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Parent-child Relationships, Parental Attitudes towards Sex, and Birth Outcomes among Adolescents

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Abstract

Study objective—To examine how parent-child relationships, parental control, and parental attitudes towards sex were related to pregnancy outcomes among adolescent mothers.

Design—Prospective cohort study. Parental report of relationship satisfaction, disapproval of adolescent having sex, discussion around sexual health, and sexual communication attitudes, and adolescent report of relationship satisfaction, parental control, and parental disapproval of sex were examined as predictors of self-reported birth outcomes. Weighted multivariable linear regression models were run incorporating interactions by race.

Setting—United States

Participants—632 females who participated in Waves I and IV of the National Longitudinal Study of Adolescent Health (Add Health), a nationally-representative sample of students enrolled in grades 7–12 in 1994–95 and followed up in 2007–2008

Main Outcome Measures—birthweight and gestational age

Results—For Black adolescents, better parent-child relationship was associated with higher birthweight (0.14 kg, $p < 0.05$) and gestational age (0.75 weeks, $p < 0.01$), while higher parental disapproval of having sex (adjusted beta 0.15 kg, $p < 0.05$) were associated with higher birthweight. For non-Black adolescents, a moderate amount of discussion of birth control was associated with higher birthweight (0.19 kg, $p < 0.01$ and lower child-perceived parental disapproval of having sex was associated with higher birthweight (0.08 kg, $p < 0.05$) and gestational age (0.37 weeks, $p < 0.05$). Higher parental control was associated with a reduced likelihood of smoking during pregnancy and a greater likelihood of early prenatal care.

Conclusion—Parent-child relationships and attitudes about sex affect outcomes of pregnant adolescents.

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Keywords

Adolescents; birthweight; gestational age; race; communication

Giving birth during adolescence (before age 20) is associated with a number of pregnancy complications, including infant mortality,¹ preterm birth, and low birthweight.² Little is known about predictors of birth outcomes within the group of adolescents who do get pregnant, beyond some basic predictors such as age, body mass index (BMI), nulliparity, and smoking.^{3, 4} However, family influences are likely to be important. For the most part, adolescents who get pregnant still live with their parents, and are likely to be dependent on them for financial and health care resources, as well as emotional support.⁵ Although to our knowledge, no research has examined the associations between parent-adolescent dynamics and birth outcomes, some relationships can be hypothesized based on general research in adolescent and reproductive health.

A positive relationship with parents is a potent source of social support, which is associated with better birth outcomes generally.⁶ Positive parent-child relationships are protective against risk behaviors in adolescents.⁷ Parental closeness has been associated with a reduced likelihood of adolescents' getting pregnant, ever having sex, and having an early sexual debut,⁸ as well as reduced initiation of smoking,⁹ alcohol use,¹⁰ and substance use.¹¹ Family conflict and reduced involvement is associated with adolescent problem behaviors, including high-risk sex and substance use.¹²

Parenting practices, particularly parental monitoring, are also associated with adolescent health.⁷ Adolescents who report a high degree of parental monitoring are less likely to have an early sexual debut or get a sexually transmitted infection,¹³ and more likely to use contraception.⁸ Permissive (high support/low rules) parenting practices are associated with health risks among adolescents,¹⁴ and a permissive parent may not provide the adolescent with a good grasp of the realities of pregnancy and childrearing.^{15, 16}

Parents' attitudes towards pregnancy and sex could influence the health of the pregnant adolescent via pathways that include access to care, health behaviors, stress, and social support. Open communication around sexual issues may encourage early addressing of potential pregnancy risk factors, such as sexually transmitted infections, bacterial vaginosis, or urinary tract infections,¹⁷ and improve preconception health.¹⁸ An adolescent who knows her parents disapprove of her having sex may be less likely to tell them in a timely fashion that she is pregnant, and thus may receive prenatal care later in the pregnancy.

