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Maternal Patterns of Marijuana Use and Early Sexual Behavior in Offspring of Teenage Mothers

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Abstract

Teenage mothers use marijuana more frequently than older mothers, and marijuana use may predict HIV risk behavior in offspring. Our goals were to (1) describe trajectories of marijuana use in teenage mothers and (2) determine if these trajectories were associated with early sexual behavior in their offspring. Pregnant adolescents (12–18 years) were recruited at a prenatal clinic and interviewed during pregnancy, at delivery, and during follow-up visits when offspring were 6, 10, 14 and 16 years old. At 16 years, 332 women (71 % Black, 29 % White) and their offspring were assessed. Mothers were asked about their marijuana use at each time point. Offspring reported on their sexual behavior at age 14. Trajectory analyses using growth mixture models revealed four maternal patterns of marijuana use: no use, only at the 6 year follow-up, quit by the 16 year follow-up, and used across most of the time points. The children of chronic users were more likely to have early sex. The maternal marijuana trajectory group variable remained a statistically significant predictor in multivariate models controlling for race, gender, socioeconomic status, child pubertal timing, child externalizing behavior problems, and child marijuana use. These findings suggest that a minority of teenage mothers continue to use marijuana over time. Chronic maternal marijuana use across a decade was associated with early sex in offspring (oral or vaginal sex by age 14). Early sexual behavior places these children at significantly higher risk of teenage pregnancy and HIV risk behaviors.

Keywords

Longitudinal study; Maternal substance use; Adolescent health; Sexual behavior; Health behavior and risk

Introduction

One in ten American children has a teenage mother [1]. These children are at greater risk of early sex and parenthood [2–4]. Risk for early parenthood may be mediated by family characteristics such as socioeconomic status (SES) and maternal characteristics such as IQ and delinquency [5]. Maternal substance use may also play a role in the risk for inter-generational transmission of early pregnancy. Few studies have examined the association of maternal substance use with inter-generational teenage pregnancy. In the Rochester Youth Development study, Pogarsky et al. [4] reported that lifetime maternal use of any marijuana was statistically significantly associated with child's substance use, but not with child's early childbearing. However, maternal patterns of marijuana use over time may be associated with offspring's early sexual behavior and pregnancy.

The literature on substance use in teenage mothers provides evidence that they are more likely to be using substances while raising their children. Teenage mothers continue using tobacco, alcohol and marijuana more frequently than older mothers, and may “age out” of using substances at a later age [6–10]. Young women who became mothers as adolescents are twice as likely to use tobacco and marijuana [8]. In one study, 13 % of White teen mothers and 28 % of Black teen mothers were marijuana users a decade after pregnancy [9]. In contrast, <1 % of all mothers in the National Survey on Drug Use and Health (NSDUH) reported marijuana use. Although mothers in the NSDUH who were 18–25 years old were seven times more likely to use illicit drugs than older mothers [11], they remained less likely to use at rates reported for teenage mothers. Thus, if more teenage mothers are likely to be using marijuana, there is cause for concern about the implications for their developing offspring.

Maternal substance use has been linked to unprotected sexual intercourse and other HIV risk behavior in offspring [12–14], which is of particular interest for the prevention of inter-generational teenage pregnancy. The offspring of teenage mothers are at greater risk of early pregnancy [2–4, 15–17]. However, teenage mothers and their children are not a homogenous group [18]. Not all teenage mothers use marijuana or continue using marijuana into their twenties and thirties [8, 9]. Not all offspring of teenage mothers become parents during adolescence [5, 18]. Among marijuana-using teenage mothers, different patterns of marijuana use over time may predict different behaviors in offspring associated with early pregnancy.

No studies have examined maternal marijuana use in teenage mothers across the span of their offspring's childhood into adolescence. There is also no literature on the role of maternal patterns of marijuana use on children's risk for early pregnancy. Early sexual behavior is a well-known risk factor for HIV risk behaviors and teenage pregnancy [19–21]. The goals of this study were to (1) describe trajectories of marijuana use in teenage mothers

and (2) determine if these trajectories were associated with early sexual behavior in offspring. We hypothesized that there would be heterogeneity in maternal marijuana use across 4 time points (postnatal years 6, 10, 14 and 16). Further, we predicted that maternal trajectories of marijuana use would predict early oral and vaginal sex in offspring.

