexual intercourse, adolescents' wave 2 reports of month/year of first sexual intercourse.

Results: Adolescents' perceptions of maternal disapproval and high levels of mother-child connectedness were directly and independently associated with delays in first sexual intercourse. Adolescents were most likely to perceive maternal disapproval if their mothers reported strong disapproval and if they reported being highly connected to their mothers.

Conclusion: Perceived maternal disapproval of sexual intercourse, along with mother-child relationships characterized by high levels of warmth and closeness, may be important protective factors related to delay in adolescents' first sexual intercourse.


Early sexual intercourse is a serious adolescent risk behavior. Early initiation of sexual intercourse is associated with other behaviors that increase risk, including more frequent intercourse and greater numbers of sexual partners, and lower probability of contraceptive use during the adolescent years. Thus, individuals who initiate sexual intercourse relatively early in their adolescence are at high risk for sexually transmitted disease and pregnancy involvement for a longer period.

Numerous psychosocial theories of health behavior, as well as previous empirical research, suggest that the timing of first sexual intercourse is influenced by a broad array of socioeconomic and personal factors. Among the most powerful sources of social influence are parents, siblings, sexual partners, and friends. In regard to parental influences, a recent review of empirical research highlights aspects of parent-child relations that are particularly relevant to adolescents' sexual risk behaviors. Key relationship factors include parent-child closeness and connectedness, parents' values about teen sex, and parent-child communication about sex. Previous studies that focused on sexual debut consistently found that relationships characterized by high levels of closeness and connectedness between parents and children are related to teens' virginity status and to delays in first sexual intercourse. While fewer studies have examined the role of parents' values in influencing adolescent sexual debut, those that have done so found nonpermissive parental values to be associated with lower levels of adolescent sexual experience. Studies about the effects of parent-child communication on timing of first sexual
MATERIALS AND METHODS

THE ADD HEALTH RESEARCH DESIGN

Our study employs data from Add Health, a 1-year longitudinal study of 7th- through 12th-grade students in the United States. The primary sampling frame for the Add Health study included all US high schools that had an 11th grade and at least 30 enrollees in the school (N=26666). Schools within this frame were stratified by geographic region, urbanicity, school size, school type, percentage white, percentage black, and grade span; a random sample of 80 high schools was selected from these strata. Some of the schools selected included grades 7 through 12. For each remaining high school, a feeder school that sent graduates to the high school and that included a 7th grade was recruited. The final sample included 133 schools that varied in size from fewer than 100 to more than 3000 students. All participating schools provided a roster of enrolled students; 129 schools hosted a confidential in-school survey during the 1994-1995 school year.21

From students on school rosters and from adolescents who were not on a roster but who completed an in-school questionnaire, a random sample of 15243 adolescents stratified by grade and gender was selected for W1 in-home surveys; of these, 12105 adolescents (79.5%) who completed 90-minute surveys became the W1 core in-home sample. This W1 core in-home sample is representative of 7th- through 12th-grade students in the United States. Wave 1 in-home surveys were completed between April and December 1995. For 85.6% of participating adolescents, a resident parent (in most instances a mother) also completed a half-hour in-home interview at W1. Adolescent in-home surveys were repeated approximately 1 year following W1 in-home surveys, from April through August 1996. Participants in the 12th grade at W1 and their parents were not reinterviewed at wave 2 (W2). Extensive precautions were taken to maintain confidentiality and to guard against deductive disclosure of participant identities.21 All study protocols received institutional review board approval. Checks for invalid and inconsistent response patterns resulted in the deletion of data of 4.5% (n=564) of the core in-home sample.22

ANALYTIC SAMPLE

The sample for this study consisted of members of the core in-home sample who were in 8th through 11th grades at W1, reported being a virgin on the W1 survey, completed both W1 and W2 in-home surveys, and had a resident mother who completed a W1 in-home survey. Seventh graders were not included in the analytic sample owing to the limited number of this youngest grade group who initiated sexual intercourse between W1 and W2. Following the remaining inclusion criteria, adolescents were excluded from the sample for this study if they were missing W2 data on date of first intercourse (n=152), if on the W2 survey they reported having sex prior to W1 (n=136), if they were lost to follow-up between W1 and W2 (n=454), if they did not have a resident mother (n=147), or if their resident mother did not complete a W1 survey (n=423). The final unweighted sample for this study consisted of 3322 adolescents.