Embarrassment and not wanting people to know about the pregnancy are associated with later initiation of prenatal care.¹⁹ Other barriers to prenatal care, such as lack of information about where to go and lack of transportation^{19, 20} are likely to be more easily addressed when an adolescent's parents are involved. Parents and prenatal care providers can provide support for positive health behaviors such as nutrition, sleep habits, vitamin use, and avoiding substance use, and that support can be provided for a longer period of time if the pregnancy is recognized and accepted early on. Alternately, an adolescent who feels her parents disapprove of her having sex or who perceives a stigma²¹ may react with anxiety,

denial,²² or panic, not conducive to healthy pregnancy.²³ Parental communication around sexuality may also be a sign of general closeness and positive relationships.²⁴

The purpose of the present paper is to examine how parent-child relationships, parenting practices, and parental attitudes towards sex and communication around sex predict birth outcomes among pregnant adolescents. We hypothesized that 1. Worse relationships between parent and child would be associated with worse birth outcomes (lower birthweight and gestational age); 2. Higher parental control would be associated with better birth outcomes, and 3. More disapproving attitudes towards sex and worse communication would be associated with worse birth outcomes. Birth outcomes in Black women and adolescents are known to be worse than other racial/ethnic groups,²⁵ and the context of adolescent pregnancy differs by cultural group,²⁶ so we also examined differences by race.

MATERIALS AND METHODS

We used data from Waves I and IV of the Add Health contractual dataset. Add Health is a prospective cohort study of a nationally-representative sample of young persons enrolled in grades 7–12 in the 1994–95 school year (Wave I).²⁷ The study conducted follow-up interviews in 1996 (Wave II), 2001 (Wave III), and 2007–08 (Wave IV). Add Health used a multistage probability clustered sampling design to obtain its original Wave I sample. The first stage of sampling was a stratified, random sample of all public and private high schools in the U.S. A middle school whose students largely attended the selected high school was also recruited from each participating community. In-school surveys were attempted with all students attending participating schools; a total of 90,118 were completed. In the second Wave I sampling stage, a sample of 20,745 adolescents was interviewed by in-depth in-home interviews. A parent, preferably the resident mother, of each adolescent respondent interviewed in Wave I was asked to complete an interviewer-assisted questionnaire (n=17,669, 85% response rate). At Wave IV, all respondents to the Wave I in-home interview were eligible for re-interview. A total of 15,701 interviews were conducted at Wave IV (80.3% response rate). Sampling weights adjusted for both unequal probabilities of selection into the original sample and for loss to follow-up.

Our focus was on predictors of adolescent birth outcomes, so several limitations were made to the dataset. First, we limited to females who participated in Wave IV, as that was the only Wave that had complete data on teen births, and with valid sampling weights. Next, we limited to women whose first pregnancies occurred after Wave I to ensure the temporal ordering of predictors and outcomes. Finally, we limited to those who gave birth to a singleton livebirth during their adolescence. This left us with an analysis sample of 938 teen singleton livebirths, 773 of whom had data from the parental interview. Of the 773 interviews, 124 were conducted with someone other than the residential, biological mother. Results omitting these 124 were similar to presented results. Final multivariable models included 632 women with complete data on exposure, outcome, and covariates. There were no statistically significant differences between those with complete data and those with missing data with respect to predictors, covariates, or outcomes.

Measures

Outcomes—At Wave IV females were asked about previous pregnancies and their outcomes. If they indicated they had given birth, they were asked “How much did the baby weigh at birth?”, “Was [baby’s name] born before or after [his/her] due date?” and then “How many weeks or days early/late was [baby’s name] born?” This was subtracted from 40 weeks to calculate gestational age. Birthweight was examined in kilograms and gestational age was examined in weeks.

Predictors

Parental report (wave 1) – Parent-child relationship: All parental reports are self-report of the person with whom the interview was conducted.

Overall parent-child relationship was measured by asking the parent how much s/he agreed or disagreed with the question “Overall, you are satisfied with your relationship with [adolescent’s NAME]” on a 1 to 5 scale. We reverse coded the responses so that higher score represents greater satisfaction.

