Parenting Strategies and Teenage Pregnancy

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ABSTRACT

Purpose: This study examines how three critical parenting strategies – parental warmth and control, parental communication and expectations, and role modeling – are associated with teenage pregnancy among both boys and girls.

Methods: Using data from 10,932 youth who participated in Waves I and IV of the National Longitudinal Study of Adolescent Health, we estimated logit models to evaluate the influences of these three parenting strategies on the likelihood of teenage pregnancy. Models were stratified by gender and adjusted for demographic, family, school, and neighborhood characteristics.

Results: Parenting strategies differed by the gender of the child; however, the influence of parenting strategies on teenage pregnancy was similar for male and female youth. In contrast to authoritative parenting, which combines high levels of parental support with parental control, authoritarian and disengaged parenting styles were associated with a higher odds of pregnancy by age 19 among both females and males. Parental role modeling through marriage in adulthood was associated with a lower risk of teen pregnancy among females but not males. In addition, parental role modeling through religious service attendance was associated with lower odds of teenage pregnancy but only among teens with authoritative parents.

Conclusions: Parents who can effectively couple warmth and support with discipline and positive role modeling can reduce their teenage children's risk of pregnancy. Prevention programs that assist parents with developing authoritative parenting skills and positive role modeling for their children may help to reduce teenage pregnancy rates.

Key Words: teen pregnancy, gender, parenting styles, communication, family

According to data released in 2010, teenage pregnancy rates for females ages 15-19 rose nationally from 69.5 per 1000 in 2005 to 71.5 per 1000 females aged 15-19 in 2006 [1]. Compared to other race-ethnic groups, teen pregnancy rates were particularly high for Hispanic [126.6 per 1,000] and African-American [126.3 per 1,000] girls. Though less frequently collected, 2002 data on teen parenting among boys indicates that at least 20 per 1000 males ages 15-19 report being a father [2]. African-American males had the highest rates of teen parenthood, followed by Hispanics and non-Hispanic Whites [2]. Parents are central socializing agents. Therefore, to promote a reduction in teenage pregnancy rates, health professionals and policy makers must better understand the ways in which parents influence teenage pregnancy.

Parents can potentially influence their teens' sexual behavior by providing warmth and support, appropriately controlling the amount of autonomy their teens have, regularly communicating with teens, and instilling values through both their words (i.e., setting expectations) and actions (i.e., role modeling) [3, 4]. Though previous studies have demonstrated their individual importance [5-7], some researchers suggest that parenting strategies may be more influential if they are delivered within the context of a parenting style characterized by warmth and support [8, 9]. Moreover, few studies have considered the influence of parenting strategies on teen pregnancy outcomes among boys. The majority has focused only on adolescent females. Thus whether and how the influence of parenting strategies on teenage pregnancy may vary for males and females is unclear.

Using data from the National Longitudinal Study of Adolescent Health (Add Health), this study evaluates how three key aspects of parenting -- parental support and control, communication and expectations, and role modeling – influence teen pregnancy and whether these influences differ by gender. We hypothesize that each parenting strategy separately

influences teen pregnancy and examine how the effects of communication, expectations, and role modeling are modified by different levels of parental support and control. Beyond direct interaction, parents influence children's development through the family and neighborhood environments that they provide for their children. Thus, we control for family structure, parents' education, and school and neighborhood contexts in our analyses. Given potential variations in teenage pregnancy by race-ethnicity and nativity [1, 10], we also use the highly detailed race-ethnicity and nativity data in Add Health to control for both in our analysis. Our analysis of a diverse and nationally representative sample of youth can inform teenage pregnancy prevention efforts, particularly those which involve parents.

METHODS

Data

We analyzed data from in-home questionnaires with parents and youth, and both school and neighborhood contextual data from Waves I and IV of Add Health, a nationally representative survey of US adolescents in 7^{th}-12^{th} grades in 1994-1995. At Wave I, 18,924 youth and 16,156 mothers or other household heads completed interviewer-administered surveys as part of the national probability (i.e., weighted) sample. At the Wave IV (2008) interviews, 14,800 (78%) of eligible Wave I in-home respondents with valid sampling weights were re-interviewed. Respondents, ages 24 to 32 years old at Wave IV, provided a detailed pregnancy history [11].

