

# Correlates of Adolescent and Young Adult Sexual Initiation Patterns

**CONTEXT:** Identifying adolescent characteristics associated with different patterns of sexual initiation is critical to promoting healthy sexual development.

**METHODS:** Patterns of sexual initiation were examined among 12,378 respondents to Waves 1 (1994–1995) and 4 (2008) of the National Longitudinal Study of Adolescent Health. Multinomial logistic regression explored associations between adolescent characteristics and membership in five latent classes capturing the timing, sequence, pace and variety of sexual initiation patterns.

**RESULTS:** Age and indicators of greater psychosocial conventionality were associated with membership in the atypical “postponers” class (characterized by postponement of oral, vaginal and anal sexual activity until early adulthood), although patterns of associations varied by gender. For example, compared with males who attended religious services at least once a week, males who never attended religious services were more likely to appear in the vaginal initiators/multiple behaviors class (characterized by initiation of vaginal sex first and then initiation of another behavior after at least one year), rather than in the postponers class (relative risk ratio, 2.5). Compared with women who prayed at least once a day, those who never prayed were more likely to be in the vaginal initiators/single behavior class (whose members typically engaged in only one type of behavior), rather than in the postponers class (2.0).

**CONCLUSIONS:** Individuals who are more adherent, and presumably more committed, to the attitudes, values and expectations of conventional society are more likely than others to delay multiple types of sexual activity until well beyond the norm for their peers.

*Perspectives on Sexual and Reproductive Health, 2014, 46(4):211–221, doi: 10.1363/46e2214*

By *Bianka M. Reese, Sophia Choukas-Bradley, Amy H. Herring and Carolyn T. Halpern*

*Bianka M. Reese is a doctoral student, Department of Maternal and Child Health; Sophia Choukas-Bradley is a doctoral student, Department of Psychology; Amy H. Herring is professor, Department of Biostatistics; and Carolyn T. Halpern is professor, Department of Maternal and Child Health—all at the University of North Carolina at Chapel Hill.*

Sexual activity before marriage is now the typical developmental pathway for U.S. adolescents and young adults. In a 2011 national survey, 47% of students in grades 9–12 reported ever having had vaginal intercourse.<sup>1</sup> By their late 20s, approximately 90% of males and females have engaged in vaginal sex.<sup>2</sup> Noncoital sexual activity is also common among youth; more than half of 15–19-year-olds have received or performed oral-genital sex, and approximately 11% have engaged in anal sex.<sup>3</sup> Levels of noncoital sexual activity are even higher among those aged 15–19 who have had vaginal sex—87% report oral-genital sex, and 21% report anal sex.<sup>3</sup>

Although the initiation of sexual activity during adolescence and early adulthood is nearly universal, little is known about the patterns of initiation—including the timing, sequencing and spacing of different sexual behaviors—or the characteristics associated with those patterns. Most research on adolescent sexual behavior has focused on the characteristics associated with first vaginal intercourse and the implications of its timing and circumstances. Although first vaginal intercourse is clearly an important transition, adolescents engage in other types of sexual behavior that also have implications for health and well-being. Different characteristics may be associated with the initiation of these behaviors,<sup>3</sup> and reducing adolescent sexuality to a

single event or behavior (i.e., transition to first intercourse) limits examination of normative developmental processes. Greater understanding of normative processes requires the consideration of adolescent sexuality in the context of broader development; the inclusion of a full repertoire of sexual and romantic experiences; and the examination of associations between these behaviors and other biological, psychological and social characteristics.<sup>4</sup>

## PRIOR RESEARCH

Although few studies have examined the characteristics associated with the debut of noncoital behaviors, a large literature documents a variety of correlates of the initiation of vaginal sex: social and demographic characteristics (e.g., low socioeconomic status, single-parent households);<sup>5</sup> early pubertal timing;<sup>6,7</sup> poor family communication;<sup>8</sup> low attachment to conventional institutions, such as family, school and religion;<sup>9,10</sup> and general psychosocial or behavioral unconventionality, especially engagement in nonsexual risk behaviors, such as smoking and drug use.<sup>11,12</sup> Whether these characteristics are also associated with noncoital behavior and, more specifically, with complex patterns of sexual initiation is not known.

In one of the first studies to describe multifaceted patterns of sexual initiation in a nationally representative sample

of adolescents, Haydon et al. used latent class analysis to group participants in the National Longitudinal Study of Adolescent Health (Add Health) into one of five latent classes on the basis of first sexual behavior initiated (vaginal, oral-genital or anal sex), timing of first sexual experience, number and variety of behaviors, spacing between first and second behavior, and whether anal sex was initiated before age 18.<sup>4</sup> Respondents who initiated vaginal sex first and then waited at least one year before initiating another behavior (typically oral-genital sex, as fewer than 10% reported anal sex before age 18) made up the largest class (vaginal initiators/multiple behaviors, accounting for 49% of the sample). Their average age at sexual initiation was 15.7 years. The second-largest class consisted of respondents who initiated oral-genital and vaginal sex within the same year and did not have anal sex during adolescence (dual initiators; 32%); the average age at initiation in this class was 16.5 years. In the third class, more than three-quarters of members had engaged in only one type of behavior, typically vaginal sex; the members of this class were, on average, 17.8 years old at initiation (vaginal initiators/single behavior; 8%). The two most atypical classes were postponers (6%) and early/atypical initiators (6%). Postponers delayed all sexual activity until almost age 22, on average, but reported a relatively fast progression once sexual initiation had occurred; 85% initiated oral-genital and vaginal sex within the same year. In contrast, the early/atypical class was characterized by an early age at initiation (15, on average) in combination with initiation of two or more behaviors within the same year; most significantly, all early/atypical initiators reported having had anal sex by age 18.