SURVEY INSTRUMENTS

Data collected from adolescents during the in-home interviews included information on sensitive health-related behaviors, including sexual behavior, marijuana use, alcohol and tobacco use, and criminal activities. In addition, adolescents were asked for detailed information on health status; peer networks; romantic relationships; family composition and dynamics; educational performance, aspirations, and expectations; personality characteristics; and health-related attitudes, beliefs, and behaviors. Many of the questions related to sexual behavior were asked only of respondents aged 13 years or older. During the more sensitive portions of the interview, adolescents listened to questions through earphones and directly entered their responses into a laptop computer, thereby reducing the potential for interviewer or parent influences on their responses.21

Data collected from mothers during the W1 in-home interviews included information on adolescent health-related topics, including parent-adolescent communication and interaction; parent expectations for the adolescent; parent familiarity with the adolescent’s friends; parent history of marriage and marriage-type relationships; health-affecting behaviors; education and employment; parent involvement in volunteer, civic, or school activities; and household income and economic assistance.

MEASURES

The outcome of interest for study hypotheses 1 and 2 is the adolescents’ time to first sexual intercourse, measured in monthly intervals from their ages at the W1 survey. Adolescents were asked if they had ever had vaginal intercourse, and if so, the month and year of their first intercourse.

A key response inconsistency for this analysis involved participants who reported being virgins at W1, but at W2 gave a date of first intercourse that preceded the W1 survey (n=255). Within this group, reports of virginity at W1 were assumed to be accurate only for those who at W2 reported a date of first intercourse that was within 4 months.
Perceived maternal disapproval of sex is the outcome of interest for research hypothesis 3 and a predictor variable in analyses testing hypotheses 1 and 2. This measure is based on adolescent report. Two survey items ask adolescents how their mother would feel about them having sex at this time in their life, and how she would feel about them having sex with someone who was special, like a steady boyfriend or girlfriend. Both items had 5 response options, ranging from “strongly disapprove” to “strongly approve.” Participants responded to these 2 items in a consistent fashion; the bivariate correlation between items was \( r = 0.70 \). In examining possible response combinations to these items, we found that teens who reported strong maternal disapproval to both items were significantly older at first intercourse than were those who reported strong maternal disapproval to neither or only one of the items (data available on request). Based on this finding, we created a dichotomous variable comparing adolescents reporting strong maternal disapproval on both items with all others. The reference group in all analyses consisted of those who perceive a message of strong maternal disapproval.

Key predictor variables for this study included stated maternal disapproval of sex based on mothers’ reports. Two survey items ask mothers how strongly they would agree or disagree with their child having sex at this time in his or her life, and having sex with someone who was special to them. For both items, 5 response choices ranged from “strongly agree” to “strongly disagree.” Bivariate correlations between these 2 items in a consistent fashion; the bivariate correlation between items was \( r = 0.29 \). Because older students who are virgins at W1 may represent a more homogeneous, low-risk group than younger students who are virgins, we stratified the sample by grade group and completed parallel analyses on younger and older grade groups (i.e., 8th and 9th graders; 10th and 11th graders). Thus, we were able to identify maternal factors that were unique or consistent across early and middle adolescence. All regression models accounted for the clustered sampling design used in Add Health.

We used Cox proportional hazards models to test paths 1 through 3 posited in Figure 1, designating time to first sexual intercourse as the outcome of interest. In addition to main effects models testing paths 1 and 2 in Figure 1, several interaction models were evaluated. To test whether the effects of perceived disapproval varied by level of mother-child connectedness (path 3, Figure 1), the interaction between these 2 variables was examined. Second, the interaction of gender with each of the key predictor variables was tested to evaluate whether the association of these variables was roughly equivalent for boys and girls.

