

# Early Puberty, Negative Peer Influence, and Problem Behaviors in Adolescent Girls

**AUTHORS:** Sylvie Mrug, PhD,<sup>a</sup> Marc N. Elliott, PhD,<sup>b</sup> Susan Davies, PhD,<sup>a</sup> Susan R. Tortolero, PhD,<sup>c</sup> Paula Cuccaro, PhD,<sup>c</sup> and Mark A. Schuster, MD, PhD<sup>b,d</sup>

<sup>a</sup>Departments of Psychology and Health Behavior, University of Alabama at Birmingham, Birmingham, Alabama; <sup>b</sup>RAND Corporation, Santa Monica, California; <sup>c</sup>Center for Health Promotion and Prevention Research, University of Texas Health Science Center, Houston, Texas; and <sup>d</sup>Children's Hospital Boston and Department of Pediatrics, Harvard Medical School, Boston, Massachusetts

## KEY WORDS

puberty, peer influence, problem behavior, racial/ethnic differences

## ABBREVIATION

SES—socioeconomic status

Dr Mrug conceptualized the study, conducted all data analyses, and drafted the initial manuscript; Dr Elliott contributed to the design of the study, assisted with data analyses, and revised the manuscript; Dr Davies supervised data collection at 1 of the 3 sites and revised the manuscript; Dr Tortolero developed the survey instrument, supervised data collection at 1 of the 3 sites, and revised the manuscript; Dr Cuccaro developed the survey instrument, coordinated data collection at 1 of the 3 sites, and revised the manuscript; Dr Schuster designed the study, supervised data collection at 1 of the 3 sites, and critically reviewed the manuscript; and all authors approved the final manuscript as submitted.

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Address correspondence to Sylvie Mrug, PhD, Department of Psychology, University of Alabama at Birmingham, 1720 Second Ave South, CH415, Birmingham, AL 35294-1170. E-mail: [smrug@uab.edu](mailto:smrug@uab.edu)

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**WHAT'S KNOWN ON THIS SUBJECT:** Early timing of puberty and affiliation with deviant friends are associated with higher levels of delinquent and aggressive behavior. Early-maturing adolescents tend to affiliate with more-deviant peers and appear more susceptible to negative peer influences.



**WHAT THIS STUDY ADDS:** Young early-maturing girls do not yet associate with deviant friends but are more susceptible to negative peer influences. Early puberty effects are stable over time for delinquency but dissipate for aggression. Most of these relationships are invariant across race/ethnicity.

## abstract



**OBJECTIVE:** To determine how early puberty and peer deviance relate to trajectories of aggressive and delinquent behavior in early adolescence and whether these relationships differ by race/ethnicity.

**METHODS:** In this longitudinal study, 2607 girls from 3 metropolitan areas and their parents were interviewed at ages 11, 13, and 16 years. Girls reported on their age of onset of menarche, best friend's deviant behavior, delinquency, and physical, relational, and nonphysical aggression. Parents provided information on family sociodemographic characteristics and girls' race/ethnicity.

**RESULTS:** Sixteen percent of girls were classified as early maturers (defined by onset of menarche before age 11 years). Overall, relational and nonphysical aggression increased from age 11 to age 16, whereas delinquency and physical aggression remained stable. Early puberty was associated with elevated delinquency and physical aggression at age 11. The relationship with early puberty diminished over time for physical aggression but not for delinquency. Best friend's deviant behavior was linked with higher levels of all problem behaviors, but the effect lessened over time for most outcomes. Early puberty was associated with a stronger link between best friend's deviance and delinquency, suggesting increased vulnerability to negative peer influences among early-maturing girls. A similar vulnerability was observed for relational and nonphysical aggression among girls in the "other" racial/ethnic minority group only.