Two later studies examined the implications of these sexual initiation patterns for selected aspects of young adult sexual and reproductive health. First, Haydon et al. investigated their associations with several indicators of sexual risk-taking: diagnosis of STDs, concurrent sexual partners and exchanging sex for money.<sup>13</sup> They found that postponers had lower odds of each outcome relative to vaginal initiators/multiple behaviors (the normative class). Early/atypical initiators were more likely than the normative class to report concurrent partners, but were no more likely to report STDs or exchanging sex for money. Subsequently, Huerta, Harris and Halpern examined the association between class membership and romantic relationship satisfaction in young adulthood.<sup>14</sup> After relationship type (marriage, cohabitation, dating) was controlled for, postponers reported better romantic relationship satisfaction than the normative class. However, early/atypical initiators did not differ from the normative class in satisfaction. In a related set of analyses that investigated the associations between the timing and sequencing of first sexual activities and the risk of teenage pregnancy, Reese et al. found that female adolescents who initiated oral sex first and who waited at least a year before having vaginal intercourse were significantly less likely to experience a pregnancy during their teenage years than female adolescents who initiated vaginal

sex first.<sup>15</sup> Collectively, these findings suggest potential benefits of sexual postponement, but also indicate that relatively uncommon (and seemingly risky) patterns of initiation are not necessarily associated with negative consequences for the outcomes examined to date.

## THEORETICAL FRAMEWORK

Much of the literature examining the characteristics associated with first vaginal intercourse relies on problem behavior theory. “Problem behavior” is behavior that is proscribed by society. Problem behavior theory is based on the principle that human behavior results from dynamic and continuous interactions between person and environment.<sup>16</sup> Three major systems define this relationship and predict involvement in problem behavior: the personality system, which includes expectations of achievement, locus of control, alienation, self-esteem and religiosity; the behavior system, which includes both conventional behaviors (e.g., church attendance) and unconventional behaviors (e.g., expulsion from school); and the perceived environment system, which includes perceived support and expectations of parents and peers. The presence of and interactions among various aspects of these three systems determine an individual’s proneness to engage in behaviors that are deemed problematic by society. This overall level of proneness, or psychosocial conventionality, reflects an individual’s commitment to the attitudes, values and expectations of mainstream society.

The goal of the present study was to provide a more comprehensive understanding of sexual initiation by examining how diverse aspects of behavior, personality and context are associated with the way that adolescents start their sexual lives. Building on the work of Haydon et al.,<sup>4</sup> we used Add Health data to examine correlates of latent class membership using an extensive array of psychosocial, behavioral, physical, and social and demographic characteristics (derived from problem behavior theory) that have been associated with timing of first vaginal sex. We adopted this theoretical framework because of its prominence in extant literature and its holistic inclusion of developmental factors, and not to imply that adolescents’ engagement in sexual behavior is necessarily “problematic.”

On the basis of problem behavior theory, we hypothesized that characteristics representing greater psychosocial conventionality—specifically, greater attachment to three conventional institutions (family, school and religion)—would be associated with a higher likelihood of postponing all sexual activity until early adulthood. Similarly, we expected that adolescents low in conventionality would be most likely to engage in sexual activity early. We also hypothesized, on the basis of past research on vaginal sex initiation, that early pubertal timing would be associated with a lower likelihood of postponing sexual activity. We also explored associations between sexual initiation and weight-related variables (i.e., body mass index and perceived weight status), because work on these measures has been limited. Given the novelty of our latent classes, and

the lack of relevant theory or empirical research, we did not have a priori hypotheses about whether, and which, variables might differentiate among identified sexual initiation patterns.

## METHODS

### Sample

We used data from Add Health, a nationally representative sample of U.S. adolescents who were in grades 7–12 (ages 11–21) in the 1994–1995 school year; four waves of individual interviews have been completed to date.<sup>17</sup> Add Health began with a school-based design and a sample of 132 high schools and feeder schools, stratified by region, urbanicity, school type, ethnic mix and size. The Wave 1 in-home sample consisted of 20,745 respondents selected to complete a 90-minute interview (response rate, 79%). Also in Wave 1, approximately 85% of parents (usually the resident mother) of participating adolescents completed a 30-minute in-home interview. The Wave 4 follow-up was completed in 2008 by 15,701 participants aged 26–32 (response rate, 80%).

We used data from Waves 1 and 4, and restricted analyses to the 14,800 respondents who participated in both waves and who had a valid sampling weight. Some 969 respondents were excluded because they lacked data on age at initiation of oral-genital, anal or vaginal sex; 1,210 were excluded because of missing data on any component measure of psychosocial conventionality; and 243 were excluded because of missing data on social and demographic characteristics. Applying these exclusion criteria yielded an analytic sample of 12,378 respondents (6,075 males and 6,303 females).

### Measures

•**Outcome.** At Wave 4, respondents used computer-assisted self-interviewing technology to report whether they had ever engaged in vaginal, anal and oral-genital sex.\* For each endorsed behavior, respondents indicated their age (in years) at initiation. Haydon et al.<sup>4</sup> used these measures in their latent class analysis of sexual initiation. We use these same classes as our outcome.

•**Psychosocial conventionality.** Variables selected to capture the personality, behavior and perceived environment components of psychosocial conventionality were measured at Wave 1.

Eight personality characteristics were measured. Self-esteem was a composite of seven items from Rosenberg's self-esteem scale (Cronbach's alpha, 0.95);<sup>18</sup> all questions used a five-point Likert scale, and higher values indicated greater self-esteem. Locus of control assessed the extent (measured on a five-point Likert scale) to which respondents agreed with the statement "When you get what you want, it's usually because you worked hard for it"; higher values reflect a greater sense of control. Alienation measured whether the respondent felt socially accepted and felt loved and wanted. Points were reverse-coded and summed across each category to create an overall alienation score

(range, 2–10; higher values indicate greater feelings of alienation). Value of achievement and expectation of achievement were measured with questions on the desire to attend and perceived likelihood of attending college, respectively; each question used a five-point Likert scale, with higher values indicating greater aspirations. Feeling toward premarital sex is a summary score measuring anticipated feelings of guilt, loneliness and physical pleasure after sexual intercourse; scores range from 3 to 15, and higher values reflect less guilt and loneliness, and more physical pleasure (Cronbach's alpha, 0.85). Measures of religious subjective experiences were how important religion is to the respondent (five-point Likert scale; higher values reflect greater importance) and frequency of prayer ("at least once a day," "once a week," "once a month," "less than once a month" and "never").