Methods

Participants

Data for this study are drawn from The Teen Mother Study, which is part of a consortium of studies on the effects of prenatal substance use on physical and neurobehavioral development. Pregnant adolescents (ages 12–18) were recruited from 1990 to 1994, seen during a prenatal visit in the first half of pregnancy, and again at delivery. Follow-up visits were conducted with mothers and their children in our laboratory when offspring were ages 6 (1995–2000), 10 (2000–2005), 14, and 16 (2005–2011). The hospital's IRB approved the prenatal and delivery phases, and the university IRB approved all phases.

All adolescents attending the prenatal clinic who were under 19 years were eligible ($n = 448$). Of the pregnant adolescents who were approached in the clinic, 3 refused for an initial refusal rate of 0.7 %. Of the remaining 445, 15 moved out of the area prior to delivery, and one refused the delivery interview. Additional losses at delivery included six twin births, five spontaneous abortions, two stillborn infants, and three live-born premature infants who died. Thus, 413 live-born singletons and their mothers were assessed at delivery.

A total of 326 women were assessed at the 16-year follow-up phase: 79 % of the birth cohort. Losses occurred because of refusals ($n = 15$), loss to follow-up ($n = 34$), moved out of state ($n = 17$), child deaths ($n = 7$), and children adopted or institutionalized ($n = 6$). Two participants were excluded because of missing substance use data. No differences in maternal education, income, pre-natal marijuana or alcohol use between women who participated in the study ($n = 324$) and those women who did not ($n = 89$) were detected. Non-participants were more likely to be white (47 vs. 28 %, $p < 0.05$) and older (16.5 vs. 16.3, $p < 0.05$) at the first phase. Sample characteristics are presented in Table 1.

Procedure

Participants were recruited during the fourth or fifth month prenatal visit and interviewed about tobacco, alcohol, marijuana, and other drug use prior to becoming pregnant and during the first trimester. The adolescents were seen again 24–36 h after delivery, when they were interviewed about their substance use during the second and third trimesters. At the 6-, 10-, 14- and 16-year follow-up visits, mothers provided information about their substance use (current and past year) and demographic and psychological status. Medical histories were obtained for both mothers and offspring. Reports on maternal substance use, growth and behavioral outcomes of the offspring have been provided elsewhere [22–25].

Measures

Maternal Marijuana Use—Mothers were interviewed in a private setting by interviewers who were comfortable discussing alcohol and drug use, trained to use the instruments

reliably, accurately identify the drugs used, and assess the amount of use. Participants were asked “how old were you when you first tried marijuana or weed? In the past year, on the days when you used marijuana, about how many joints did you *usually* smoke? How many *other* people do you usually share this amount with? How often did you use this amount of marijuana?” Marijuana, hashish, and sinsemilla use were transformed into a measure of average daily joints. A blunt of marijuana was converted to four joints, and a hashish cigarette or bowl was counted as three joints, based on the relative amount of delta-9-THC in each [26]. A dichotomous variable was created, indicating marijuana use reported in the past year at the 6, 10, 14 and 16-year follow-up visits. Women with missing data on marijuana use for three out of the four phases were excluded from the current analyses ($n = 2$), resulting in a sample size of 324.

Child Sexual Behavior—The sexual behavior measure from the Youth Risk Behavior Surveillance System (YRBSS) [27] was used at age 14 ($n = 293$). This measure has excellent test–retest reliability, with a Kappa of 90.5 % for the “ever had sexual intercourse” item. Reliability does not differ as a function of child gender or race/ethnicity [28, 29]. Adolescents were asked, “Have you ever had oral sex?” and “Have you ever had sexual intercourse?” These data were used to create dichotomous variables. Sexual behavior data from the 14-year phase were available for 293 cases. Forty-five subjects reported having both oral and vaginal intercourse, 29 reported intercourse only, and 8 reported oral sex only.

Covariates—Several demographic characteristics were included in the multivariate analyses including maternal age, maternal race, child gender, maternal custody of the child, and presence of a man in the household. Mothers reported on their living situations and child custody at the 14-year visit. The offspring were 14–15 years old at this follow-up ($M = 14.5$, $SD = 0.6$, range = 14–16); therefore, child’s age was included in the analyses. However, for the sake of convenience, we refer to this phase as the 14-year phase of testing.