Given our interest in the influence of parenting strategies on teen pregnancy, Wave IV participants who were missing parent interviews at Wave I (n=1,948), information on the occurrence of their first pregnancy (n=146), data on parenting styles (n=142), or data on other independent variables of interest (n=1,448) were excluded from this analysis. Additionally, to

examine how parenting practices and teen pregnancy differ by immigrant generation, 184 youth of Native American heritage were excluded. The final analytic sample included 10,932 youth, 5,745 females and 5,187 males. Analyses of missing data (available upon request) suggest that biases from these exclusions are minimal.

Measures

Our dependent variable – teenage pregnancy – was defined utilizing comprehensive pregnancy data from Wave IV. All other variables were defined utilizing data from either the Wave I adolescent or parent interview. When relevant, Cronbach alphas reported here are for our Add Health sample.

Teenage pregnancy. Using self-reported data on due dates for current pregnancies, dates of completed pregnancies, and the birth dates for live births, we identified females who reported ever being pregnant and males who reported ever causing a pregnancy before age 19. Depending on the pregnancy outcome (e.g., abortion, miscarriage, or live birth), we subtracted 2-9 months from these end dates to estimate age at first pregnancy. We then created a dichotomous variable to indicate whether the pregnancy occurred when the respondent was less than 19 years old (=1).

Parenting style. We identified four parenting styles -- authoritarian, authoritative, permissive, and disengaged – using answers to sets of questions on both parental support and control [12, 13]. To measure parental support, we reverse coded and averaged adolescents' responses to five Likert items (1=strongly disagree to 5=strongly agree) on both maternal and paternal closeness, personal warmth, caring, relationship satisfaction, and satisfaction with parent-child communication (α=0.85). To measure parental control, we reverse coded and averaged responses to six dichotomous items asking adolescents whether their parents let them make their own decisions regarding friendships, clothing, amount and type of television shows

watched, bedtime, and food choices (α=0.64). An authoritative parenting style was defined by high parental support (score> 4) and control (score> 0.2); low parental support and monitoring defined disengaged parenting; high support and low monitoring indicated permissive parenting; and low support with high monitoring defined authoritarian parenting [14].

Communication and expectations. We considered three aspects of communication -- communication about sex, general communication, and parental educational expectations. Our index on communication about sex ranged from 1 (not at all) to 4 (a great deal) and reflected an average of five items querying parents about how much they talked with their children about sex, birth control, pregnancy, sexually transmitted infections, and social and moral issues around sex (α=0.90) [15]. Our general communication index ranged from 0 to 4 and reflected adolescents' responses to five items on whether (0=no or 1=yes) they talked with their mother or father in the past four weeks about dating, personal problems, school or grades, and other aspects of school (α=0.56) [16]. Parents' educational expectations for their children were assessed by a 3-point Likert question on how disappointed the parent who responded to the parent questionnaire (in most cases this was the mother) would be if their child did not graduate from college. Responses were reverse coded so higher scores indicated higher educational expectations.

Role modeling. We captured role modeling utilizing two measures from parent interviews. Parental religious service attendance was assessed on a four-point scale with a 4 indicating weekly attendance. Since data on parents' age at first pregnancy were not available, parents' age at first marriage was used as a proxy and coded as 0 (never married), 1 (early marriage before age 19), or 2 (marriage at age 19 or older).

Covariates. To control for confounding we included other family, demographic, school, and neighborhood variables. Families were categorized as two-parent biological, two-parent step,

single parent, or other (i.e., foster families, adolescents in group homes, and emancipated minors). Based on self-reported data, we defined three parental educational categories reflecting information about the parent with the higher education level-- less than high school, high school diploma or GED, and some post-high school education.

Demographic controls included gender, age at menarche for females, race-ethnicity, immigrant generation, and English language proficiency. Age at menarche was collected at Waves I, II, and III and used as an indicator of pubertal development among females. Because Add Health is a school-based sample and pregnant teens age 16 and older may have chosen to drop out of school before data collection began, we also control for age of entry into the Add Health study with a categorical variable coded as ages 12-13, 14-15, 16-17 (referent), and 18-20.

Race-ethnicity was defined using respondents' self-reported race-ethnicities (i.e., White, Black, Hispanic or Asian) in combination with the country of origin for immigrant children or the country of parents' origin for children of immigrants. Using data on adolescents' and parents' place of birth, youth were also categorized as first (foreign-born to foreign-born parents), second (US-born to foreign-born parents), or third-plus (US-born to US-born parents) generation immigrants. Due to some small cell sizes, the first and second generation children of immigrants were combined into a single category for analyses reported here. By combining race-ethnicity and immigrant generation, we then identified eight demographic groups with third-plus generation whites as the reference group. Further details on the classification of race-ethnicity and immigrant generation have been described elsewhere [17].