Six behavior variables were examined. Public dimensions of religiosity are religious services attendance and participation in church-related youth activities in the past 12 months; response options were "once a week or more," "once a month or more," "less than once a month" and "never." Respondents were asked if they had ever repeated a grade, been suspended from school or been expelled from school. Finally, school attachment is a summary score measuring feelings of being close to people at school, feeling a part of school, feeling happy to be at school and feeling safe at school. Each component was measured on a five-point Likert scale; total scores range from 4 to 20, and higher values indicate greater attachment to school (Cronbach's alpha, 0.78).

Four perceived environment measures examined respondents' perceptions of their parents' and peers' attitudes. Maternal attitudes toward sexual activity are represented by a summary score based on respondents' reports of whether their mother would approve of their having sex and of their having sex with a steady partner. Scores were averaged across items and range from 3 to 15; higher values indicate greater maternal approval of sexual activity (Cronbach's alpha, 0.95). Parent-adolescent relationship quality was measured by summing answers to four questions about perceptions of closeness, communication satisfaction, relationship satisfaction and warmth with each resident parent. In households with two parents, we selected the higher of the two scores; scores range from 4 to 20, and higher values reflect better relationship quality (Cronbach's alpha, 0.85). Maternal attitudes toward education were measured by respondents' ratings of how disappointed their mothers would be if they did not graduate from high school and if they did not graduate from college. Scores were summed and range from 2 to 10; higher values reflect

\*Specifically, participants were asked the following questions: "Have you ever had vaginal intercourse? (Vaginal intercourse is when a man inserts his penis into a woman's vagina)"; "Have you ever had anal intercourse? (By anal intercourse, we mean when a man inserts his penis into his partner's anus or butt hole)"; and "Have you ever had oral sex? That is, has a partner ever put his/her mouth on your sexual organs or you put your mouth on his/her sex organs?"

**TABLE 1. Selected characteristics of a sample of male respondents to Waves 1 and 4 of the National Longitudinal Study of Adolescent Health, by latent class membership**

Characteristic	N	Vaginal initiators/ multiple behaviors	Dual initiators	Vaginal initiators/ single behavior	Postponers	Early/ atypical initiators	Total
ALL	6,075	42.5	37.2	7.2	5.8	7.3	100.0
<b>SOCIAL AND DEMOGRAPHIC</b>							
<b>Race/ethnicity*</b>							
White	3,364	39.4	41.4	4.9	6.4	7.8	100.0
Black	1,181	57.0	22.1	15.2	3.0	2.7	100.0
Hispanic	946	45.5	30.9	9.1	4.6	10.0	100.0
Asian/Pacific Islander	406	53.7	28.9	3.9	11.8	1.7	100.0
Other	178	42.2	37.7	5.2	6.8	8.1	100.0
<b>Parental education</b>							
<high school	891	41.6	31.8	12.4	4.3	9.9	100.0
High school/GED	2,138	40.6	37.4	7.9	6.2	7.9	100.0
Some postsecondary	772	42.9	40.7	5.1	5.2	6.1	100.0
College graduate	2,274	44.7	37.0	5.3	6.9	6.1	100.0
Age at Wave 1 (mean)		15.6 (1.72)	15.7 (1.71)	15.9 (1.79)	16.0 (1.67)	15.6 (1.71)	na
<b>PHYSICAL</b>							
<b>Pubertal timing (self-reported)*</b>							
Look younger	1,322	43.4	32.6	9.4	7.8	6.9	100.0
Look average	2,442	44.8	37.7	5.6	5.8	6.2	100.0
Look older	2,311	39.6	39.5	7.5	5.0	8.5	100.0
<b>Body mass index classification*</b>							
Normal-weight	4,133	43.3	38.3	6.8	5.5	6.2	100.0
Overweight	1,313	44.3	36.4	5.1	5.7	8.6	100.0
Obese	629	35.0	34.6	11.0	8.5	10.9	100.0
<b>Perceived weight status</b>							
Underweight	1,354	44.5	38.3	5.3	6.2	5.7	100.0
Normal-weight	3,352	42.4	36.8	8.5	5.2	7.2	100.0
Overweight	1,369	40.7	37.2	6.1	7.1	9.0	100.0
<b>PSYCHOSOCIAL CONVENTIONALITY</b>							
<b>Personality</b>							
Self-esteem (mean)		29.6 (2.67)	29.3 (3.64)	29.4 (3.59)	28.9 (3.92)	29.2 (3.91)	na
Locus of control (mean)		4.0 (0.83)	3.9 (0.85)	3.9 (0.90)	4.0 (0.80)	3.9 (0.92)	na
Alienation (mean)		3.5 (1.20)	3.6 (1.21)	3.6 (1.29)	3.6 (1.35)	3.5 (1.20)	na
Value of achievement (mean)		4.4 (1.06)	4.3 (1.12)	4.3 (1.16)	4.4 (1.10)	4.2 (1.18)	na
Expectation of achievement (mean)		4.0 (1.60)	4.0 (1.21)	4.0 (1.24)	4.2 (1.21)	3.8 (1.27)	na
Feelings toward premarital sex (mean)		9.7 (2.06)	8.0 (2.15)	9.3 (2.31)	8.9 (2.34)	10.3 (2.20)	na
Importance of religion (mean)		3.3 (0.76)	3.2 (0.78)	3.5 (0.71)	3.4 (0.72)	3.2 (0.79)	na
<b>Frequency of prayer</b>							
≥once a day	2,529	43.1	35.9	8.1	6.7	6.2	100.0
Once a week	1,421	44.4	35.4	7.5	5.9	6.8	100.0
Once a month	759	44.8	36.2	4.6	4.4	10.0	100.0
<once a month	718	42.3	41.3	3.1	5.1	8.2	100.0
Never	648	37.8	42.9	6.8	5.3	7.2	100.0
<b>Behavior</b>							
<b>Religious services attendance*</b>							
≥once a week	2,447	42.2	35.9	7.7	8.5	5.8	100.0
≥once a month	1,396	46.8	36.8	5.4	3.8	7.3	100.0
<once a month	1,259	41.0	39.6	6.3	4.7	8.4	100.0
Never	973	42.6	37.8	6.8	4.1	8.8	100.0
<b>Participation in church-related youth activities*</b>							
≥once a week	1,443	41.4	37.1	8.8	7.1	5.6	100.0
≥once a month	1,058	45.7	35.2	8.7	5.5	4.9	100.0
<once a month	1,014	45.1	38.6	4.8	4.7	6.8	100.0
Never	2,560	42.3	37.3	6.0	5.8	8.6	100.0
Ever repeated a grade*	1,550	42.9	33.5	11.1	5.4	7.1	100.0
Ever been suspended from school*	2,150	46.3	35.6	7.5	2.9	7.7	100.0
Ever been expelled*	353	47.4	29.9	13.5	2.7	6.5	100.0
School attachment (mean)		15.1 (3.01)	15.0 (3.15)	15.2 (2.97)	15.4 (3.01)	14.6 (3.21)	na
<b>Perceived environment</b>							
Maternal attitudes toward sexual activity (mean)		6.6 (3.14)	6.5 (3.07)	6.3 (3.07)	5.6 (2.88)	7.1 (3.14)	na
Parent-adolescent relationship quality (mean)		17.9 (2.29)	17.8 (2.41)	18.0 (2.23)	17.9 (2.45)	17.9 (2.33)	na
Maternal attitudes toward education (mean)		9.1 (2.13)	9.0 (2.07)	9.0 (2.17)	9.0 (2.08)	9.2 (2.17)	na
Anticipated social consequences of sex (mean)		11.7 (2.63)	11.7 (2.48)	11.2 (2.96)	10.6 (2.86)	12.0 (2.42)	na