The remaining covariates were maternal and child risk factors for drug use and sex. Maternal risk factors included maternal age at first sex, as reported by the mother at entry into the study. Maternal psychological status was also measured at the age 14 follow-up. Maternal depression was assessed using the CES-D [30]. Maternal dispositional (trait) anxiety and hostility were assessed using the State Trait Anxiety Index (STAI) [31]. The psychometric properties of the STAI have been demonstrated in a variety of populations [31]. The Home Observation for Measurement of the Environment—Short Form (HOME-SF) [32] was used to measure the quality and quantity of support available to the offspring at age 14 for cognitive, social, and emotional development. The HOME-SF has demonstrated acceptable validity in large datasets [33, 34].

Child risk factors were subdivided into psychological risk factors and substance use variables. Child psychological measures included a self-report of pubertal status asking children to use a 5-point scale to compare their pubertal timing to same-age and same-sex peers. This measure has been used in other longitudinal studies investigating the effects of pubertal development [35–37]. Child internalizing and externalizing behavior problem scores from the maternal report of the Child Behavior Checklist (CBCL) [38] were also included in the analyses as psychological risk factors for early sex. The child substance use

variables were all dichotomous and self-report. These variables included peer cigarette use at the age 10 follow-up, and the child's own use of tobacco, alcohol and marijuana at the age 14 follow-up. Ever cigarette use was defined as more than just a puff; ever alcohol use was defined as more than just a sip of alcohol; and ever marijuana use was defined as ever having tried marijuana. Dichotomous variables were created indicating the use of any of these substances by age 14.

Statistical Analysis

First, a growth mixture model (GMM) was applied to maternal marijuana use measured at four phases, to explore different trajectories of use over time. GMM is based on random coefficients growth curve models. GMM allows variation in growth across individuals, and at the same time estimates mean growth curves for each trajectory [39]. Quadratic growth curves were fitted, creating trajectory classes of maternal marijuana use. The number of classes best fit to the data was determined using the Lo-Mendell-Rubin likelihood ratio test [40]. This statistic tests whether a smaller number of classes better fits the data. The individual posterior probabilities for each class were also screened, to ascertain lack of ambiguity in assigning individuals to different classes.

Bivariate analyses included analysis of variance (ANOVA), *t* tests and Chi square tests of difference. We conducted ANOVA on the characteristics of the maternal marijuana use trajectory groups, to explore differences among these groups of teenage mothers. *t* tests and Chi square tests were then used to test for statistically significant group differences between offspring who reported early sex and those offspring who did not report early sex.

For the multivariate analyses, maternal marijuana trajectory groups were regressed separately on early oral and vaginal sex in offspring. Logistic regression was conducted in a stepwise manner to avoid saturation of the model by inclusion of non-statistically significant covariates. Analyses were carried out in two hierarchical steps, because covariates included in the second step were more closely related to the outcome variables and could be considered as mediators. Core covariates considered in the first step were: maternal age, maternal age of first intercourse, maternal race, gender of offspring, offspring rates of friends' smoking at 10, offspring age at 14-year interview, pubertal timing, family income, HOME environment, maternal depression and hostility, maternal custody of the child, and presence of male figure in the household. Covariates included in the second step were CBCL internalizing and externalizing problem behavior scores at 14 and offspring use of alcohol, tobacco, and marijuana. We also tested for interactions of maternal marijuana use with child gender using product terms, but these interactions were not statistically significant and were not used in the final models.

Results

Trajectories of Maternal Marijuana Use

Rates of maternal marijuana use decreased as the mothers matured. Twenty-nine percent, 22, 19, and 13 % reported marijuana use at the 6, 10, 14, and 16 year follow-up phases, respectively. The GMM revealed four patterns of maternal marijuana use. We also fit five

classes of marijuana use to the data. The Lo-Mendell-Rubin statistic for a five class model was low (0.7) indicating that a lower number of classes would be a better fit. In comparison, this statistic for the four class model was adequate (5.8). The four patterns of marijuana use included: no use at any time point (non-users, $n = 208$), use only at the 6-year follow-up (early quitters, $n = 37$), more likely to use earlier but then quit by the 16-year follow-up (gradual quitters, $n = 42$), and use of marijuana across most of the time points (chronic users, $n = 37$).