To measure English language ability, we used age-standardized scores on the Add Health Picture Vocabulary test (AHPVT). Scores were rescaled by dividing by ten and respondents with missing data were retained in our models using mean substitution and an indicator variable.

School and neighborhood level controls included respondents' school attachment, peer educational expectations, proportion of co-ethnics (same racial or ethnic group) and proportion living under the Federal Poverty Level in the neighborhood, and region of the US. School attachment was assessed by asking youth how close they feel to people at school, how much they feel a part of school, and how happy they are at their school. We reverse coded and averaged items (range 1 to 5) as long as data for at least 2 items were not missing (α=0.78); higher scores reflected higher attachment to school [18]. Peer educational expectations were the aggregated responses about chances of graduating from college from the in-school questionnaire for all students in a given school [17]. The proportion of co-ethnics and the proportion living under the Federal Poverty level (1999) were derived from 1990 census-tract data linked to youth's address. The region in which teens resided included the Northeast (referent), South, Midwest, and West.

Analysis

Given our interest in gender differences, we stratified all analyses by gender. We then evaluated gender differences in means and proportions in parenting strategies and other covariates. Next, for each gender, we estimated both unadjusted and adjusted logit models on the relationship between parenting strategies reported at Wave I and teen pregnancy reported at Wave IV. Unadjusted and adjusted odds ratios are also reported by gender for all other covariates in our models.

To test for gender differences in the effects of parenting strategies and all other covariates, we ran a fully interacted model with interaction terms for each variable with gender (available upon request). Though we found no significant gender interactions at a .05 level, we present all odds ratios and 95% confidence intervals stratified by gender.

Finally, in separate models, we tested for interactions between parenting styles and each aspect of the other three parenting strategies – communication, expectations, and role modeling. For parsimony, we focus on comparing the most beneficial parenting style -- authoritative -- with authoritarian, disengaged, and permissive styles. We weighted all analyses and adjusted standard errors for school-level clustering using Stata software [19, 20]. All research was approved by the Committee on Human Research Ethics at the University of North Carolina, Chapel Hill.

RESULTS

Sample characteristics

Within our sample, 1,473 youth (13.2%) reported a pregnancy prior to their 19th birthday (Table 1). More females reported a teen pregnancy than males (18.5% vs. 8.2%). The majority of teen pregnancies reported ended in a live birth (69%), 18% resulted in an abortion, and the remaining 13% ended by miscarriage or still birth (data not shown). At Wave I, respondents' mean age was 15.8 years and 316 had already had a pregnancy. Over half came from two parent households and had parents who had some college education. Nearly 70% of the sample was White, 15% African American, 12% Hispanic, and 3% Asian. On average, males were slightly older, had better educated parents, and had higher English language proficiency.

Parenting styles and strategies

A permissive parenting style was most common (50%, Table 1). Authoritative parenting was more common for male teens whereas disengaged or authoritarian parenting was more common for female teens. Parents also communicated more with female teens and set higher educational expectations for them. Role modeling behaviors, parental religious service attendance and age at first marriage, did not differ by gender.

Influence of parenting strategies on teenage pregnancy

Unadjusted odds ratios showed that female teens whose parents utilized an authoritarian (OR=1.77, 95% CI: 1.24-2.52) or disengaged parenting style (OR=1.41, 95% CI: 1.08-1.83), who communicated with their teens about sex (OR=1.56, 95% CI: 1.36-1.80), who infrequently attended religious services (OR=1.14, 95% CI:1.05-1.23), and who had never been married (OR=3.10, 95% CI: 2.12-4.53) or married during their teens (OR=1.73, 95% CI: 1.41-2.13) had a higher odds of teenage pregnancy (Table 2). With the exception of parenting styles, these same factors significantly influenced teen pregnancy among males (Table 3).

After adjusting for potential confounders, the influence of authoritarian and disengaged parenting styles on teen pregnancy remained for females (Table 2) and became statistically significant at the 10% level for males (Table 3). However, the influence of parental role modeling – religious attendance and age of marriage – weakened substantially. General communication and parental educational expectations never approached significance for either males or females. In models testing whether the effects of parenting strategies and other covariates differed by gender (results not shown), we found no significant gender differences at the .05 level.