\*Distribution differs significantly across categories at  $p < .05$ . Notes: All characteristics were measured at Wave 1 (1994–1995). Unless otherwise specified, data are percentages. Percentages may not total 100.0 because of rounding. For ranges of scaled measures, see Measures section of the text. Figures in parentheses are standard deviations. Percentages are weighted to yield national population estimates. na=not applicable.

greater maternal disappointment (Cronbach's alpha, 0.71). Finally, anticipated social consequences of sex were evaluated by four items: "If you had sexual intercourse, your friends would respect you more"; "If you had sexual intercourse, your partner would lose respect for you"; "If you had sexual intercourse, it would make you more attractive to men/women"; and "If you had sexual intercourse, you would feel less lonely." Scores were summed and range from 4 to 20; higher values indicate higher levels of anticipated rewards (fewer negative consequences) of having sex (Cronbach's alpha, 0.68).

•**Physical.** All physical variables were measured at Wave 1. Respondents' reported pubertal timing measured whether they thought they looked older than others of their age and sex, looked younger than peers or looked average. We used the Centers for Disease Control and Prevention's 2003 guidelines for classifying respondents' weight status by age- and sex-specific body mass index (BMI) percentiles: normal-weight (BMI greater than or equal to the fifth percentile and less than the 85th percentile), overweight (BMI greater than or equal to the 85th and less than the 95th percentile) and obese (BMI greater than or equal to the 95th percentile).<sup>19</sup> Perceived weight status measured respondents' self-perceptions about being underweight, normal-weight or overweight.

•**Social and demographic characteristics.** Using respondents' Wave 1 report, we derived a combined measure of race and ethnicity (non-Hispanic white; non-Hispanic black; Hispanic, any race; Asian or Pacific Islander; and other). We created a four-category measure of parental educational attainment (less than high school, high school diploma or GED, some postsecondary or college graduate) using data from the Wave 1 parent interview, selecting the higher level attained in households with two resident parents. Parental reports were unavailable for approximately 15% of the sample; in these cases, we substituted the adolescents' reports of their parents' educational attainment. Wave 1 chronological age was calculated by subtracting the date of birth from the Wave 1 interview date. Biological sex was based on respondents' self-report.

## Analysis

After examining descriptive statistics for all variables, we conducted bivariate analyses, using chi-square tests to compare the distribution of characteristics by latent class. Next, we ran multinomial logistic regression models, stratified by biological sex, to examine correlates of class membership. All variables were entered simultaneously. All significant relative risk ratios are hypothesized to reflect associations in the same direction but possibly of varying magnitude. Therefore, for ease of comprehension of relative risk ratios, we used the postponers class as the referent in all models.<sup>20</sup> All analyses were conducted using SAS 9.2 and STATA 12, and were adjusted to account for Add Health's complex survey design. Sampling weights were used to yield nationally representative population estimates. We viewed this analysis as descriptive and conducted all tests at a 5% significance level with no adjustment for multiple comparisons.

## RESULTS

The distribution of both males (Table 1) and females (Table 2) by class differed significantly across social and demographic characteristics. Among males, 43% were in the vaginal initiators/multiple behaviors class, 37% in the dual initiators class, 7% in the vaginal initiators/single behavior class, 7% in the early/atypical class and 6% in the postponers class. Among females, a majority (56%) were in the vaginal initiators/multiple behaviors class, 25% in the dual initiators class, 9% in the vaginal initiators/single behavior class, 6% in the early/atypical class and 4% in the postponers class. Regardless of race or ethnicity, the vaginal initiator/multiple behaviors class was generally the most heavily populated for both males and females. However, the proportion in this class was greater among black males (57%) than among white males (39%). Among females, the proportion who were dual initiators was highest among whites (30%, compared with 12–25% in the other groups), while the proportion in the vaginal initiators/single behavior was highest among blacks (21% vs. 5–10%). The vaginal initiators/multiple behaviors and dual initiators classes were the most common classes for both males and females across parental education categories, although substantial proportions of respondents whose parents did not complete high school also appeared in the vaginal initiators/single behavior class and early/atypical initiators class (12% and 10%, respectively, for males; 15% and 4%, respectively, for females).