Parental report (wave 1) – Parental attitudes and communication around sex: *Parental disapproval of child having sex* was measured by parent’s reporting how much they agree or disagree with the statement “You disapprove of [adolescent’s name] having sexual intercourse at this time in [his/her] life”,²⁸ on a 5-point scale from strongly agree (1) to strongly disagree (5).

Sexual communication attitudes were measured by asking the parent how much they agree or disagree with five items, e.g., “It would embarrass [adolescent’s name] to talk to you about sex and birth control”.²⁸ Response format was a 5-point scale of agreement (ranging from strongly agree to strongly disagree). Cronbach’s alpha coefficient for these five items was 0.78. Responses to these items were summed (median=21; higher scores indicating less embarrassment in sex communication).

Discussion of sex costs was measured by asking the parent about the amount of discussion with the adolescent about potential negative consequences of sexual activity, including “the negative or bad things that would happen if [he got someone/ she got] pregnant”, “the dangers of getting a sexually transmitted disease”, “the negative or bad impact on [his/ her] social life because [he/ she] would lose the respect of others” and “the moral issues of not having sexual intercourse”²⁸. Responses were rated on a 4-point scale (1= not at all to 4= a great deal). Cronbach’s alpha coefficient for these four items was 0.87. Responses to these items were summed (median=13; higher scores indicating more discussion of sex costs).

Discussion about sex was measured by asking the parent how much s/he talked to the adolescent about sex. Responses were rated on a 4-point scale (1= not at all to 4= a great deal).

Discussion about birth control was measured by asking the parent how much s/he talked to the adolescent about birth control. Responses were rated on a 4-point scale. We found a non-

linear relationship between this variable and birth outcomes and thus we re-categorized the responses into three groups: not at all/some; a moderate amount and a great deal.

Adolescent report (Wave 1) – Parent-child relationship: *Child's overall perception of relationship with mother* was measured by asking adolescents how much they agree or disagree with the question "Overall, you are satisfied with your relationship with your mother" on a 1 to 5 scale. We reverse coded the responses so that higher score represents greater satisfaction.

Adolescent report (Wave 1) – Parental control: *Parental control* was measured by asking adolescents whether parents let them make their own decisions about a list of seven items, such as the food respondents eat, the clothes they wear, their curfew, and the shows that they watch on television.^{28, 29} Cronbach's alpha coefficient for these seven items was 0.61. Responses were reverse coded and summed (higher scores indicating higher parental control).

Adolescent report (Wave 1) – Parental attitudes and communication around sex: *Parental disapproval perceived by children* was measured by a question asked to children about their mother's attitude: 1) how would she feel about your having sex at this time in your life? Response format was a 5-point scale of disapproval (ranging from strongly disapprove to strongly approve). The polychoric correlation between parental disapproval perceived by children and parent-reported disapproval of child having sex was 0.32.

Confounders—We drew upon our previous analysis of predictors of birth outcomes in this cohort to determine confounders.³⁰ This analysis indicated effects of self-defined race, age at pregnancy, age at Wave I, parental education, and BMI. Race was defined as Black/non-Black as this is the important divide in predicting birth outcomes, and our previous work had also confirmed interactions between these groups.³⁰ All such variables were measured at Wave I and modeled in the form listed in table 1. To determine whether relationships with sexual communication variables were due to the parent's perception of the child's behavior, we also ran models adjusting for whether the parent believed the child had already had sex at Wave I. Finally, we examined whether the predictors were associated with potential mediators including smoking during pregnancy and prenatal care.

Statistical Analyses

All analyses were conducted in SAS 9.2 (SAS Institute, Cary, North Carolina) using survey procedures, which apply population weights and adjust standard errors for non-independence of adolescents sampled from the same schools. Bivariate relationships between parenting variables and birth outcomes (birthweight and gestational age) were examined using linear regression coefficients. Multivariable linear regression models were run adjusting for confounders. Interactions with race were tested, and due to the number of significant interactions (p-values for these interactions included in tables), data are presented stratified on racial groups.

The Add Health Study was approved by the Institutional Review Board of the University of North Carolina at Chapel Hill, and this secondary analysis was deemed exempt by the Institutional Review Board of Tulane University.