The mean posterior probabilities for the four classes were 0.96, 0.87, 0.85, and 0.96, respectively. The probabilities for classification of participants into their respective classes were all above 0.5. The trajectories identified in the GMM are depicted in Fig. 1, with the observed frequencies of maternal marijuana use at each time point in the study. The entropy value of classification was 0.85 indicating clear delineation of classes. Mothers in the “non-users” group were the only ones who did not use marijuana at either age 6 or 10 years. The “early quitters” group consisted of individuals who used marijuana only at the 6-year phase (100 %) but did not report any marijuana use after that time point. Their pattern of use is statistically significantly different from the “gradual quitters” group with mothers who reported some marijuana use at the later time points. All the subjects in the “chronic users” group reported use at the 16-year phase, and all of them reported use at least once prior to that most recent time point, indicating a more chronic pattern of marijuana use.

Characteristics of Maternal Marijuana Trajectory Groups

We conducted an ANOVA of the characteristics of the maternal marijuana use trajectory groups (Table 1). Chronic marijuana users were younger at study entry, had lower HOME scores, and were more depressed and hostile than the mothers from the other groups. Their children were more likely to have internalizing problems at ages 10 and 14, and externalizing problems at age 10. Mothers from the late quitters and chronic groups were more likely to be Black, and mothers from the chronic user group were less likely to be married or living with a man (not shown in Table 1). No group differences in child gender, child cigarette use at any age, or child alcohol or marijuana use at age 16 were revealed in the ANOVA. However, the children whose mothers were in the early quitter and chronic user groups used more alcohol at age 14 than children whose mothers were in the other groups. We also compared the quantity of marijuana used by the chronic maternal users to the quantity used by the other maternal marijuana users at the phases where the quitters had reported marijuana use. The chronic maternal marijuana user group used more marijuana than the mothers in the early quitter group, but we observed no statistically significant differences in the amount of marijuana used by chronic user mothers and the mothers in the late quitter group.

Sample Characteristics as a Function of Early Sex in Offspring

Overall, 25 % of the offspring reported early vaginal sex ($n = 83$) and 18 % reported early oral sex ($n = 60$). Selected prenatal and postnatal covariates are presented in Table 2. Means and percentages are presented for the sample as a whole, and for the sample of offspring stratified by oral or vaginal sex by age 14. Significance tests were used to test group differences between the “No Early Sex” and “Early Sex” groups of offspring, specifically t

tests for the continuous variables and Chi square tests of difference for the dichotomous variables (ns = non-significant; * $p < .05$; ** $p < .01$).

Multivariate Models of Maternal Marijuana Use and Early Sex in Offspring

We found statistically significant bivariate monotonic relations between patterns of maternal marijuana use and early sex in offspring (Fig. 2). Twenty percent, 23, 29, and 53 % of offspring whose mothers were non-users, gradual quitters, early quitters, and chronic users reported early vaginal sex, respectively ($\chi^2 = 16.8$, $p < 0.001$). Similarly, 13, 18, 26, and 38 % of these groups reported early oral sex, respectively ($\chi^2 = 13.8$, $p < 0.01$).

Results of the final logistic regression equations on early sex in offspring are presented in Table 3. The maternal marijuana use trajectories were dummy-coded so that the reference category was the “non-user” group, and the other marijuana-using groups were compared to this reference group. Maternal marijuana use remained a statistically significant predictor of early sex in multivariate models controlling for other significant covariates. Children from the maternal group of chronic marijuana users were more likely to have had early oral (AOR = 4.3; confidence interval = 1.68–10.9) and vaginal sex (AOR = 3.9; confidence interval = 1.58–9.57) compared to children of abstainers.

Discussion

This is the first study to examine maternal marijuana use in teenage mothers 16 years postpartum. *On average*, fewer mothers reported marijuana use as time elapsed. However, we found statistically significant heterogeneity in marijuana use among teenage mothers. Not all teenage mothers use marijuana while raising their children. In fact, the vast majority of women reported no past-year marijuana use at the age 6-, 10-, 14- or 16-year follow-up visits. Nonetheless, these young mothers remained more likely to use than adult mothers [11]. Among teenage mothers who did report marijuana use, they were equally divided among women who only used at the age 6 follow-up (early quitters), women who used at the age 6 and 10 year follow-ups but not during the offspring adolescent years (gradual quitters), and women who used across most of the time points (chronic users).

Teenage mothers who used marijuana in this study were in the minority. However, our findings suggest that patterns of their marijuana use are associated with greater risk for early pregnancy in adolescent offspring via early sexual behavior. Offspring whose mothers were chronic marijuana users were nearly 4 times as likely to engage in vaginal sex by age 14 than offspring whose mothers abstained from marijuana use. The link between chronic maternal marijuana use and child sexual intercourse by age 14 is worrisome, because early adolescents who have intercourse are more likely to continue having sex [41] and engage in risky behavior such as having multiple sex partners and using condoms less consistently [20, 21]. The results of recent developmental functional magnetic resonance imaging (fMRI) studies suggest a shift during adolescence toward risky decision-making in social contexts (such as intimate encounters) [42].