**CONCLUSIONS:** Early puberty and friends' deviance may increase the risk of problem behavior in young adolescent girls. Although many of these associations dissipate over time, early-maturing girls are at risk of persistently higher delinquency and stronger negative peer influences. *Pediatrics* 2014;133:7–14

Early pubertal timing is associated with a number of behavioral and emotional problems in girls,<sup>1</sup> including relational aggression,<sup>2</sup> conduct problems, delinquency,<sup>3,4</sup> and substance use.<sup>5,6</sup> These effects of pubertal timing have been shown to persist to middle adolescence<sup>4</sup> or adulthood<sup>7,8</sup> in some studies, but to dissipate in others.<sup>9</sup> Few investigations have assessed long-term, prospective effects of early puberty from early adolescence, when early pubertal timing becomes overtly apparent<sup>10</sup> and behavioral problems among early-maturing girls emerge.<sup>2,11</sup> Identifying factors that contribute to behavioral problems in early-maturing girls in early adolescence is critical for interventions to prevent later negative outcomes.

One mechanism implicated in the behavioral problems of early-maturing girls is negative peer influence. Studies suggest that early-maturing girls gravitate toward more-deviant peers who may model and reinforce problem behavior.<sup>8,12</sup> Affiliations with deviant peers accounted for the associations of early puberty with initiation of substance use among mostly white girls<sup>13</sup> and aggression and delinquency in an ethnically diverse sample of youth.<sup>11</sup> By contrast, early pubertal timing was not related to deviant peer affiliations among young black girls,<sup>14</sup> suggesting that negative peer influence may not be a uniform correlate of early puberty across age and race/ethnicity.

Early-maturing girls may not only associate with more deviant peers but also be more susceptible to negative peer influences. Their increased susceptibility may stem from the developmental asynchrony of being more physically mature and treated by others as “older” but not yet having developed the cognitive, emotional, and social skills necessary to resist negative peer influence.<sup>4,15</sup> Several studies indicate that friends’ deviant behavior is more closely linked with problem behavior

among early-maturing youth. Specifically, having substance-using friends was more strongly related to one’s own willingness to use substances among black youth who matured earlier.<sup>16</sup> Association with deviant peers was also more strongly related to alcohol use<sup>17</sup> and delinquency<sup>18</sup> in mostly white early-maturing adolescents. These studies suggest that increased susceptibility to peer influence may be present in early-maturing youth across races/ethnicities, but racial/ethnic differences have not been examined. Additionally, it is unclear whether the increased susceptibility among early maturers is evident in very early adolescence and whether it predicts long-term negative outcomes. Because early puberty occurs earlier and is linked with more detrimental outcomes in girls,<sup>3</sup> and because deviant peer affiliations are differentially involved in problem behavior of early-maturing girls versus boys,<sup>13</sup> it is critical to examine susceptibility to deviant peer influence among early-maturing girls.

This study investigates the roles of early puberty and deviant peer behavior in trajectories of girls’ behavioral problems from ages 11 to 16 years. We assess whether early-maturing girls are more likely to associate with deviant peers at age 11 and whether deviant peer behavior is more closely related to behavioral problems in early- versus not-early-maturing girls. Because research suggests racial/ethnic differences in correlates of early puberty<sup>19,20</sup> and a role of deviant peers for early maturers,<sup>13,14</sup> we examined racial/ethnic differences in the studied relationships. The study includes problem behaviors most relevant in early adolescence, aggression and minor delinquency, including relational aggression that is more typical and consequential for girls.<sup>21</sup> Peer deviance is conceptualized as the behavior of each girl’s best friend, the most influential peer during adolescence.<sup>22</sup>

## METHODS

### Study Design and Participants

Participants took part in Healthy Passages (2004–2011), a longitudinal study of health-risk behaviors in adolescence<sup>23,24</sup> conducted by the following institutions: the University of Alabama, Birmingham; the University of California, Los Angeles/Rand; and the University of Texas, Houston. Institutional review boards at all research sites and the Centers for Disease Control and Prevention approved the study. The sampling frame included all fifth-graders in regular classrooms in public schools with fifth-grade enrollments of  $\geq 25$  students in the Birmingham, Houston, and Los Angeles metropolitan areas. Schools and students were selected by using a 2-stage probability sampling procedure. Stratified sampling was used to achieve similar numbers of black, Hispanic, and non-Hispanic white participants. Design and nonresponse weights were constructed so that weighted results represented the population of fifth-graders in the public schools in each area.