Our multinomial models revealed associations between all of our social and economic measures and patterns of sexual initiation. Black males were more likely than their white counterparts to appear in the vaginal initiators/multiple behaviors class or the vaginal initiators/single behavior class, rather than in the postponers class (relative risk ratios, 2.6 and 2.9—Table 3). Black females were more likely than their white counterparts to appear in the vaginal initiators/single behavior or the early/atypical initiators class, rather than the postponers class (1.5 and 1.9—Table 4). Compared with females whose parents graduated from college, those living in households where the highest parental educational level was a high school diploma or GED were more likely to appear in the dual initiators or the early/atypical initiators class, rather than in the postponers class (2.1 and 3.1). For both males and females, age at Wave 1 was negatively associated with being in a class other than postponers (0.5–0.8).

All of the physical characteristics included in our models also were associated with class membership. For males, compared with those of normal weight, those who were overweight were less likely to appear in the vaginal initiators/multiple behaviors, dual initiators and vaginal initiators/single behavior classes than in the postponers class (relative risk ratios, 0.5, 0.5 and 0.2, respectively). However, males who perceived themselves as overweight were more likely than those who perceived themselves as normal-weight to appear in the vaginal initiators/multiple behaviors class, rather than in the postponers class (1.9).

**TABLE 2. Selected characteristics of a sample of female respondents to Waves 1 and 4 of the National Longitudinal Study of Adolescent Health, by latent class membership**

Characteristic	N	Vaginal initiators/ multiple behaviors	Dual initiators	Vaginal initiators/ single behavior	Postponers	Early/ atypical initiators	Total
ALL	6,303	55.9	25.4	8.7	4.1	5.9	100.0
<b>SOCIAL AND DEMOGRAPHIC</b>							
<b>Race/ethnicity*</b>							
White	3,352	55.5	30.0	4.6	5.2	4.7	100.0
Black	1,431	64.3	11.6	20.8	2.2	1.1	100.0
Hispanic	989	53.4	22.2	10.4	9.6	4.3	100.0
Asian/Pacific Islander	386	47.9	25.3	9.8	12.7	4.3	100.0
Other	145	53.5	25.4	8.7	8.9	3.6	100.0
<b>Parental education</b>							
<high school	800	54.0	21.0	14.6	6.9	3.5	100.0
High school/GED	1,751	59.8	24.4	8.3	3.3	4.3	100.0
Some postsecondary	1,336	58.5	26.4	5.9	4.5	4.8	100.0
College graduate	2,416	53.3	29.9	5.5	8.2	3.2	100.0
Age at Wave 1 (mean)		15.6 (1.73)	15.5 (1.71)	15.8 (1.73)	15.7 (1.63)	15.3 (1.77)	na
<b>PHYSICAL</b>							
<b>Pubertal timing (self-reported)*</b>							
Look younger	1,245	53.3	23.7	12.9	7.3	2.8	100.0
Look average	2,542	55.0	28.0	8.3	5.7	3.1	100.0
Look older	2,516	59.7	25.1	5.9	3.9	5.4	100.0
<b>Body mass index classification*</b>							
Normal-weight	4,036	57.6	26.6	7.4	5.1	3.3	100.0
Overweight	1,629	51.0	27.4	9.6	7.1	4.9	100.0
Obese	638	54.4	19.3	12.2	7.3	6.8	100.0
<b>Perceived weight status</b>							
Underweight	717	58.4	26.0	8.8	4.7	2.0	100.0
Normal-weight	3,001	57.0	26.4	8.2	4.6	3.9	100.0
Overweight	2,585	55.5	25.2	8.0	6.6	4.7	100.0
<b>PSYCHOSOCIAL CONVENTIONALITY</b>							
<b>Personality</b>							
Self-esteem (mean)		27.7 (4.17)	27.6 (4.06)	28.0 (4.55)	27.7 (3.88)	27.6 (4.56)	na
Locus of control (mean)		3.9 (0.90)	3.8 (0.87)	4.0 (0.94)	4.1 (0.81)	3.9 (0.93)	na
Alienation (mean)		3.7 (1.31)	3.7 (1.27)	3.7 (1.36)	3.8 (1.24)	3.6 (1.27)	na
Value of achievement (mean)		4.5 (0.90)	4.6 (0.85)	4.5 (1.03)	4.7 (0.79)	4.5 (0.96)	na
Expectation of achievement (mean)		4.3 (1.04)	4.4 (1.04)	4.2 (1.19)	4.5 (0.94)	4.3 (1.06)	na
Feelings toward premarital sex (mean)		7.9 (2.14)	7.9 (2.15)	7.2 (2.35)	6.7 (2.22)	8.1 (2.25)	na
Importance of religion (mean)		3.4 (0.72)	3.3 (0.74)	3.6 (0.61)	3.6 (0.66)	3.3 (0.82)	na
<b>Frequency of prayer</b>							
≥once a day	3,243	54.3	25.2	9.7	6.8	4.0	100.0
Once a week	1,381	57.2	27.0	7.2	5.0	3.6	100.0
Once a month	769	59.2	27.7	6.4	3.6	3.1	100.0
<once a month	615	58.6	27.5	5.3	4.1	4.6	100.0
Never	295	57.1	25.6	8.1	3.7	5.5	100.0
<b>Behavior</b>							
<b>Religious services attendance*</b>							
≥once a week	2,965	52.5	24.9	10.8	7.7	4.1	100.0
≥once a month	1,146	56.4	28.3	7.7	3.4	4.2	100.0
<once a month	1,477	62.0	26.1	5.1	3.8	2.9	100.0
Never	715	58.0	26.1	5.5	5.1	5.2	100.0
<b>Participation in church-related youth activities*</b>							
≥once a week	1,698	52.3	23.5	12.6	8.3	3.3	100.0
≥once a month	1,106	55.2	29.1	8.0	3.8	3.9	100.0
<once a month	997	54.8	28.0	7.1	5.0	5.1	100.0
Never	2,502	59.2	25.6	6.3	4.9	4.0	100.0
Ever repeated a grade*	1,026	55.1	21.1	17.0	3.5	3.4	100.0
Ever been suspended from school*	1,189	63.9	16.8	13.1	2.4	3.9	100.0
Ever been expelled	156	68.9	15.2	13.4	1.1	1.4	100.0
School attachment (mean)		14.9 (3.25)	15.2 (3.10)	15.1 (3.11)	15.6 (2.77)	15.1 (3.20)	na
<b>Perceived environment</b>							
Maternal attitudes toward sexual activity (mean)		5.7 (2.91)	5.3 (2.80)	5.4 (2.57)	4.7 (2.24)	5.3 (2.79)	na
Parent-adolescent relationship quality (mean)		17.4 (2.99)	17.4 (2.91)	17.7 (2.57)	18.1 (2.38)	17.5 (2.91)	na
Maternal attitudes toward education (mean)		9.1 (2.12)	9.1 (2.00)	8.9 (2.35)	8.9 (1.86)	9.1 (1.84)	na
Anticipated social consequences of sex (mean)		9.5 (2.67)	9.4 (2.73)	9.1 (2.96)	8.4 (3.04)	9.6 (2.65)	na