There are several possible mechanisms linking maternal marijuana use to early sex in offspring, and many were considered as covariates in our statistical analyses. However, the

association between chronic maternal marijuana use and early sex in offspring was not explained by mental health problems (such as greater maternal hostility and depression) or by increased child behavior problems (including early marijuana use). Nonetheless, the covariates that were statistically significant in the final regression models provide possible targets for identification, prevention and intervention. Consistent with other studies, male offspring were more likely to report early sex than female offspring [43]. Thus, sons of teenage mothers could be targeted for prevention. Child externalizing behavior problems and early marijuana use also predicted early sex in offspring. This is consistent with the literature on problem behaviors [44]. The child risk factors identified in this paper may help pediatricians and community providers determine which offspring of teenage mothers are at greatest risk of engaging in early sex and potentially becoming teen parents themselves. These findings also provide additional support for the use of multiple behavior interventions in vulnerable youth.

The use of self-report data, subject to recall and social desirability biases, was one of the limitations of this study. However, every effort was made to increase reliability, including asking detailed questions, pilot testing before each follow-up, and carefully selecting and training interviewers in standardized and non-judgmental interview techniques. We did use biological measures to validate substance use, but biological measures only assess use for a short window of time, whereas questionnaire data can elicit patterns of use over time. For this study, we were interested in maternal marijuana use over the past year so we used self-report data. Another limitation of the study was that two-thirds of the teenage mothers were classified as non-users, leaving only one-third of them to be classified into the three marijuana-user groups. Thus, the sample size was smaller in those 3 trajectory groups and the results of the GMM should be interpreted with caution. The results of this study may not generalize to families headed by teenage mothers with different demographic profiles (such as families in rural settings or families headed by Latina mothers).

This is the first study to examine the role of maternal marijuana use in inter-generational risk for teenage pregnancy. In contrast to studies that examine maternal lifetime use of marijuana or maternal marijuana use at a single point in time, we included data on maternal use from 4 postpartum time points. The longitudinal data on maternal marijuana use in this unique birth cohort revealed a specific pattern of maternal marijuana use that can be used to help identify those offspring at greatest risk of early pregnancy. Maternal marijuana use *per se* at any single point during childhood may not place children at risk of early sex. Mothers in the chronic use group did not use more marijuana than the other three marijuana user groups. However, maternal use across several periods was associated with early sex in offspring. Therefore, chronic maternal marijuana use may be a risk marker for the children at greatest risk of repeating the cycle of teenage pregnancy in these families. In other words, knowledge that a mother is a chronic marijuana user should trigger concern in pediatricians for offspring engaging in early marijuana use and early sex. The logical next step to this research is examining other possible mechanisms or processes that might link maternal marijuana use to early sexual behavior in offspring.

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Fig. 1.
Maternal marijuana use trajectory groups

Fig. 2.

Early sexual behavior as a function of maternal marijuana use trajectory groups. *Note* The children of chronic marijuana users were significantly more likely to have had oral and vaginal sex by the age 14 follow-up than the children of non-users ($p < .05$)

Table 1
Select maternal and child characteristics (means) by different patterns of marijuana use