Among the 11 532 fifth-graders eligible for the study, 58% parents provided permission to be contacted; 77% of these families completed interviews at wave 1 ( $n = 5147$ ; 2607 girls). The sample closely resembled the sampled population and all eligible students on basic demographic characteristics; sampling weights adjusted for any selection bias due to differential non-response. After 2 and 5 years, 4773 and 4521 families completed wave 2 and wave 3 interviews, respectively (93% and 88% retention). This study uses data from all 2607 girls in the sample. The girls had a mean age of 11.1 years at wave 1, 13.1 years at wave 2, and 16.1 years at wave 3. Racial/ethnic composition was 35% black, 35% Hispanic, 24% non-Hispanic white, 3% multiracial, 3% Asian or Pacific Islander, and

<1% Native American. Due to small sizes, the last 3 categories were combined into an “other” group. Birmingham contributed 30% participants, Houston 36%, and Los Angeles 34%. Median family income was \$30 000 to \$34 999 per year, and median parental educational level was “some college or a 2-year degree.” The sample comprised 6% single-parent families, 66% families with 2 married or cohabiting parents, and 28% other family structures.

Parent and child interviews were conducted in separate private spaces by trained staff with a computer-assisted personal interview (CAPI) and audio-computer-assisted self-interview (A-CASI). English and Spanish versions were available; 8% of the child interviews and 23% of parent interviews were conducted partly or fully in Spanish. The CAPI/A-CASI required a response on each item to move forward to the next; therefore, there were few missing data that were imputed by using a single Markov chain Monte Carlo imputation via SAS PROC MI (multiple imputation; SAS Institute, Cary, NC).

## Measures

### *Delinquency*

At each wave, delinquency was measured with 7 dichotomous (yes/no) items: 5 questions on fighting (ever in a fight, fighting at school, gang fighting, sustained injuries, and inflicted injuries) and 2 on running away from home and truancy. The time frame was lifetime at wave 1 and since the last interview at waves 2 and 3. The total score indicated number of items endorsed ( $\alpha = 0.67\text{--}0.72$ ).

### *Physical, Nonphysical, and Relational Aggression*

At each wave, aggression was measured with the Problem Behavior Frequency Scale.<sup>25</sup> Children reported on their behavior in the last 30 days by

using a 4-point scale ranging from “never” (0) to “6 or more times” (3). Items were summed to form scales. The Physical Aggression subscale (7 items) measured threatened and completed physical aggression (eg, hitting, shoving) ( $\alpha = 0.73\text{--}0.80$ ). The Relational Aggression subscale (6 items) assessed use of social exclusion and gossip to hurt others ( $\alpha = 0.60\text{--}0.72$ ). The Nonphysical Aggression subscale (5 items) assessed verbal and nonverbal aggression (eg, putting someone down, giving mean looks) ( $\alpha = 0.70\text{--}0.79$ ).

### *Best Friend’s Deviant Behavior*

At wave 1, girls were asked to name their best friend and to report on the best friend’s behavior by using a 3-point response scale ranging from “never true” (0) to “true most of the time” (2). The questions included 3 negative behaviors (talks back to adults, lies and cheats, disturbs other kids in class) and 1 positive behavior (is nice and helpful to other kids). The positive behavior was reverse scored, and all 4 items were summed for a total score ( $\alpha = 0.55$ ).

### *Early Maturation*

At waves 1 and 2, girls indicated whether they had reached menarche and, if yes, at what age. On the basis of a recent report identifying the average age of menarche as 12 years for all racial/ethnic groups,<sup>26</sup> we defined early maturation as the onset of menarche before 11 years.

### *Covariates*

Covariates included exact age, site (Birmingham, Houston, or Los Angeles), race/ethnicity (black, Hispanic, white, or other), and use of Spanish during the child and parent interviews. Additional covariates included family structure (single parent, 2 parents, or other) and socioeconomic status (SES; average of standardized highest level of education in the household and family income).