RESULTS

A description of the study population is given in Table 1. Black adolescent mothers had lower birthweight compared to non-Black adolescent mothers. Parents of Black adolescents were more likely to report higher levels of discussion about sex and sex costs than parents of non-Black adolescents.

Parent-child relationship

A better parent-child relationship was associated with higher birthweight among Black adolescents. (Table 2) In bivariate analysis, better parent-child relationship higher gestational age among Black and non-Black adolescents, respectively (data not shown). In multivariable analysis (Table 3), among Black adolescents, a better relationship with mother was also associated with a longer gestation.

Parental control

There were no significant associations with parental control and either birthweight or gestational age for either group (Tables 2 and 3).

Parental attitudes and communication around sex

For Black adolescents, higher parental disapproval reported by children was associated with higher birthweight (table 2), while a moderate amount of discussion about birth control and lower parental disapproval perceived by children were associated with higher birthweight among non-Black adolescents. Among non-Black adolescents, higher parental disapproval of the child's sexual activity was associated with longer gestation (table 3), while higher child-perceived parental disapproval was associated with shorter gestation.

Adjustment for whether the parent believed the child had had sex (measured before the pregnancy) did not change any of the associations.

Potential mediators were also examined (Tables S1 and S2). A better adolescent-perceived relationship with mother was associated with a reduced likelihood of smoking among Black adolescents, but a higher likelihood of smoking among non-Blacks. Higher parental control was associated with lower likelihood of smoking among non-Black adolescents, and a greater likelihood of entering prenatal care early among Black adolescents. Among Black girls, those who reported more discussion around sex had a higher likelihood of smoking during pregnancy, while higher adolescent-perceived parental disapproval of sex was associated with a lower risk of smoking among non-Blacks ($p<0.05$).

DISCUSSION

We examined whether the parent-child relationship, parental control, and parental communication about sex and attitudes towards sex pre-pregnancy influenced adolescent

females' birth outcomes, hypothesizing that these would relate to positive health behaviors, the perceived stigma of pregnancy, and social support. Better parent-child relationship was associated with better outcomes, though not in all analyses. A previous analysis of Add Health data did not find that closeness with parents was associated with beliefs about the consequences of pregnancy for teen girls.³¹ Although greater parental permissiveness has been associated with risky adolescent behaviors in some studies,³² we did not find associations between parental control and birth outcomes. Studies indicate a stronger association with monitoring/control than parental support on sexual activity.^{41, 42}

We found higher parent-reported disapproval of sex associated with better birth outcomes, but higher child-reported disapproval of sex associated with worse outcomes. This is contradictory but perhaps not inexplicable: pregnant adolescents who perceive their parent as being uncomfortable and disapproving of sex may hide their pregnancy for longer, while parents who are more approving and accepting of teenage sexual activity may be generally laissez-faire. Both circumstances might not provide the optimal structure for a healthy pregnancy with respect to, for instance, nutrition, sleep, or prenatal care. This interpretation is supported by previous studies that have found that parental sexual communication is associated with an increased likelihood of accessing reproductive health care, with the exception of an abstinence-only message, which is associated with a reduced likelihood of accessing care.¹⁷ Also, while greater perceived maternal disapproval of sexual activity was associated with reduced likelihood of initiating sexual activity (in Add Health), adolescent-perceived disapproval was a stronger predictor than maternal-reported disapproval.^{33, 34} Similarly, we found the best outcomes among those who reported a moderate amount of discussion around birth control. Most studies of influences of parental communication on teenage sexuality and pregnancy have focused on risk behaviors,^{28, 35} rather than the outcome after a pregnancy occurs. Some studies have found that greater sexual communication is associated with a reduced likelihood of pregnancy,³⁶ while others have found no such association.³⁷ Generally, parental values, particularly disapproval of sexual activity, are associated with reduced likelihood of sexual experience, particularly among White youth.³⁸