In a second set of analyses, we used multivariate logistic regression to identify correlates of perceived maternal disapproval (paths 4-6, Figure 1). In addition to main effects models, several interaction models were evaluated. To test whether the effects of mothers’ stated disapproval on adolescents’ perceived disapproval varied with levels of mother-child connectedness (path 7, Figure 1), the interaction between stated disapproval and connectedness was examined. To test whether the association between mothers’ stated disapproval and adolescents’ perceived disapproval varied with frequency of mother-child discussions about sex (path 8, Figure 1), we examined the interaction between stated disapproval and discussions about sex. Finally, gender was interacted with each of the key predictor variables to evaluate model differences between girls and boys.
intercourse present mixed findings. While some studies suggest that open and frequent communication about sex is associated with teens not having sex or postponing sexual debut, other studies (also M. Shew, MD, MPH, unpublished data, 2000 and C. Saccoff, DrPH, unpublished data, 2000) have found neither an association between parent-child communication and adolescent sexual activity nor that more frequent parent-child communication is associated with increased risk of adolescent sexual activity. It is not often clear whether communication precedes sexual activity or is a consequence of parents learning of their teens' sexual activity.13

To our knowledge, relatively few studies to date have used prospective designs to test the predictive power of various elements in the parent-child relationship on adolescent sexual debut. Even fewer studies have tested how parent-child relationship factors may operate jointly or through a combination of direct and indirect pathways. Many studies are based exclusively on adolescents' perceptions of parental attitudes and behaviors, which may bias estimated associations with sexual debut because of a "false consensus" effect.20 Some studies examining relationships between parent influences and adolescent sexual activity have not controlled for other known influences on sexual debut, leaving open the possibility of observed associations being confounded by unmeasured factors, such as age. The ability to generalize based on many existing studies is limited by the age range, geographic location, or gender of the adolescent sample.

The conceptual model guiding our research is derived from the Theory of Triadic Influence (TTI).2 The TTI posits that social, attitudinal, and intrapersonal factors independently and in unison influence health-related decisions and behaviors. In terms of social influence, TTI assumes that an individual's behaviors are shaped, in part, by their perceptions of the health-related attitudes, beliefs, and behaviors of others. Individuals are especially motivated to adopt attitudes, beliefs, and behaviors of others with whom they have strong social bonds. Together, perceived expectations and level of motivation to conform to others' expectations influence decisions around particular health behaviors.

The model depicted in Figure 1 suggests that there are 2 parent-child relationship factors that will directly influence the timing of adolescents' first sexual intercourse. Based on TTI's proposed link between perceived expectations and behavior, this model first suggests that adolescents' perceptions of their parents' expectations related to sexual activity will have a direct effect on the timing of their sexual debut (path 1, Figure 1). Second, based on TTI's proposed relationship between strong social bonds and behavior, this model suggests that the level of parent-child connectedness will directly influence the timing of teens' sexual debut (path 2, Figure 1). In accord with TTI, the model posits that these 2 factors have synergistic effects (ie, the magnitude of influence associated with perceived parental expectations will be strongest among teens who experience high levels of parent-child connectedness [path 3, Figure 1]).

Given the key role of perceived parental expectations, this model also includes 3 parental behaviors and relationship factors that shape adolescents' perceptions. Specifically, parents' stated expectations about sexual activity (path 4, Figure 1), the level of parent-child connectedness (path 5, Figure 1), and parent-child communication about sexual issues (path 6, Figure 1) are all hypothesized to have independent effects on adolescents' perceptions of their parents' expectations. Furthermore, this model suggests that the magnitude of association between parents' stated expectations and adolescents' perceived expectations depends on the level of parent-child connectedness (path 7, Figure 1) and the level of parent-child communication about sexual issues (path 8, Figure 1).