## Statistical Analyses

All analyses were conducted in Mplus 7 (Muthén & Muthén, Los Angeles, CA) using maximum likelihood estimation with robust SEs, which yields valid estimates for non-normally distributed variables. All analyses adjusted for design and nonresponse weights, stratification by site, and clustering of participants within schools. Girls with complete versus missing data were compared on all study variables. Missing data were handled with Full Information Maximum Likelihood in all other analyses. Differences between early- versus not-early maturers and between the 4 racial groups were examined with regression models. Relationships among problem behaviors and their stability were tested with correlations. The relationship between early maturation and friend’s deviance was examined with a regression model adjusted for covariates; racial/ethnic differences in the effects of friend’s deviance were tested with multigroup models, comparing a model in which the coefficient for friend’s deviance was constrained to be equal across all racial/ethnic groups with a model in which it could vary across groups. Latent growth curve models estimated the level of each problem behavior at age 11 years and its linear change over time. Early puberty, friend’s deviance, and their interaction were included as predictors of age 11 level and change in each problem behavior; all effects were adjusted for covariates. Racial/ethnic differences were tested with multigroup modeling.

## RESULTS

Girls with missing data were more likely to be early maturing, white, or in the “other” minority group (small differences). Early-maturing girls (15% of the sample) came from lower SES families and reported higher levels of delinquency at all ages and aggression

at ages 11 and 13 than did not-early-maturing girls (Table 1). Racial/ethnic differences emerged on all variables except for age. White girls had higher SES, higher rates of 2-parent families, and lower rates of early puberty than all other groups. Hispanic and black girls reported greater friend deviance and more problem behavior than white girls. Delinquency and the 3 types of aggressive behavior were positively intercorrelated within each time point ( $r = 0.19-0.72$ ,  $P < .001$ ) and moderately stable over time ( $r = 0.20-0.44$ ,  $P < .001$ ). After adjusting for covariates, early maturation was not related to best friend's deviant behavior ( $\beta = 0.03$ ,  $P = .73$ ). This lack of relationship did not vary by race/ethnicity ( $\Delta\chi^2[3] = 1.93$ ,  $P = .59$ ).

All latent growth curve models had good fit to the data (comparative fit index [CFI] = 0.94–0.97; Root Mean Square Error of Approximation [RMSEA] = 0.02–0.04;

Table 2). Best friend's deviant behavior was associated with higher levels of delinquency and all types of aggression at age 11 (small to medium effects). This association remained stable over time for delinquency and physical aggression but lessened for relational and nonphysical aggression (ie, negative effects on change) due to faster increase in aggression among girls with nondeviant friends (Fig 1). Early puberty predicted higher levels of delinquency and physical aggression at age 11 (small effects). The association of early puberty with delinquency remained stable, but for physical aggression it dissipated over time (Fig 1 A and B). The interaction of early puberty with best friend's deviant behavior reached significance for both age 11 and change in delinquency (small effects); friend's deviant behavior was more strongly related to age 11 delinquency among

early-maturing than not-early-maturing girls, but over time, the link between friend's deviance and delinquency diminished among early maturers (Fig 1A). Overall, relational and nonphysical aggression increased over time, whereas physical aggression and delinquency remained stable for girls who did not mature early. For early maturers, physical aggression declined and delinquency increased or decreased depending on initial friend's deviance.

Multigroup modeling indicated racial/ethnic differences in the effects of early puberty and/or friend's deviance for relational and nonphysical aggression (Table 2), but not for delinquency or physical aggression. Follow-up multigroup analyses constraining 1 effect at a time revealed racial/ethnic differences in the effect of early puberty on relational aggression at age 11 ( $\Delta\chi^2[3] = 11.18$ ,  $P = .01$ ) and early puberty by friend's deviance interaction on age 11

**TABLE 1** Descriptive Characteristics for the Overall Sample and Subgroups Defined by Pubertal Timing and Race/Ethnicity