	Total N = 324	Non-users n = 208	Early quitters n = 37	Gradual quitters n = 42	Chronic users n = 37
Maternal age at first sex ^t	14.25	14.34	14.38	14.12	13.78
Age at entry into study [*]	16.25	16.34	16.27	15.93	16.11
Race (percent white) [*]	32.21	32.43	16.66	13.51	28.08
Years of education at age 6 follow-up	12.23	12.28	12.38	12.05	12.06
Years of education at age 14 follow-up	12.82	12.80	13.36	12.72	12.49
Maternal depression at age 6 follow-up ^{**}	37.77	35.48	40.68	41.49	43.26
Maternal depression at age 10 follow-up ^{**}	39.06	36.49	40.58	43.34	46.61
Maternal depression at age 14 follow-up ^{**}	39.05	37.29	36.75	44.53	45.06
Maternal hostility at age 6 follow-up ^{***}	15.77	14.96	16.09	16.78	18.83
Maternal hostility at age 10 follow-up ^{**}	15.51	14.49	15.34	17.78	18.58
Maternal hostility at age 14 follow-up ^{**}	16.10	15.46	16.31	17.33	18.03
HOME scores at age 6 follow-up ^{**}	11.67	12.02	12.15	10.98	10.02
HOME scores at age 10 follow-up ^t	12.28	12.57	12.06	11.79	11.48
HOME scores at age 14 follow-up [*]	10.77	11.13	10.31	10.15	9.93
Child gender (% male)	51.85	50.00	64.86	52.38	48.65
CBCL internalizing scores at age 6 follow-up	47.77	47.17	48.14	47.63	50.91
CBCL internalizing scores at age 10 follow-up ^{**}	50.02	48.57	48.77	52.71	56.21
CBCL internalizing scores at age 14 follow-up ^{**}	49.29	48.71	46.56	49.49	55.06
CBCL externalizing scores at age 6 follow-up	52.10	51.18	54.14	52.66	54.53
CBCL externalizing scores at age 10 follow-up ^{**}	50.02	49.88	51.03	51.69	56.91
CBCL externalizing scores at age 14 follow-up	52.13	51.35	52.50	52.67	55.49

^t
 $p < .10$,

^{*}
 $p < .05$,

^{***}
 $p < .01$

Table 2

Pre- and post-natal characteristics

	Total sample <i>N</i> = 293	By early sex (oral or vaginal sex by age 14)	
		No early sex (<i>n</i> = 211)	Early sex (<i>n</i> = 82)
<i>Prenatal demographic information</i>			
Maternal age at entry into study (mean)	M = 16.2 years old	M = 16.4 years old	M = 16.0 years old**
Attending school (%)	70	70	70 (ns)
Average education (years)	M = 9.8 years	M = 9.9 years	M = 9.5 years*
Maternal race (% Black)	73 %	70 %	80 % (ns)
<i>Selected postnatal covariates</i>			
Offspring gender (% male)	52	46	62*
HOME environment scores (mean)	M = 10.8	M = 11.0	M = 10.0**
Monthly family income at age 14 follow-up	M = \$2,225	M = \$2,379	M = \$1,830**
Maternal depression (CES-D)	M = 39.0	M = 38.2	M = 41.2*
Maternal hostility scores (STAI)	M = 16.1	M = 15.8	M = 16.9 (ns)
Presence of male figure in the household (%)	45	49	34*
Child Internalizing problems at age 14 (CBCL)	M = 49.4	M = 48.8	M = 50.9 (ns)
Child externalizing problems at age 14 (CBCL)	M = 52.3	M = 50.5	M = 56.8**
Child used marijuana by age (%)	14 15	7.6	34**

Table 3
Significant variables in the logistic regression equations predicting early sex in offspring

Variable	Beta	p value	SE	Odds ratio	Conf. Int.
<i>A. Early oral sex (n = 293)</i>					
Maternal marijuana use					
Gradual quitters	0.45	ns	0.84	1.56	0.55–4.46
Early quitters	0.79	ns	1.58	2.20	0.82–5.91
Chronic users	1.46	.002	3.07	4.29	1.68–10.9
Maternal age at child's birth	−0.37	.005	−2.61	0.69	0.53–0.91
Male child	1.08	.002	2.84	2.93	1.39–6.16
Child age at age 14 follow-up	0.80	.003	2.75	2.23	1.26–3.95
Child tobacco use by age 14	1.27	.02	2.11	3.58	1.09–11.8
Child marijuana use by age 14	1.10	.006	2.54	3.00	1.28–7.02
<i>B. Early intercourse (n = 293)</i>					
Maternal marijuana use					
Gradual quitters	0.12	ns	0.25	1.13	0.43–3.02
Early quitters	0.37	ns	0.76	1.45	0.56–3.78
Chronic users	1.36	.003	2.96	3.88	1.58–9.57
Maternal race (white)	−1.02	.01	−2.51	0.36	0.16–0.80
Male child	0.74	.03	2.23	2.09	1.09–4.00
Child age at age 14 follow-up	1.06	.000	3.82	2.88	1.67–4.97
Externalizing problems at age 14	0.06	.002	3.22	1.06	1.02–1.10
Child marijuana use by age 14	1.54	.000	3.73	4.65	2.07–10.5

SE Standard error, Conf. Int. confidence Interval, ns non-significant