\*Distribution differs significantly across categories at  $p < .05$ . Notes: All characteristics were measured at Wave 1 (1994–1995). Unless otherwise specified, data are percentages. Percentages may not total 100.0 because of rounding. For ranges of scaled measures, see Measures section of the text. Figures in parentheses are standard deviations. Percentages are weighted to yield national population estimates. na=not applicable.

**TABLE 3. Relative risk ratios (and 95% confidence intervals) from multinomial logistic regression analyses assessing associations between selected characteristics of males and latent class membership**

Characteristic	Vaginal initiators/ multiple behaviors	Dual initiators	Vaginal initiators/ single behavior	Early/ atypical initiators
<b>SOCIAL AND DEMOGRAPHIC</b>				
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Black	2.62 (1.12–6.62)*	1.10 (0.44–2.81)	2.85 (1.70–3.60)**	0.56 (0.17–1.82)
Age	0.51 (0.44–0.59)***	0.58 (0.51–0.66)**	0.66 (0.54–0.80)***	0.47 (0.40–0.55)***
<b>PHYSICAL</b>				
Body mass index classification				
Normal-weight (ref)	1.00	1.00	1.00	1.00
Overweight	0.45 (0.25–0.81)**	0.49 (0.28–0.85)*	0.21 (0.08–0.51)***	0.56 (0.29–1.14)
Obese	0.50 (0.20–1.21)	0.55 (0.23–1.45)	0.88 (0.26–2.95)	0.73 (0.23–2.34)
Perceived weight status				
Normal-weight (ref)	1.00	1.00	1.00	1.00
Overweight	1.92 (1.12–3.52)*	1.56 (0.83–2.98)	1.93 (0.87–4.26)	1.71 (0.81–3.61)
<b>PSYCHOSOCIAL CONVENTIONALITY</b>				
<b>Personality</b>				
Frequency of prayer				
≥once a day (ref)	1.00	1.00	1.00	1.00
Never	0.34 (0.12–0.97)*	0.52 (0.19–1.42)	0.38 (0.12–1.21)	0.47 (0.12–1.81)
<b>Behavior</b>				
Religious services attendance				
≥once a week (ref)	1.00	1.00	1.00	1.00
≥once a month	2.34 (1.21–4.42)**	2.08 (1.11–3.91)*	1.84 (0.80–4.23)	2.42 (1.12–5.1)*
Never	2.47 (1.16–5.89)*	1.96 (0.78–4.94)	2.18 (0.78–6.06)	1.64 (0.56–4.82)
Ever repeated a grade	1.04 (0.63–1.71)	0.95 (0.55–1.67)	1.91 (1.15–3.47)*	1.26 (0.61–2.61)
<b>Perceived environment</b>				
Parent-adolescent relationship quality	0.97 (0.86–1.17)	0.97 (0.88–1.14)	0.86 (0.75–0.98)*	0.95 (0.82–1.14)
Maternal attitudes toward education	1.10 (0.98–1.23)	1.12 (0.99–1.29)	1.17 (0.99–1.48)	1.17 (1.14–1.42)*

\*p<.05. \*\*p<.01. \*\*\*p<.001. Notes: Reference category is the postponers class. Only measures with significant findings are shown. Models control for all characteristics listed in Table 1. ref=reference category.

**TABLE 4. Relative risk ratios (and 95% confidence intervals) from multinomial logistic regression analyses assessing associations between selected characteristics of females and latent class membership**

Characteristic	Vaginal initiators/ multiple behaviors	Dual initiators	Vaginal initiators/ single behavior	Early/ atypical initiators
<b>SOCIAL AND DEMOGRAPHIC</b>				
Race/ethnicity				
White (ref)	1.00	1.00	1.00	1.00
Black	1.53 (0.58–4.12)	0.49 (0.20–1.23)	1.46 (1.15–2.15)**	1.87 (1.11–3.27)*
Parental education				
College graduate (ref)	1.00	1.00	1.00	1.00
High school/GED	1.44 (0.78–2.71)	2.06 (1.1–3.84)*	1.62 (0.81–3.37)	3.13 (1.31–6.17)**
Age	0.52 (0.39–0.68)***	0.56 (0.44–0.72)***	0.82 (0.67–0.99)*	0.47 (0.34–0.63)***
<b>PHYSICAL</b>				
Pubertal timing (self-reported)				
Look average (ref)	1.00	1.00	1.00	1.00
Look older	0.87 (0.56–1.38)	0.69 (0.46–1.11)	0.67 (0.41–1.11)	3.10 (1.40–6.69)**
Body mass index classification				
Normal-weight (ref)	1.00	1.00	1.00	1.00
Overweight	0.51 (0.26–0.97)*	0.67 (0.32–1.43)	0.52 (0.21–1.35)	0.86 (0.34–2.21)
Obese	0.44 (0.20–0.98)*	0.43 (0.17–1.11)	0.51 (0.20–1.37)	1.83 (0.60–5.67)
<b>PSYCHOSOCIAL CONVENTIONALITY</b>				
<b>Personality</b>				
Expectation of achievement				
1.49 (1.10–2.10)*	1.46 (1.13–1.98)*	1.30 (0.94–1.84)	1.52 (0.93–2.51)	
Frequency of prayer				
≥once a day (ref)	1.00	1.00	1.00	1.00
Never	2.55 (0.61–5.74)	1.40 (0.58–3.84)	1.95 (1.20–2.70)*	1.87 (0.33–2.71)
<b>Perceived environment</b>				
Parent-adolescent relationship quality	0.83 (0.76–0.92)***	0.86 (0.79–0.93)**	0.92 (0.81–1.13)	0.82 (0.73–0.92)**

\*p<.05. \*\*p<.01. \*\*\*p<.001. Notes: Reference category is the postponers class. Only measures with significant findings are shown. Models control for all characteristics listed in Table 2. ref=reference category.