The purpose of this study is to examine forms and pathways of parent influence posited by the model in Figure 1. To reduce questions regarding the direction of effects, we used longitudinal data to investigate the influence of key parent-child relationship factors (measured at wave 1 [W1]) on the timing of adolescents' first sexual intercourse, during a follow-up period. This procedure assures that the relationship dynamics precede first sexual intercourse, rather than being a result of them. Specifically, this model was examined using 2 waves of data from the National Longitudinal Study on Adolescent Health (Add Health). Data are from mother-child dyads, as only 1.8% of interviewed parents in our targeted sample were fathers. Specifically, we test the following research hypotheses: (1) adolescents who perceive that their mothers strongly disapprove of them having sex will report later onset of sexual intercourse than other adolescents (path 1, Figure 1); (2) adolescents who report high levels of mother-child connectedness will report later onset of sexual intercourse than other youth (path 2, Figure 1); and (3) adolescents who perceive strong maternal disapproval of them having sex are more likely than others to have mothers who state strong disapproval of sex (path 4, Figure 1). They are more likely to experience high levels of connectedness to their mothers (path 5, Figure 1), and to have mothers who talk with them more about sexual health issues (path 6, Figure 1).
Table 1. Study Outcome and Key Predictor Variables by Grade Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>8th-9th Graders (n = 1997)</th>
<th>10th-11th Graders (n = 1286)</th>
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<tbody>
<tr>
<td>Non-virgin status on W2</td>
<td>12.5</td>
<td>20.0</td>
</tr>
<tr>
<td>Strong maternal disapproval on W1 mother report</td>
<td>75.5</td>
<td>60.6</td>
</tr>
<tr>
<td>Strong maternal disapproval on W1 adolescent report</td>
<td>61.1</td>
<td>45.0</td>
</tr>
<tr>
<td>Mean (SE) mother-child connectedness on W1 adolescent report†</td>
<td>19.5 (0.07)</td>
<td>19.4 (0.09)</td>
</tr>
</tbody>
</table>

*All values are expressed as percentages unless otherwise indicated. W1 indicates the first wave of surveys; W2, the second wave. Estimates are based on weighted samples.
†Score range, 3-22.

RESULTS

SAMPLE CHARACTERISTICS

As noted in Table 1, the percentage of adolescents who began having sexual intercourse during the study period increased with age. While 12.5% of 8th and 9th graders reported having first intercourse between W1 and W2, 20.0% of 10th and 11th graders reported sexual debut during the same time period. Adolescents tended to underestimate strong maternal disapproval of their sexual activity. While a majority of both younger and older teens reported at W1 that their mothers would strongly disapprove of having intercourse, even greater percentages of their mothers stated they would strongly disapprove of their children having sex. Both younger and older adolescents reported high levels of connectedness to their mothers at W1. While mother-child connectedness scale scores ranged from 3 to 22, mean scores were 19.5 and 19.4 among younger and older teens, respectively.

As noted in Figure 2, left, 27.3% of mothers of older adolescents reported talking a great deal about birth control, sex, and potential negative consequences of sex with their children; only 5.7% reported not talking at all with their children about these topics. A similar pattern was found among mothers of younger teens: 25.2% of mothers reported frequent conversations around these sexual health topics; only 5.6% reported not talking at all about these topics. However, mothers of both older and younger teens tended not to have recommended specific birth control methods to their children. Only 28% of younger teens’ mothers and 30% of older teens’ mothers (Figure 2, right) noted that they had recommended a specific form of birth control to their children.

MODELS PREDICTING TIME TO FIRST SEXUAL INTERCOURSE

Findings from the multivariate main effects models predicting time to first sexual intercourse are presented in Table 2. As noted in the table, findings supported the first research hypothesis. Among both younger and older adolescents, those who perceived strong maternal disapproval of sex initiated intercourse later than those who did not perceive strong disapproval. Controlling for the effects of perceived maternal disapproval, stated maternal disapproval did not seem to have an independent relationship with timing of sexual debut for younger or older teens.

Findings related to mother-child connectedness differ for younger and older teens. Among 8th and 9th graders, high levels of mother-child connectedness were independently related to delays in sexual debut. Findings from the main effects model (Table 2) suggested a nonsignificant relationship between mother-child connectedness and sexual debut among older teens. However, including a gender interaction term in this model, we found that high levels of mother-child connectedness was significantly related to delay of first sexual intercourse among older boys but not among older girls (interaction terms have not been included in Table 2). In another product-term model, the interaction of perceived disapproval and mother-child connectedness was nonsignificant, suggesting that the effects of these variables were independent (interaction terms have not been included in Table 2).