Modifying effects of parenting styles on the influence of other parenting strategies

We found few meaningful differences in the effects of parenting strategies by parenting style. Though the effect of educational expectations differed by parenting style, its effect was insignificant among parents with both non-authoritative and authoritative styles (Table 4, Model 1). The effects of general communication, communication about sex, and parents' age at marriage did not differ by parenting style (Models 2, 3, and 5). However, the influence of religious service attendance did differ by parenting style (Model 4). Religious service attendance

was associated with reduced teen pregnancy odds among youth with authoritative parents but not among youth with non-authoritative parents.

Influence of other family, demographic, and contextual covariates on teenage pregnancy

Though we focused on parenting strategies, we controlled for several potential confounders in our analyses and found results consistent with previous research [21-23]. First, for both males and females, teens in two parent households and teens with parents who had some college education or beyond had lower odds of teenage pregnancy (Tables 2 and 3). Second, several key demographic characteristics influenced teenage pregnancy risks for females but among males none was significant in adjusted models. In particular, we found that each 1-year increase in the age at menarche among females was associated with a 10% decrease in the odds of teenage pregnancy. In addition, the first and second generation female children of Black and Hispanic immigrants had lower odds of teenage pregnancy than their third-plus generation co-ethnic peers ($OR_{1st\text{-}2nd\ black}$=0.33 vs. $OR_{3rd+\ black}$=3.05, p<.01; $OR_{1st\text{-}2nd\ Hispanic}$ =0.47 vs. $OR_{3rd+\ Hispanic}$=2.12, p<.05). Asian third-plus generation females also had elevated odds of teen pregnancy (OR=2.37, 95% CI: 1.18-5.21). In general, youth with less English proficiency (typically the children of immigrants) had lower odds of teenage pregnancy.

Third, school and neighborhood contexts modestly influenced outcomes for both genders (Tables 2 and 3). School attachment was negatively associated with teenage pregnancy for females but did not significantly influence teenage pregnancy among males. For males and females alike, residence in high poverty neighborhoods was associated with increased odds of teenage pregnancy. Residence in co-ethnic neighborhoods and the Northeast was protective.

DISCUSSION

Among a nationally representative sample of male and female youth who attended middle or high school in 1994-95, we found that parenting strategies played an important role in the likelihood of teen pregnancy. Although the typicality of parenting strategies varied between males and females, we identified no significant gender differences in their influence on teenage pregnancy. Of the three strategies we evaluated -- parenting styles, parental communication and expectations, and role modeling -- parenting styles had the strongest influence on teenage pregnancy, particularly among female youth. Authoritative parenting was protective while youth whose parents utilized authoritarian or disengaged parenting styles were at higher risk of teen pregnancy. These findings are consistent with earlier studies documenting the protective effects of parental closeness and monitoring on sexual activity, contraceptive use, and pregnancy [3-5].

Previous studies have also documented that parent-adolescent general communication can protect youth from a broad range of deleterious adolescent sexual and reproductive health outcomes. Yet no conclusive longitudinal studies on the relationship between parent-adolescent general communication and teen pregnancy have been conducted [3]. Our longitudinal study suggests that general communication in the absence of parental support and appropriate control does not significantly reduce the risk of teenage pregnancy.

In contrast to expectations, parent-adolescent communication about sex has been associated with risky teen sexual behavior [3-5]. Our results are consistent with these findings. However, we conducted additional analyses (available upon request) and found that parents who thought their teens were sexually active reported more communication about sex. This suggests that parents are talking to their children in response to their behavior and that communication about sex needs to happen before adolescents initiate sexual activity [24].

Indirect types of parental communication such as modeling behavior and setting expectations may be influential above and beyond direct communication. For example, previous research documents a protective effect of teens' high educational aspirations among females and parents' high educational expectations among males [22, 25]. In addition, teens whose parents were themselves teen parents are more likely to become teen parents [26-30] and teens with religious parents are less likely to engage in sex [31] but possibly less likely to use contraception at first intercourse [32]. In contrast to previous research, we found that parental educational expectations had no significant effect for either males or females. Moreover parents' age of marriage only significantly influenced teen pregnancy among females. However, consistent with previous findings, we also found that parental role modeling through religious service attendance reduced the risk of teen pregnancy for both males and females. But, in the full sample, these effects were significant only among youth whose parents engaged in authoritative parenting. No parenting strategies offset the risk associated with non-authoritative parenting styles [5].