There was limited support for our hypothesized mechanisms. Both smoking during pregnancy and later prenatal care were associated with lower parental control in some groups, and lower parental child-perceived parental disapproval of child having sex was associated with smoking, which might indicate that more strict parenting practices are associated with better health behaviors among pregnant teens. On the other hand, better parental relationships were associated with better health behaviors only among Black girls, and more discussion about sex, which we hypothesized would indicate closeness and healthier attitudes towards sexuality, was associated with a greater likelihood of smoking. These relationships can only be suggestive of broader patterns, as our previous analysis had not indicated a relationship between smoking, prenatal care, and birth outcomes among adolescents in these data.³⁰ Other mechanisms cannot be directly measured in this study; for instance, worry about parents' reaction might be associated with stress, which has been associated with adverse birth outcomes in a number of studies.²³

Overall, we found several interactions between race and these predictors. Better child-perceived relationship with mother was associated with a reduced likelihood of smoking in Blacks, but an increased risk in non-Blacks, for instance. Other studies also indicate family structure is differentially related to aspects of adolescent well-being according to race/ethnicity. For example, living in a single parent family is more strongly related to early sexual initiation³⁹ and to educational attainment and psychological well-being among Whites compared to Blacks.⁴⁰ In addition, there is some evidence for weaker social norms against teenage pregnancy among Blacks,⁴¹ and teenage pregnancy may constitute an adaptive strategy under some circumstances.⁴² Our findings emphasize the importance of considering cultural context when examining the influences of family relationships on adolescent pregnancy.

Strengths of the study include the prospective data collection and the representative sample. Weaknesses include limited data on some potential covariates of interest, such as whether the adolescent's mother was herself a teenage parent, and fairly small sample size. Also, the birth outcomes were self-reported, and although mother's report of these outcomes is generally reliable,⁴³ this is a potential source of error. Studies have found that maternal age does not affect accuracy of reporting,⁴³ but ethnicity and socioeconomic status have been found to predict errors.⁴⁴

Understanding modifiable risk and protective factors for birth outcomes among adolescent mothers is important to prevent the increased mortality and disabilities found in children born preterm and low birthweight. In addition, future studies on the effects of stress and stigma on pregnancy outcomes may find these results useful. Research should include investigation of how the parental relationships change or stay the same after an adolescent becomes pregnant, and how the trajectory of parental relationship qualities affects birth outcomes. Further study is also warranted as to whether parental relationships affect the quality and continuity of prenatal care accessed by adolescents, and in turn whether these aspects of prenatal care (more than just timing of initiation) impact adolescents' birth outcomes.

Although this research is far from the last word on the subject, a firmer understanding of how parenting practices and communication around sex affects health would help guide parents, pediatricians, and adolescent medicine specialists. Parents may fear that discussion of sex or birth control will lead to worse health for their adolescent, or believe that permissiveness will improve their child's health. Providers can help and guide parents to hold these conversations with their children, and encourage adolescents to discuss these issues with their parents.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Singleton livebirths from women whose first pregnancy occurred after Wave 1 and before age 20, and with parental interview in the Add Health Study, 1996–2007 (N=632).^a

Table 1

	Overall sample (n=632)	Black (n=194)	Non-black (n= 438)	P-value
Birth weight	3.25(0.03)	3.08(0.06)	3.29(0.03)	0.004
Gestational age	39.33(0.11)	39.07(0.28)	39.40(0.11)	0.27
Baseline age	15.38(0.14)	15.38(0.24)	15.38(0.15)	0.99
Age at pregnancy	17.83(0.08)	17.79(0.09)	17.84(0.10)	0.73
Baseline BMI category (n [%])				0.30
Underweight	75(14.35)	18(10.3)	57(15.50)	
Normal weight	428(68.33)	128(66.88)	300(68.74)	
Over weight	95(11.89)	36(16.25)	59(10.66)	
Obese	34(5.43)	12(6.57)	22(5.11)	
Parental education (n [%])				0.95
high school	497(80.73)	163(80.99)	334(80.66)	
less than high school	135(19.27)	31(19.01)	104(19.34)	
<i>Parent-child relationship</i>				
Overall parent-child relationship reported by parents	4.12(0.06)	4.14(0.13)	4.11(0.06)	0.83
Overall relationship with mother reported by children	4.19(0.05)	4.21(0.08)	4.19(0.06)	0.82
<i>Parental control</i>				
Parental control	2.10(0.11)	2.12(0.22)	2.09(0.11)	0.90
<i>Parents' attitude and communication around sex</i>				
Parental disapproval of child having sex	4.22(0.07)	4.19(0.12)	4.23(0.08)	0.74
Maternal disapproval perceived by children	4.35(0.05)	4.35(0.09)	4.35(0.06)	1.00
Attitudes (degree of comfort) about communication about sex	21.32(0.18)	21.54(0.24)	21.26(0.22)	0.42
Discussion of sex costs	12.95(0.17)	13.82(0.28)	12.71(0.20)	0.001
Discussion about sex	3.28(0.05)	3.48(0.07)	3.22(0.06)	0.01
Discussion about birth control (n [%])				0.11
Not at all/somewhat	189(29.03)	45(18.86)	144(31.89)	
A moderate amount	185(28.74)	55(34.55)	130(27.10)	
A great deal				