MODELS PREDICTING PERCEIVED MATERNAL DISAPPROVAL

In terms of delaying first sexual intercourse, adolescents’ perceptions of maternal disapproval seemed to be a proximal and important factor. An important question for intervention then is, “What factors help to shape perceived maternal disapproval?” We hypothesized that adolescents who experience high levels of connectedness to their mothers and those whose mothers state strong disapproval and talk with them more frequently about sex would be more likely than their peers to perceive strong maternal disapproval of them having sex. Findings from multivariate main effects models provided partial support for these hypotheses (Table 3). As noted in Table 3, adolescents were more likely to perceive strong maternal disapproval when their mothers reported strong disapproval of adolescent sexual intercourse. In bivariate analyses (not included in Table 3), only moderate associations were found between perceived and stated disapproval: Pearson correlation coefficients ranged from \( r = 0.18 \) to \( r = 0.29 \) for the 4 grade/gender groups. Among younger teens, those who were highly connected to their mothers were more likely to perceive strong maternal disapproval. Regarding the mother-child communication measures, while the frequency of mother-child discussion about birth control, sex, and its negative consequences was not independently associated with teens’ perception of maternal disapproval, mothers who reported recommending a specific birth control method had teenaged children who were less likely to perceive strong maternal disapproval of their having sex. Bivariate associations (not included in Table 3) between recommending a specific birth control method and adolescents’ perceived disapproval were relatively small in magnitude. Pearson correlation coefficients ranged from \( r = -0.07 \) to \( r = -0.11 \) among the 4 grade/gender groups.

Modeling interactions between core independent variables, we found that actual maternal disapproval was related to perceived disapproval only in those mother-
Findings from this study support that the pathways posited by Figure 1 are directly related to timing of first sexual intercourse. Specifically, adolescents' perceptions of strong maternal disapproval of sex may be an important protective factor in delaying the onset of sexual intercourse among 8th- through 11th-grade students. In addition, high levels of mother-child connectedness may have independent effects on delaying first sexual intercourse during early adolescence. For boys, the protective effects of close mother-child relationships seem to extend into middle adolescence. After accounting for adolescents' perceptions of maternal disapproval and the level of warmth and support in the mother-child relationship, mothers' stated disapproval of adolescent sexual activity seems to have minimal independent effects on timing of adolescents' first sexual intercourse.

Findings provide mixed support for model-hypothesized influences on perceived maternal disapproval. As hypothesized, 8th- through 11th-grade virgins are most likely to perceive maternal disapproval of their sexual activity if their mothers actually report strong disapproval and they feel highly connected to their mothers. Contrary to a model-hypothesized relationship, the frequency of mother-child discussions about birth control and sex does not seem to have an independent relationship with teens' perception of maternal disapproval. Finally, mothers who have recommended a specific form of birth control have teenaged children who are less likely to perceive strong maternal disapproval of them having sex.

This study, involving a representative sample of US adolescents, expands the understanding of relationships among parent values, parent-child connectedness, and adolescent sexual debut derived from theory and existing research. Both theory and previous research suggest that teens' reports of parent values and expectations are more predictive of their behavior than are parents' stated expectations, as these reports reflect the cognitions that adolescents act on. Our findings support this notion. After accounting for perceived maternal expectations, mothers' stated disapproval of teen sexual activity had nonsignificant direct effects on timing of first sexual intercourse among adolescents.
In previous studies examining the combined effects of several forms of maternal influence on adolescent virginity status, Jaccard et al.\textsuperscript{13,27} found both perceived maternal disapproval and relationship satisfaction between mother and child to be associated with lower odds of teens aged 14 to 17 years having engaged in sexual intercourse. Several cross-sectional studies\textsuperscript{12,13} found relationships between maternal values and adolescent sexual activity to be strongest among children who noted being close to their mothers. Using longitudinal data to explore a temporal sequence suggested by theory, we found that both perceived maternal disapproval of adolescent sexual activity and high levels of mother-child connectedness, as present at W1, had direct effects on delaying young peoples’ sexual debut during a 10- to 18-month follow-up period. Our findings fail to support the notion that perceived maternal disapproval has strongest effects on delaying first sex among teens who are highly connected to their mothers.