We also identified important race-ethnicity and nativity differences in the odds of teenage pregnancy. Among Hispanic and black females, the first and second generation children of immigrants tended to have lower odds of teen pregnancy than their native, third-plus generation peers. No differences by race-ethnicity and nativity could be detected among males, but neighborhood co-ethnicity had a protective effect on teenage pregnancy among males [33]. However, as in other studies [34-36], high poverty concentrations increased teen pregnancy risk for both genders. These results are consistent with research on the immigrant health paradox and theories of segmented assimilation and neighborhood disorganization [37-40]. Despite their lower socio-economic backgrounds, the children of immigrants tend to engage in less risky health behaviors and have better health outcomes than their native counterparts. In addition, the

co-ethnic support represented by high co-ethnic concentrations and the lack of social resources reflected by high poverty levels in neighborhoods can have protective and harmful effects on youth, respectively.

While our study substantially extends earlier research on parenting strategies and adolescent sexual behavior, our data were limited in several respects. First, data on pregnancies were collected retrospectively. As a result, some respondents may not accurately recall the dates for their first pregnancies or pregnancies that did not end in a live birth. However, our use of a dichotomous variable to identify teen pregnancy should minimize any potential exposure misclassification. Second, the relatively small numbers of reported pregnancies and the potential for unknown pregnancies among males reduces our power to detect effects among males and biases our estimates toward the null. Third, teen pregnancies are identified prior to Wave I for 20% of our cases (N=316). For these cases, reported parenting strategies identified in Wave I could have been influenced by adolescents' pregnancies. To evaluate this potential, we excluded these retrospective cases (results not shown) and found that our conclusions did not change.

CONCLUSION

Our evaluation of the influence of three parenting strategies -- parenting styles, parental communication and expectations, and role modeling – on the likelihood of teenage pregnancy suggests that programs which encourage parents to develop effective discipline coupled with warmth and support (i.e., authoritative parenting styles) may be successful in reducing the risk of teenage pregnancy. Moreover, the same parenting strategies that are effectively employed for female teens can be employed for male teens. Among youth with parents who engage in authoritative parenting styles, role modeling strategies such as religious service attendance can help to further reduce the risk of teen pregnancy. But no parenting strategies offset the risk

associated with non-authoritative parenting styles. Finally, with limited resources available for teen pregnancy prevention, programs should target the highest risk groups – African American, Asian, and Hispanic females in the third generation and beyond and their potential sexual partners. Resources might also be targeted towards areas with high-poverty and limited co-ethnic support systems. Future research on teenage pregnancy should aim to better understand what factors promote lower teenage pregnancy risks among the children of immigrants and influence higher risk among third-plus generation minority youth.

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Table 1. Descriptive Statistics and Means Comparisons by Gender