	Overall	Pubertal Timing		Race/Ethnicity			
		Early	Not Early	Hispanic	Black	Other	White
Age at wave 1, mean (SD), y	11.10 (0.57)	11.11	11.12	11.10	11.12	11.00	11.12
Family SES, mean (SD)	-0.16 (0.92)	-0.44***	-0.13	-0.64***	-0.21***	0.50**	0.79
Single-parent family, %	6	6	6	3	11***	7	4
Two parents, %	66	61	66	75*	40***	70*	81
Early maturation, %	15	100	0	17***	19***	15**	6
Best friend's deviance, mean (SD)	0.73 (1.13)	0.79	0.71	0.82***	0.75**	0.69	0.52
Delinquency, mean (SD) <sup>a</sup>							
Age 11 years	0.61 (1.03)	0.87***	0.57	0.37	1.19***	0.57*	0.35
Age 13 years	0.63 (1.13)	1.04***	0.56	0.67***	0.93***	0.34	0.19
Age 16 years	0.67 (1.15)	0.82**	0.65	0.74***	0.87***	0.45	0.29
Physical aggression, mean (SD) <sup>b</sup>							
Age 11 years	0.95 (1.67)	1.23***	0.91	0.83	1.40***	0.99*	0.61
Age 13 years	1.50 (2.41)	2.02***	1.41	1.53***	2.12***	1.16	0.62
Age 16 years	1.60 (2.47)	1.65	1.61	1.50***	2.39***	0.97	0.83
Relational aggression, mean (SD) <sup>c</sup>							
Age 11 years	1.00 (1.69)	1.21*	0.97	0.93*	1.35***	1.08*	0.64
Age 13 years	1.20 (1.90)	1.45*	1.16	1.15	1.48***	1.31	0.90
Age 16 years	1.12 (1.54)	1.07	1.14	0.88***	1.39*	1.28	1.23
Nonphysical aggression, mean (SD) <sup>d</sup>							
Age 11 years	1.19 (1.69)	1.40*	1.16	1.10	1.52***	1.18	0.92
Age 13 years	1.60 (2.24)	2.01***	1.54	1.67***	1.93***	1.27	1.05
Age 16 years	1.96 (2.29)	2.01	1.97	1.81	2.35***	1.69	1.80

<sup>a</sup> Delinquency ranged from 0 (none) to 6 delinquent acts; means correspond to <1 delinquent act.

<sup>b</sup> Physical Aggression ranged from 0 (none) to 19 (each aggressive behavior  $\geq 6$  times last month).

<sup>c</sup> Relational Aggression ranged from 0 (none) to 18 (each aggressive behavior  $\geq 6$  times last month).

<sup>d</sup> Nonphysical Aggression ranged from 0 (none) to 15 (each aggressive behavior  $\geq 6$  times last month). Means for each aggression scale correspond to engaging in each aggressive behavior 1 to 2 times in last month (1) to 3 to 5 times per month (2).

\* $P < .05$ , \*\* $P < .01$ , \*\*\* $P < .001$ .

**TABLE 2** Associations of Early Maturation and Best Friend's Deviant Behavior With Problem Behaviors at Age 11 and Their Changes From Ages 11 to 16