Given the proximal role of adolescents’ perceptions of maternal disapproval in delaying sexual debut, the results of our second analysis identified several factors that may help to shape this perception. Our finding that mothers’ stated disapproval accounted for only a portion of the variation in perceived disapproval is consistent with previous research.\textsuperscript{26,27} In an interaction not previously tested empirically, we found that mothers’ stated disapproval was most closely linked with perceived disapproval among teens who reported being highly connected to their mothers. That maternal disapproval is most likely to be accurately perceived within the context of supportive and caring mother-child relationships may illustrate a mechanism of authoritative parenting, a style in which a parent clearly communicates expectations they have for their child within the context of a warm and responsive relationship.\textsuperscript{28,29} While authoritative parenting has consistently been linked to a variety of positive child development outcomes, relatively few studies have examined associations between components of parenting style and adolescent sexual risk behavior.\textsuperscript{30}

Our mother-child communication findings support a conclusion based on a review of research on relationships between parent-child communication and adolescent sexual behavior. Here, Miller\textsuperscript{6} noted that parent-child communication does not seem to have uniform effects on teens’ sexual attitudes and behaviors. Instead, relationships between parent-child communication and adolescent sexual attitudes and behaviors seem to vary depending on the specific aspects of communication that are considered (ie, frequency, content, or quality of communication). Also fundamental would be the teen’s gender, age, and previous sexual experience, in addition to the parent’s own values and expectations related to sexuality. Our findings suggest that the frequency with which mothers talk to their children about birth control, sex, and its potential negative consequences is not directly linked to adolescents’ perceiving their mothers’ disapproval of their having sexual intercourse. Contrasting this nonsignificant association, we found that a mother’s recommendation of a specific form of birth control was linked to lower levels of perceived maternal disapproval of sexual activity.

This association between mothers’ recommending a birth control method and less perceived maternal disapproval of sex raises a broader question: if mothers recommend a specific form of birth control, do they increase the risk that their teenagers will engage in risky sexual behavior? Findings from several studies address this question. First, while our study found significant associations between mothers’ recommending a method of birth control and adolescents’ perceiving less maternal disapproval of them having sex, the magnitude of these associations were small (in both multivariate and bivariate analyses). In previous research with 14- to 16-year-old Add Health participants who were virgins at W1, M. Shew, MD, MPH (unpublished data, 2000) found no direct relationship between mothers’ recommending a birth control method and earlier sexual debut during the study follow-up period. Thus, recommending a birth control method does not seem to be a key independent risk factor for early sexual debut. Future research must examine the possibility that increasing discussions about birth control is a mother’s response to cues that their teenagers are, or are about to become, sexually active. Jaccard et al.\textsuperscript{12} have examined associations between mothers’ talking about birth control and other adolescent sexual risk behaviors. In analysis of cross-sectional data from Philadelphia teens aged 14 to 17 years, sexually active adolescents reported more frequent discussions with their mothers about birth control than teens who were not sexually active. Among sexually active girls, discussions about birth control were not related to consistency of contraceptive use; among boys, more frequent discussions were associated with greater contraceptive use consistency. Taken together, the evidence suggests that links between mother-child discussions about birth control and adolescent sexual risk behavior are complex; these discussions do not seem to function as a key antecedent of sexual risk behavior.

This study focuses on relationships between several potential forms of maternal influence and timing of adolescents’ first sexual intercourse. Findings must be interpreted in light of several study limitations. First, as previously noted, we were not able to test whether these same factors predict timing of first intercourse among adolescents who became sexually active prior to the time of W1 interviews. Second, our analyses have focused on the outcome of first vaginal intercourse; maternal influences on other sexual behaviors of adolescents may be similar or distinct. Third, this study did not account for influences provided by adolescents’ fathers, romantic partners, siblings, and friends. Thus, questions about pathways and relative potency of maternal influence remain to be answered by future research accounting for other forms of social influence. Finally, these data are from 2 observations made during a 10- to 18-month period. To more fully test the effects of maternal expectations on teen perceptions and behavior, a group of young people and their mothers should be followed throughout time, beginning at a time prior to the children’s sexual debut. Collecting data at 3 points in time from both young people and their mothers would allow for exploration of feedback loops and reciprocal relationships between maternal and adolescent factors.