	Full Sample		Females		Males		
	%/M	(s.e.)	%/M	(s.e.)	%/M	(s.e.)	
Pregnancy by age 19 (Prevalence)	13.20		18.50		8.15		***
Parenting Strategies							
Authoritative	29.15		26.06		32.10		***
Authoritarian	6.39		7.14		5.68		**
Permissive	50.21		49.86		50.54		
Disengaged	14.24		16.94		11.68		***
Educational expectations (mean)	2.25	(0.02)	2.27	(0.02)	2.23	(0.02)	**
General communication (mean)	2.01	(0.03)	2.22	(0.03)	1.82	(0.03)	***
Communication about sex (mean)	2.86	(0.03)	2.98	(0.03)	2.75	(0.02)	***
Parent religious service attendance (mean)	2.83	(0.03)	2.84	(0.03)	2.82	(0.04)	
Parent never married	4.33		4.48		4.19		
Parent married as teen (age<19)	28.47		28.08		28.84		
Parent married as adult (19+)	67.20		67.43		66.97		
Family Structure							
Two parent family	58.61		58.32		58.88		
Step-parent family	16.02		15.60		16.42		
Single parent family	22.24		23.00		21.52		
Other (e.g. foster family)	3.13		3.08		3.18		
Highest Parent Education							
High School Dropout	15.77		16.22		15.35		
High School Graduate	31.94		33.23		30.72		**
Some College	52.28		50.55		53.93		**
Demographics							
Gender	---		---		---		
Age at Wave I							
11-13	19.24		20.49		18.05		**
14-15	34.74		35.40		34.12		
16-17	33.02		32.26		33.75		
18-20	13.00		11.86		14.08		**
Age at menarche (mean)	---		12.20	(0.04)	---		
White 3rd+ Generation	66.94		66.17		67.66		
White 1st or 2nd Generation	3.51		3.58		3.44		
Black 3rd+ Generation	14.34		14.72		13.97		
Black 1st or 2nd Generation	0.75		0.83		0.66		
Hispanic 3rd+ Generation	4.67		4.82		4.53		
Hispanic 1st or 2nd Generation	7.16		7.27		7.05		
Asian 3rd+ Generation	0.46		0.47		0.46		
Asian 1st and 2nd Generation	2.18		2.12		2.23		
English Language Proficiency (AHPVT, 10s)	10.19	(0.06)	10.12	(0.07)	10.26	(0.07)	***
School and Neighborhood Context							
School Attachment (mean)	3.78	(0.02)	3.77	(0.03)	3.79	(0.02)	
Prop. peers expect to go to college	0.78	(0.01)	0.78	(0.01)	0.78	(0.01)	
Prop. co-ethnic in neighborhood	0.77	(0.02)	0.77	(0.02)	0.77	(0.02)	
Prop. living below FPL in neighborhood	0.11	(0.01)	0.11	(0.01)	0.11	(0.01)	
Region							
Northeast	13.96		13.74		14.18		
South	37.85		36.21		39.40		**
Midwest	32.62		33.59		31.70		
West	15.57		16.47		14.72		*
Sample Size (N)	10932		5745		5187		

Source: National Longitudinal Study of Adolescent Health (Wave IV)

Notes: Weighted means and proportions, unweighted Ns. Means for missing values indicators on English proficiency and Peer expectations for college are not shown.

*p<.1, **p<.05, ***p<.01; % = percent; M = mean; s.e. = standard error; prop = proportion

Table 2. Unadjusted and Adjusted Logit Estimates of Ever Pregnant by Age 19, Females

	Unadjusted			Adjusted		
	OR	(95 %CI)		OR	(95 %CI)	