^d Except where otherwise noted, figures presented are mean with standard errors

Multivariable associations between birthweight and parent relationships, parenting style, and attitudes towards sex among adolescents, by race, in the Add Health Study, 1996–2007 (N=632).

Table 2

	Black (n=194) β^a (SE)	Non-black (n=438) β (SE)
<i>Parent-child relationship</i>		
Better overall parent-child relationship reported by parents	0.14(0.05) *	-0.06(0.03)
Better overall relationship with mother reported by children	0.00(0.06)	0.01(0.04)
<i>Parental control</i>		
Higher parental control	0.05(0.04)	-0.03(0.03)
<i>Parents' attitude and communication around sex</i>		
Parental disapproval of child having sex	0.15(0.06) *	0.03(0.03)
Maternal disapproval perceived by children	-0.01(0.07)	-0.08(0.04) *
Attitude (degree of comfort) about communication about sex	0.02(0.02)	-0.01(0.01)
Discussion of sex costs	0.02(0.03)	-0.01(0.01)
Discussion about sex	-0.11(0.11)	0.03(0.06)
Discussion about birth control		
Not at all/somewhat	-0.06(0.16)	-0.08(0.12)
A moderate amount	-0.09(0.12)	0.19(0.10)
A great deal	Ref	Ref **
	<i>P for interaction: <0.01</i>	

* p<0.05;

** p<0.01

^a Increase in birthweight in kilograms associated with a one-unit increase in the measure. Adjusted for baseline age, age at pregnancy, BMI, and parental education.

Table 3

Multivariable associations between gestational age and parent-child relationships, parenting style, and attitudes towards sex among adolescents, by race, in the Add Health Study, 1996–2007 (N=632).

	Black (n=194) β^a (SE)	Non-black (n=438) β (SE)
<i>Parent-child relationship</i>		
Better parent-child relationship reported by parents	0.75(0.23) **	-0.13(0.14)
Better relationship with mother reported by children	-0.20(0.27)	-0.13(0.12)
<i>Parental control</i>		
Higher parental control	-0.04(0.09)	-0.08(0.08)
<i>Parents' attitude and communication around sex</i>		
Parental disapproval of child having sex	0.57(0.33)	0.27(0.13) *
Maternal disapproval perceived by children	0.15(0.28)	-0.37(0.15) *
Attitude (degree of comfort) about communication about sex	-0.04(0.07)	-0.01(0.04)
Discussion of sex costs	0.04(0.15)	-0.06(0.05)
Discussion about sex	-0.63(0.62)	-0.12(0.19)
Discussion about birth control		
Not at all/somewhat	-0.42(0.89)	-0.54(0.36)
A moderate amount	-0.57(0.75)	0.03(0.34)
A great deal	Ref	Ref
	<i>P for interaction: <0.01</i>	

* p< 0.05;

** p< 0.01

^a Increase in gestational age in weeks associated with a one-unit increase in the measure. Adjusted for baseline age, age at pregnancy, BMI, and parental education.