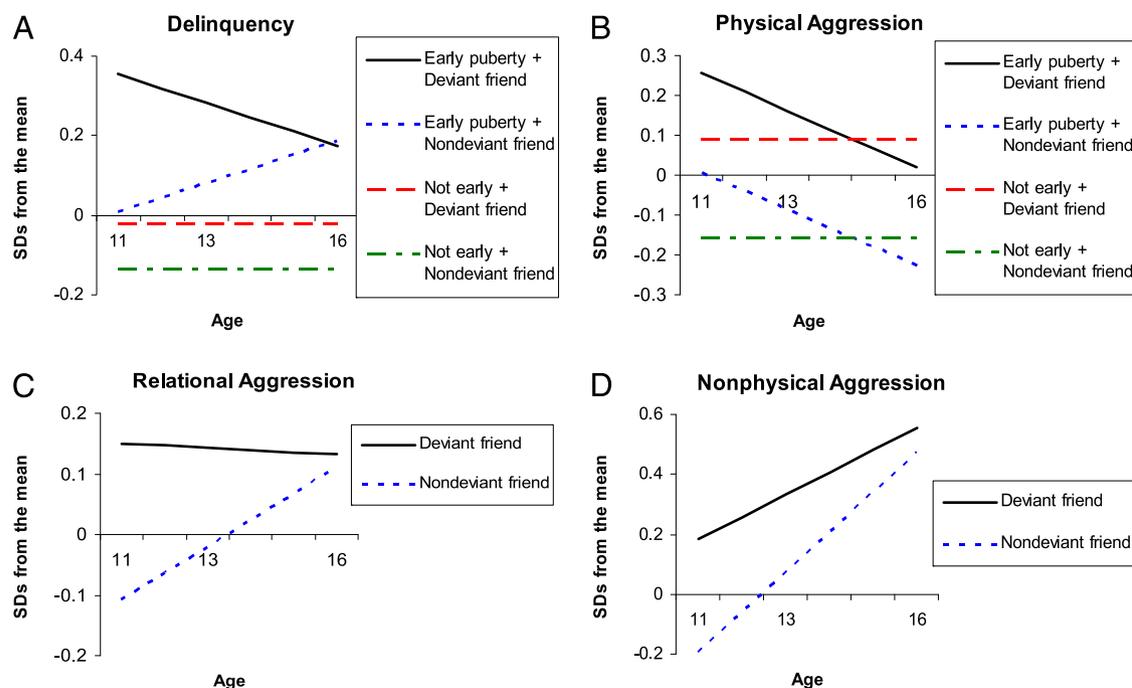
Predictor	Delinquency	Physical Aggression	Relational Aggression	Nonphysical Aggression
Effect sizes at age 11 years				
Best friend's deviance	0.09 (0.03 to 0.15)*	0.18 (0.11 to 0.26)*	0.19 (0.13 to 0.26)*	0.27 (0.20 to 0.33)*
Early maturation	0.15 (0.08 to 0.21)*	0.09 (0.03 to 0.14)*	0.05 (−0.02 to 0.12)	0.06 (0.00 to 0.12)
Early × best friend's deviance	0.07 (0.02 to 0.13)*	0.02 (−0.06 to 0.09)	0.06 (−0.01 to 0.14)	0.03 (−0.06 to 0.13)
Effects sizes on change				
Average change per year	−0.47 (−1.71 to 0.76)	0.93 (−0.15 to 2.00)	2.49 (1.32 to 3.65)*	2.14 (0.91 to 3.37)*
Best friend's deviance	−0.05 (−0.12 to 0.03)	−0.03 (−0.10 to 0.04)	−0.15 (−0.22 to −0.08)*	−0.15 (−0.21 to −0.08)*
Early maturation	−0.06 (−0.13 to 0.01)	−0.08 (−0.14 to −0.03)*	−0.05 (−0.12 to 0.02)	−0.03 (−0.10 to 0.03)
Early × best friend's deviance	−0.09 (−0.15 to −0.02)*	−0.04 (−0.11 to 0.02)	−0.03 (−0.10 to 0.05)	−0.06 (−0.13 to 0.01)
Model fit				
Model $\chi^2(15)$ , <i>P</i> value	61.14, .00	72.82, .00	32.27, .01	46.62, .00
CFI	0.96	0.94	0.97	0.96
RMSEA	0.03	0.04	0.02	0.03
Test of racial/ethnic differences				
$\Delta \chi^2(18)$ , <i>P</i> value	24.50, 0.14	20.01, 0.33	48.16, 0.00*	30.14, 0.04*

Data are presented as  $\beta$  (95% confidence interval).  $\beta$ s are standardized regression coefficients that can be interpreted as an SD increase in problem behavior associated with early versus not-early maturation, a 1-SD increase in best friend's deviance, and 1-year increase in age. Covariates in all models include child age at wave 1, family structure, family SES, Spanish used during child and adult interviews, and site. All effects were adjusted for stratification by site, clustering by school, and design and nonresponse weights. \* $P > .05$ . CFI, comparative fit index; RMSEA, root mean square error of approximation.