Parenting Strategies						
Authoritative (ref)	---	--- ---		---	--- ---	
Authoritarian	1.77	(1.24 , 2.52)	***	1.84	(1.31 , 2.60)	***
Permissive	0.92	(0.73 , 1.17)		1.15	(0.88 1.52)	
Disengaged	1.41	(1.08 , 1.83)	**	1.71	(1.25 , 2.33)	***
Educational expectations	1.00	(0.85 , 1.17)		0.97	(0.84 , 1.13)	
General communication	0.96	(0.90 , 1.02)		1.00	(0.94 , 1.08)	
Communication about sex	1.56	(1.36 , 1.80)	***	1.37	(1.20 , 1.57)	***
Parent religious service attendance	0.88	(0.81 , 0.95)	***	0.93	(0.85 1.01)	*
Parent never married	3.10	(2.12 , 4.53)	***	1.17	(0.74 , 1.84)	
Parent married as teen (age<19)	1.73	(1.41 , 2.13)	***	1.21	(0.98 , 1.50)	*
Parent married as adult (19+) (ref)	---	--- ---		---	--- ---	
Family Structure						
Two parent family (ref)	---	--- ---		---	--- ---	
Step-parent family	1.92	(1.55 , 2.36)	***	1.44	(1.14 , 1.81)	***
Single parent family	2.47	(2.00 , 3.05)	***	1.80	(1.42 , 2.28)	***
Other (e.g. foster family)	4.92	(3.04 , 7.97)	***	3.41	(1.80 , 6.48)	***
Highest Parent Education						
High School Dropout	2.53	(1.93 , 3.32)	***	1.53	(1.15 , 2.03)	***
High School Graduate	1.62	(1.26 , 2.09)	***	1.43	(1.15 , 1.78)	***
Some College (ref)	---	--- ---		---	--- ---	
Demographics						
Age at Wave I						
11-13	1.17	(0.82 , 1.65)		1.34	(0.99 , 1.80)	*
14-15	1.51	(1.20 , 1.91)	***	1.55	(1.24 , 1.94)	***
16-17 (ref)	---	--- ---		---	--- ---	
18-20	0.69	(0.47 , 0.99)	**	0.70	(0.46 , 1.05)	*
Age at menarche	0.82	(0.77 , 0.88)	***	0.90	(0.85 , 0.96)	***
White 3rd+ Generation (ref)	---	--- ---		---	--- ---	
White 1st or 2nd Generation	0.91	(0.53 , 1.57)		1.01	(0.58 , 1.74)	
Black 3rd+ Generation	2.54	(1.85 , 3.49)	***	1.05	(0.68 , 1.63)	
Black 1st or 2nd Generation	0.55	(0.21 , 1.46)		0.34	(0.12 , 0.97)	**
Hispanic 3rd+ Generation	2.50	(1.52 , 4.13)	***	1.57	(0.79 , 3.12)	
Hispanic 1st or 2nd Generation	1.23	(0.79 , 1.91)		0.74	(0.41 , 1.35)	
Asian 3rd+ Generation	1.99	(0.95 , 4.14)	*	2.37	(1.08 , 5.23)	**
Asian 1st or 2nd Generation	1.35	(0.57 , 3.19)		1.12	(0.39 , 3.17)	
English Language Proficiency (AHPVT, 10s)	0.76	(0.68 , 0.85)	***	0.84	(0.77 , 0.92)	***
School and Neighborhood Context						
School Attachment	0.76	(0.68 , 0.84)	***	0.81	(0.72 , 0.92)	***
Prop. peers expect to go to college	0.69	(0.04 , 13.3)		3.24	(0.31 , 34.3)	
Prop. co-ethnic in neighborhood	0.46	(0.33 , 0.65)	***	0.68	(0.39 , 1.20)	
Prop. living below FPL in neighborhood	31.8	(12.8 , 79.0)	***	4.36	(1.25 , 15.3)	**
Region						
Northeast (ref)	---	--- ---		---	--- ---	
South	1.84	(1.24 , 2.73)	***	1.38	(1.01 , 1.89)	**
Midwest	1.59	(0.93 , 2.74)	*	1.59	(1.11 , 2.26)	**
West	1.54	(0.98 , 2.42)	*	1.49	(1.05 , 2.11)	**
Model N		5745			5745	
F		---			11.85	***