Similarly, compared with normal-weight females, overweight and obese females were less likely to be in the vaginal initiators/multiple behaviors class, rather than in the postponers class (0.5 and 0.4, respectively). Pubertal timing was also associated with class membership for females. Females who perceived themselves as looking older were more likely than those who considered themselves average-looking to appear in the early/atypical class, rather than in the postponers class (3.1).

**Greater  
psychosocial  
conventionality  
[distinguished]  
members  
of the  
nonnormative  
postponers  
class...from  
the others.**

Several measures of psychosocial conventionality were significant in the multinomial models. For both males and females, aspects of religiosity were associated with class membership. In the personality domain, compared with males who prayed at least once every day, those who never prayed were less likely to appear in the vaginal initiators/multiple behaviors class than in the postponers class (relative risk ratio, 0.3). In contrast, females who never prayed had an elevated risk of appearing in the vaginal initiators/single behavior class (2.0). In the behavior domain, compared with males who attended religious services at least once a week, males who attended at least once a month were more likely to be in the vaginal initiators/multiple behaviors, dual initiators or early/atypical class, rather than in the postponers class (2.3, 2.1 and 2.4, respectively). Also, males who never attended services had an elevated risk of being in the vaginal initiators/multiple behaviors class (2.5).

Two school-related variables were significant for males and females. Males who repeated a grade were more likely than others to appear in the vaginal initiators/single behavior class, rather than in the postponers class (relative risk ratio, 1.9). For females, the more strongly respondents expected to attend college, the more likely they were to appear in the vaginal initiators/multiple behaviors or dual initiators class, rather than in the postponers class (1.5 for each).

Finally, in the perceived environment domain, two measures were associated with membership in particular classes. For males, the higher the parent-adolescent relationship quality, the less likely the respondent was to appear in the vaginal initiators/single behavior class, rather than in the postponers class (relative risk ratio, 0.9). For females, parent-adolescent relationship quality was negatively associated with appearing in the vaginal initiators/multiple behaviors, dual initiators or early/atypical class (0.8, 0.9 and 0.8, respectively). Males who perceived that their mother would be disappointed if they did not graduate from high school or college were more likely than others to appear in the early/atypical initiators class, rather than in the postponers class (1.2).

## DISCUSSION

Using data from a nationally representative sample of youth, this study examined the associations of an extensive array of theoretically derived characteristics with patterns of emerging coital and noncoital sexual behaviors. The key finding is that in some respects, greater psychosocial

conventionality distinguishes members of the nonnormative postponers class (6% of males and 4% of females) from the others. However, the variables that are significant and the class membership they are associated with differ for males and females. These complex patterns of associations are consistent with findings of a review that synthesized results from 35 studies of the correlates of timing of initiation of vaginal intercourse;<sup>21</sup> the review also found mixed and inconsistent patterns of association for most of the domains we examined.

For males, there are relatively few indicators consistently associated with class membership. Respondents who are older are more likely to be in the postponers class than in each of the other classes; with one exception, the same is true for those who are overweight. Moderate (approximately monthly) religious service attendance, compared with attendance weekly or more, is associated with a lower likelihood of postponement than of membership in most of the other classes. This finding is consistent with prior work using Add Health data that found associations between public religiosity and likelihood of intercourse.<sup>22</sup> Repeating a grade, parent-adolescent relationship quality and perceived maternal attitudes toward education are associated only in single class comparisons. In addition, compared with their white peers, black males are more likely to be in the vaginal initiators/multiple behaviors and vaginal initiators/single behavior classes than in the postponers class.

For females, age is similarly associated with class membership, but in contrast to males, females who are overweight or obese are less likely to belong to the most normative class only, rather than to the postponers class. Perceived pubertal timing distinguishes females in the early/atypical class from postponers. For females only, two indicators of conventionality are associated with class membership: Expectations of achievement distinguishes the two most normative classes from postponers; and parent-child relationship quality distinguishes postponers from every other class except vaginal initiators/single behavior. Also, compared with their white counterparts, black females are more likely to be in the vaginal initiators/single behavior and early/atypical classes.

Past research suggests that overweight and obese adolescents are less likely than their normal-weight peers to be in dating and romantic relationships,<sup>23</sup> and such relationships usually provide the context for sexual activity. Our findings suggest that overweight adolescents have an elevated likelihood of membership in the postponers class, but that males who perceive themselves as overweight have an elevated likelihood of being in the vaginal initiators/multiple behaviors class. Perhaps males who perceive themselves to be overweight engage in sexual activity to improve their self-perceptions or reputations among peers;<sup>20</sup> however, little is known about the association between perceived weight status and sexual activity among males. Perceived weight status was not associated with class membership among females. By contrast, in another study using Add Health data, self-perceptions about weight were more closely related to psychological well-being among females

than among males,<sup>24</sup> and other work has linked females' perceptions of being overweight to sexual risk behaviors.<sup>25</sup>