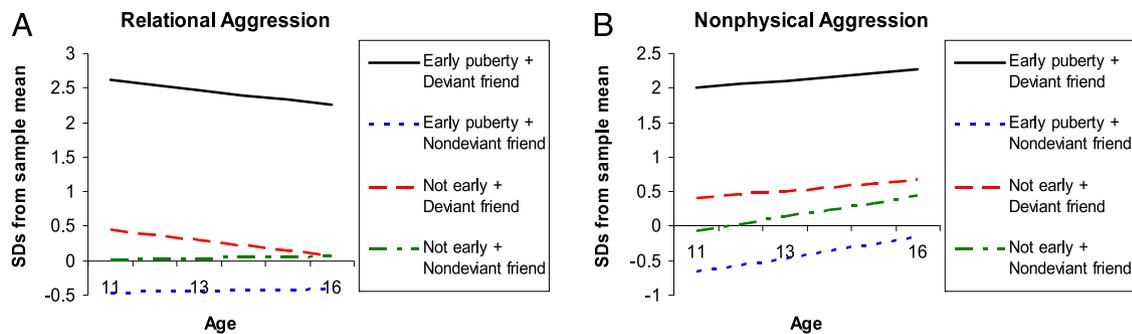
relational and nonphysical aggression ( $\Delta \chi^2[3] = 30.96, P = .00; \Delta \chi^2[3] = 11.78, P = .01$ ). In each case, these effects were large and significant for the "other" group ( $\beta = 0.30, P = .00$ , for the effect of

early puberty on relational aggression;  $\beta = 0.51$  and  $0.52, P = .00$  and  $.01$  for the interactions of early puberty with friend's deviance in relational and nonphysical aggression). However, these

effects were nonsignificant for Hispanic, white, or black girls ( $P = .09$ – $.99$ ). Thus, for girls in the "other" racial/ethnic minority group, friend's deviance was more strongly associated with relational and

**FIGURE 1**

A, At age 11 years, the highest levels of delinquency are reported by early-maturing girls with deviant friends, but the effects of best friend's deviance among early-maturing girls dissipate by age 16. B, Early puberty and best friend's deviance are independently associated with physical aggression at age 11; the effect of early puberty lessens over time. C, D, Best friend's deviance is related to more relational (C) and nonphysical (D) aggression at age 11, but the differences diminish by age 16 due to faster increase in aggression among girls with nondeviant friends. For all problem behaviors, 0 indicates sample mean at age 11; all values are expressed as SDs from this mean. Best friend's high/low deviance is 1 SD above/below the mean. Values are estimated from models using all girls ( $N = 2607$ ).



**FIGURE 2**

In the “other” racial/ethnic minority group, best friend’s deviance is more strongly associated with relational (A) and nonphysical (B) aggression among early-maturing girls; these differences persist from age 11 to age 16 years. For both types of aggression, 0 indicates sample mean at age 11; all values are expressed as SDs from this mean. Best friend’s high/low deviance is 1 SD above/below the mean. Values are estimated from models using all girls in the “other” racial/ethnic minority group ( $n = 160$ ).

nonphysical aggression at age 11 among early- than among non-early-maturers, and these differences persisted over time (Fig 2).

## DISCUSSION

In this 5-year prospective study of young adolescent girls, early onset of puberty was associated with persistently elevated delinquent behavior and a transient increase in physical aggression. Being an early maturer was not related to deviant behavior of the girls’ best friend at age 11. However, having a more-deviant best friend was associated with higher levels of aggression and delinquency at age 11. With the exception of physical aggression, these effects of friend’s deviance dissipated by age 16. Additionally, the relationship between best friend’s deviant behavior and delinquency at age 11 was stronger among early-maturing girls, suggesting increased susceptibility to negative peer influence in early maturers. A similar pattern was obtained also for relational and nonphysical aggression among girls in the “other” racial/ethnic minority group. However, other relationships among early puberty, friend’s deviance, and problem behavior were consistent across race/ethnicity. The lasting association of early puberty with girls’ delinquent behavior confirms previous findings<sup>4,11</sup> and extends

them across 4 racial/ethnic groups. The transient association of early puberty with physical aggression may be explained by generally low and decreasing levels of physical aggression in adolescent girls.<sup>27</sup> Consistent with some previous research,<sup>28</sup> early puberty was not related to relational and nonphysical aggression.