Source: National Longitudinal Study of Adolescent Health (Wave IV)

Notes: Weighted data, standard error adjusted for clustering and stratification of sample. Coefficients for missing values indicators on English proficiency and peer expectations for college are not shown. OR = odds ratio; N = analytic sample; F= F statistic; ref = referent group; 10s = divided by 10

*p<.1, **p<.05, ***p<.01

Table 3. Unadjusted and Adjusted Logit Estimates of Ever Caused a Pregnancy by Age 19, Males

	Unadjusted			Adjusted		
	OR	(95 %CI)		OR	(95 %CI)	
Parenting Strategies						
Authoritative (ref)	---	--- ---		---	--- ---	
Authoritarian	1.50	(0.85 , 2.63)		1.69	(0.95 , 2.99)	*
Permissive	1.07	(0.78 , 1.47)		1.27	(0.91 , 1.78)	
Disengaged	1.27	(0.78 , 2.06)		1.66	(0.98 , 2.81)	*
Educational expectations	0.94	(0.79 , 1.12)		0.93	(0.77 , 1.13)	
General communication	1.03	(0.92 , 1.15)		1.06	(0.94 , 1.20)	
Communication about sex	1.37	(1.15 , 1.63)	***	1.34	(1.13 , 1.58)	***
Parent religious service attendance	0.89	(0.78 , 1.01)	*	0.90	(0.78 , 1.03)	
Parent never married	2.83	(1.27 , 6.32)	**	1.36	(0.77 , 2.64)	
Parent married as teen (age<19)	1.47	(1.10 , 1.95)	***	1.06	(0.81 , 1.55)	
Parent married as adult (19+) (ref)	---	--- ---		---	--- ---	
Family Structure						
Two parent family (ref)	---	--- ---				
Step-parent family	1.43	(1.04 , 1.97)	**	1.12	(0.81 , 1.55)	
Single parent family	1.84	(1.20 , 2.81)	***	1.21	(0.85 , 1.73)	
Other (e.g. foster family)	3.77	(2.18 , 6.54)	***	2.47	(1.32 , 4.60)	***
Highest Parent Education						
High School Dropout	2.45	(1.77 , 3.40)	***	1.66	(1.08 , 2.55)	**
High School Graduate	1.43	(1.01 , 2.03)	**	1.22	(0.84 , 1.78)	
Some College (ref)	---	--- ---		---	--- ---	
Demographics						
Age at Wave I						
11-13	1.35	(0.86 , 2.12)		1.81	(1.16 , 2.84)	**
14-15	1.16	(0.83 , 1.63)		1.32	(0.95 , 1.84)	
16-17 (ref)	---	--- ---		---	--- ---	
18-20	0.76	(0.51 , 1.14)		0.73	(0.48 , 1.10)	
Age at menarche	---	--- ---		---	--- ---	
White 3rd+ Generation (ref)	---	--- ---		---	--- ---	
White 1st or 2nd Generation	0.69	(0.24 , 1.95)		0.83	(0.29 , 2.33)	
Black 3rd+ Generation	2.07	(1.32 , 3.24)	***	0.97	(0.58 , 1.63)	
Black 1st or 2nd Generation	0.41	(0.05 , 3.23)		0.30	(0.04 , 2.34)	
Hispanic 3rd+ Generation	1.57	(0.85 , 2.89)		0.84	(0.43 , 1.65)	
Hispanic 1st or 2nd Generation	1.88	(1.07 , 3.31)	**	1.17	(0.58 , 2.38)	
Asian 3rd+ Generation	---	--- ---		---	--- ---	
Asian 1st or 2nd Generation	0.59	(0.18 , 1.91)		0.53	(0.15 , 1.87)	
English Language Proficiency (AHPVT, 10s)	0.84	(0.76 , 0.93)	***	0.97	(0.85 , 1.10)	
School and Neighborhood Context						
School Attachment	0.88	(0.76 , 1.02)	*	0.92	(0.78 , 1.08)	
Prop. peers expect to go to college	0.20	(0.01 , 3.15)		0.90	(0.05 , 15.1)	
Prop. co-ethnic in neighborhood	0.51	(0.31 , 0.82)	***	0.52	(0.27 , 0.98)	**
Prop. living below FPL in neighborhood	24.3	(7.62 , 77.8)	***	5.37	(1.54 , 18.7)	***
Region						
Northeast (ref)	---	--- ---		---	--- ---	
South	1.57	(0.93 , 2.66)	*	1.38	(0.82 , 2.33)	
Midwest	1.64	(0.92 , 2.91)	*	1.67	(1.01 , 2.77)	**
West	1.04	(0.59 , 1.84)		1.15	(0.63 , 2.09)	
Model N	5187			5142		
F	---			3.74		***

Source: National Longitudinal Study of Adolescent Health (Wave IV)

Notes: Weighted data, standard error adjusted for clustering and stratification of sample. No third generation Asian males reported a teen pregnancy (N = 45). Therefore, they were excluded from the logit model. Coefficients for missing values indicators on English proficiency and peer expectations for college are not shown. OR = odds ratio; N = analytic sample; F= F statistic; ref = referent group; 10s = divided by 10. *p<.1, **p<.05, ***p<.01

Table 4. Adjusted Logit Estimates of Ever Pregnant or Caused a Pregnancy by Age 19, Stratified by Authoritative vs. Non-authoritative Parenting Styles

	Authoritative Parenting Style		Non-authoritative Parenting Style		Effects Differ
	OR	(95 %CI)	OR	(95 %CI)	
Full Sample					
Model 1. Educational expectations	1.13	(0.91 , 1.40)	0.90	(0.78 , 1.03)	Yes
Model 2. General communication	1.03	(0.91 , 1.17)	0.99	(0.92 , 1.07)	No
Model 3. Communication about sex	1.44	(1.12 , 1.86) ***	1.34	(1.20 , 1.49) ***	No
Model 4. Parent religious service attendance	0.82	(0.71 , 0.94) ***	0.96	(0.89 , 1.04)	Yes
Model 5. Parent never married	1.44	(0.68 , 3.02)	1.72	(0.97 , 3.06) *	No
Parent married as a teenager	1.22	(0.85 , 1.75)	1.60	(1.14 , 2.26) ***	No
Parent married as an adult (ref)	1.00	--- ---	1.39	(1.03 , 1.88) **	Yes

Source: National Longitudinal Study of Adolescent Health (Wave IV)

Notes: Weighted data, standard error adjusted for clustering and stratification of sample.

Each model includes all variables in the main effects models.

*p<.1, **p<.05, ***p<.01