While future research must more fully explore the influence of fathers and the relative potency of parent in-
fluence on adolescent sexual debut, several recommenda-
tions for the practice of adolescent health care emerge
from existing knowledge. First, assessment of perceived
parent expectations related to sexual activity and level
of connectedness to parents may provide clinicians who
have one-on-one contact with teenagers with important
clues about their young patients’ level of sexual health
risk. Second, health care professionals must step out-
side the boundaries of one-on-one care to identify ways
in which messages can be conveyed to parents that they
make a difference in the lives and health of their adoles-
cent children. Third, health care professionals must find
creative ways to encourage and facilitate positive par-ent
involvement in the lives of their adolescent children.
As high levels of connectedness may delay sexual debut
as well as protect against a variety of other adverse health
outcomes. Finally, we can inform parents that clearly
and consistently conveying their disapproval of adoles-
cent sexual intercourse may help to delay sexual debut;
and that these expectations are most likely to be acted
on when young people feel cared for and connected to
their parents. Ideally, parents should be encouraged to
set clear and age-appropriate expectations for their chil-
dren’s behavior beginning at young ages, prior to their
adolescent years. These expectations may be most ef-
fective if they are conveyed in social environments that
reinforce good parenting practices.

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REFERENCES

1. Moore K, Miller B, Gle D, et al. Adolescent Sex, Contraception, and Childbear-
2. Koyle P, Jensen L, Olsen J, et al. Comparison of sexual behaviors among ado-
elscents having an early, and late first intercourse experience. Youth Soc
3. Seidman S, Mosher W, Aral S. Predictions of high-risk behavior in unmarried
American women: adolescent environment as a risk factor. J Adolesc Health
Guttmacher Institute; 1994.
5. Flay B, Petraitis J. The theory of triadic influence: a new theory of health behav-
or with implications for preventive interventions. In: Albrecht G, ed. Advances
in Medical Sociology Vol 4: A Reconsideration of Health Behavior Change Mod-
6. Jessar R. Risk behavior in adolescence: a psychosocial framework for under-
Pregnancy; 1997.
8. Resnick M, Bearman P, Blum R, et al. Protecting adolescents from harm: find-
ings from the National Longitudinal Study on Adolescent Health. JAMA
1997;276:823-832.
Pregnancy; 1998.
10. Bearman P, Bruckner H. Peer potential: making the most of how teens influence
each other. In: Peer Effects on Adolescent Sexual Debut and Pregnancy: An Analy-
sis of a National Survey of Adolescent Girls. Washington, DC: National Cam-
paign to Prevent Teen Pregnancy; 1999.
11. Inazu J, Fox G. Maternal influence on the sexual behavior of teenage daughters:
12. Weinstein M, Thornton A. Mother-child relations and adolescent sexual atti-
13. Jaccard J, Dittus P, Gordon V. Maternal correlates of adolescent sexual and con-
14. Luster T, Small S. Factors associated with sexual risk taking behaviors among
15. Furstenberg F, Moore K, Peterson J. Sex education and sexual experience among
16. Leland N, Barth R. Characteristics of adolescents who have attempted to avoid
HIV and who have communicated with parents about sex. J Adolesc Res. 1999;
8:58-76.
17. Casper L. Does family interaction prevent adolescent pregnancy? Fam Plann
18. Kastner L. Ecological factors predicting adolescent contraceptive use: implica-
19. Widmer E. Influence of older siblings on initiation of sexual intercourse. J Mar-
riage Fam. 1979;39:926-938.
20. Mueks G, Miller N. Ten years research on the false-consensus effect: an empir-
21. Bearman P, Jones J, Udry JR. The national longitudinal study of adolescent health:
research design. Available at: http://www.cpc.unc.edu/projects/addhealth. Ac-
cessed April 1997.
Measures from the National Longitudinal Study of Adolescent Health. Health
In press.
behavior, drug use, and violence: increased reporting with computer survey tech-
1997.
25. Struyker S. Relationships of married offspring and parents: a test of Mead’s theory.
26. Acock A, Bengtson V. Socialization and attribution processes: actual versus per-
27. Jaccard J, Dittus P, Gordon V. Parent-adolescent congruency in reports of ado-
lescent sexual behavior and in communications about sexual behavior. Child Dev.
30. Feldman S, Brown N. Family influences on adolescent male sexuality: the medi-
31. Flay R, Rinehart PM. Reducing the Risk: Connections That Make a Difference
in the Lives of Youth. Minneapolis: Div of General Pediatrics and Adolescent Health,
University of Minnesota, 1997.
32. Baumgardt D. Effective parenting during the early adolescent transition. In: Cowan

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