The lack of association between early puberty and friend’s deviance contradicts most previous research in older youth<sup>4,11,13</sup> but is consistent with a study of 10-year-old black girls.<sup>14</sup> Our findings suggest that early-maturing girls of all races/ethnicities do not begin to affiliate with deviant peers until age 12 to 13 years. Nevertheless, early-maturing girls in this study reported more delinquent behavior at age 11 if their best friend was more deviant. These results parallel similar findings in older adolescents,<sup>4,18</sup> indicating that increased vulnerability to negative peer influences among early-maturing girls emerges as early as age 11. At this young age, most girls have not yet developed the cognitive, emotional, and social skills needed to deal with negative peer influence.<sup>4,15</sup>

Independent of early puberty, best friend’s deviance at age 11 was associated with higher levels of concurrent delinquency and all types of aggression. Most of the relationships between best

friend’s deviance and problem behaviors dissipated by age 16, suggesting short longevity of peer influences from fifth-grade best friends. This limited span of peer influence may be explained by high friendship turnover accompanying the middle school transition,<sup>29,30</sup> which occurred in our sample within a year of the first assessment. Although friends’ influences may be short-lived, the resulting increases in problem behaviors may still incur long-term negative consequences.<sup>31</sup>

Collectively, the results suggest that early-maturing girls may benefit from efforts to limit their associations with deviant peers and to reduce potential negative peer influences. Our findings suggest that these efforts may be best initiated at or before age 11 and should precede the normative transition to middle school (around age 12) that increases exposure to older and more-deviant peers. In subsequent years, early-maturing girls may benefit from close monitoring of emerging peer alliances by parents and other adults. Preventing undesirable peer affiliations or limiting their influence can be accomplished through communication and monitoring; it may reduce many of the problem behaviors associated with early puberty.

Although most of the relationships among early puberty, best friend’s

deviance, and problem behavior did not reveal racial/ethnic differences, early-maturing girls in the “other” minority group appeared to be more vulnerable to negative friend influences on relational and nonphysical aggression. The “other” minority group included 160 girls who were identified primarily as multiracial (50%) or Asian/Pacific Islander (47%). It is possible that the stress of being both an early maturer and a member of a small minority group contributed to these girls’ greater vulnerability. Future studies should replicate these findings in larger samples while addressing the roles of minority and immigrant status and cultural factors.

Several limitations of the study need to be noted. Although the girls were followed prospectively over time, the correlational design does not support causal inferences. For instance, other factors (eg, family conflict or father’s absence) may be responsible for both early puberty and increased delinquency, rather than early puberty being causally involved in delinquent behavior. Nevertheless, early puberty, measured as early as fifth grade, remains a risk factor for delinquent and physically

aggressive behavior. Our assessment of peer deviance was limited to girls’ reports of their best friend’s behavior and had low internal reliability. Future studies should use more objective and reliable measures of peer behavior (eg, friends’ self-reports) and encompass broader peer networks. Another limitation is reliance on the girls’ self-reports of menarche onset and problem behaviors. Future studies should use other informants (eg, physical assessments of pubertal development, peer reports of aggression). Finally, the average levels of problem behaviors were low in this community sample of girls, which likely contributed to the small to medium magnitude of most effects. Because of these small to medium effects, other salient risk factors for problem behavior (eg, temperament, parenting, broader peer influences) should be included in interventions.

## CONCLUSIONS

Early puberty in girls has been linked with problem behavior in adolescence. Deviant peer affiliations may play a major role in this relationship, with early-maturing girls being more likely to affiliate with deviant peers and more

susceptible to negative peer influences. However, little is known about the developmental timing and racial/ethnic differences in these processes. This study revealed that early puberty is a risk factor for stable delinquency and transient physical aggression for girls from all major racial/ethnic groups. Best friend’s deviance was associated with all problem behaviors at age 11, but for most outcomes these effects dissipated by age 16. At age 11, early-maturing girls did not yet have more deviant best friends than their later-maturing counterparts, but they showed increased susceptibility to negative peer influences on delinquency. This increased vulnerability extended to relational and nonphysical aggression for a small group of primarily multiracial and Asian/Pacific Islander girls. These findings suggest that prevention of deviant peer affiliations in early-maturing girls may be most relevant at or before age 11 and that emerging peer liaisons of these girls should be closely monitored as they enter adolescence at ages 12 to 13 years. Early-maturing girls may benefit from increased emotional and social support to help decrease their susceptibility to negative peer influences.

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