For females only, perceived pubertal timing distinguishes early/atypical initiators (but no other classes) from postponers. Extensive research has documented an association between early pubertal timing and early initiation of vaginal intercourse and other sexual behaviors.<sup>6,7</sup> One review of the literature suggested that early pubertal development and physical maturation best differentiate individuals with early versus late sexual onset, but does not distinguish these groups from individuals with normative ages of onset.<sup>21</sup> Our findings are consistent with this pattern, and suggest that the association is also relevant to a broader range of sexual indicators. Early pubertal timing captures both biological and social mechanisms. The hormonal changes of puberty are associated with increased sexual interest and changes in sexual behavior.<sup>26</sup> Additionally, psychosocial models point to processes of perception and expectations from both the self and others. Females who look older are attractive to older males, and thus may have older boyfriends who expect and push for sexual activity. Although we found no association for males, other studies have found associations between earlier pubertal timing and earlier initiation of myriad sexual behaviors among males.<sup>7</sup>

Two conventional institutions are associated with emergent sexual patterns for females: expectation of achievement and parent-child relationship quality. Although earlier work found that adolescents with higher educational aspirations and better academic performance tend to postpone first intercourse,<sup>16</sup> our analyses suggest that those with higher achievement expectations are more likely to be members of the two most normative classes than of the postponers class. This is somewhat unexpected, given other patterns identified here and in earlier research. Further, we did not find any other school-related variables to be associated with emergent patterns of sexual activity. Further work is needed to determine if this is a replicable finding capturing more nuanced associations between educational aspirations and different patterns of sexual initiation.

Beyond age, the characteristic that most consistently distinguishes females in the postponers class from all other classes is quality of the parent-child relationship. Relationships characterized by greater warmth, communication, closeness and satisfaction are associated with extended postponement of multiple types of sexual activity, not just vaginal intercourse, as has been demonstrated in other work.<sup>27</sup>

Not all comparisons on dimensions of conventionality are significant. This lack of variation in association across classes is somewhat surprising, especially in regard to the early/atypical class. Members of the postponers and early/atypical classes are the most behaviorally distinct. We hypothesized that the magnitude of correlations with the psychosocial conventionality construct would be especially strong in comparisons of these two groups, yet this does not appear to be the case.

Our findings are reminiscent of the findings of Haydon et al.<sup>13</sup> and Huerta et al.,<sup>14</sup> who found few meaningful differences in health outcomes between the early/atypical class and the most common patterns of emerging sexuality. Problem behavior theory would predict that unconventional adolescents would be the most likely to be in the early/atypical class, and that membership in that class would have the most obvious negative implications for reproductive health and well-being. However, we find that for the most part, psychosocial conventionality is similarly associated with membership in multiple classes.

Taken together, our findings offer support for the application of psychosocial conventionality indicators as correlates of patterns of sexual initiation that capture more than the timing of first vaginal intercourse. The utility of expanding the search for more discriminating correlates of membership rests partly on the ultimate utility of the latent classes for understanding and predicting health outcomes in adolescence and young adulthood. Two examinations suggest that other than some apparent benefit of postponement of sexual activity until well beyond the U.S. norm, there may be little benefit or harm for the small set of examined outcomes that follows from engagement in the other emergent patterns.<sup>13,14</sup> However, other analyses suggest that sequences of initiation are associated with the likelihood of teenage pregnancy.<sup>15</sup> Thus, these latent classes may not optimally capture or configure the most informative aspects of emergent sexual patterns; alternatively, the relevance of different aspects of sexual initiation may vary, depending on the outcome of interest.

A second implication is the importance of experiences after sexual initiation. On the basis of available literature and theory, one would predict that compared with postponing first sex until age 21, having first sex at age 15 and rapidly moving to a broad range of sexual behaviors (early/atypical) would have both distinct predictors and different implications for subsequent developmental trajectories. However, few characteristics appear to be distinctively associated with membership in the early/atypical class, and psychosocial conventionality appears to be most relevant in distinguishing those who postpone all sexual activity until early adulthood from others. Furthermore, no single pattern appears to be clearly associated with substantially worse (or better) health outcomes.<sup>13</sup> The findings in previous literature suggest that sexual experiences after initiation, regardless of timing or pattern of initiation, may be more relevant for longer term health.<sup>13,14</sup> Our future work will examine associations between these latent classes and long-term trajectories of sexual partnering to further investigate the utility of the classes.

### **Strengths and Limitations**

Strengths of this analysis include the use of a nationally representative and socially and demographically diverse sample, assessment of both coital and noncoital sexual behaviors, and attention to broad and complex patterns of sexual initiation, moving beyond the traditional focus on the timing of

the first coital experience. In addition, the examination of classes of individuals with distinct patterns of sexual behaviors allows scientists to better understand the associations of these patterns with multiple characteristics, and thereby inform future prevention and intervention efforts.

Despite our study's strengths, the findings should be considered with certain limitations in mind. First, because respondents reported ages at initiation in whole years, temporal ordering of behaviors that occurred within the same chronological year was not possible in the original construction of latent classes.<sup>4</sup> Second, not all potential correlates of emergent sexual patterns were examined, and interactions among variables were not tested. Future investigation of moderating and mediating processes for key correlates identified here would be useful. Finally, subjective measures, such as perceived physical maturity relative to peers, may be biased.

### Conclusion

Although we examined the timing, sequencing and spacing of multiple types of sexual acts, we found that most characteristics associated with class membership are similar to those that previous studies have linked to age at first vaginal sex. Therefore, these variables appear to be important, even when the definition of sexual initiation is expanded to include more complex patterns. The findings lend support for problem behavior theory in each of the three domains: personality, behavior and perceived environment. As practitioners and researchers, our focus should be on understanding the diversity of pathways that lead to the development of a sexual self by integrating information about timing, sequencing, spacing and variety of sexual behaviors, as well as both direct and distal predictors of sexual patterns.

### REFERENCES

- Eaton DK et al., Youth risk behavior surveillance—United States, 2011, *Morbidity and Mortality Weekly Report*, 2012, Vol. 61, No. SS-4.
- Herbenick D et al., Sexual behavior in the United States: results from a national probability sample of men and women ages 14–94, *Journal of Sexual Medicine*, 2010, 7(Suppl. 5):255–265.
- Lindberg LD, Jones R and Santelli JS, Noncoital sexual activities among adolescents, *Journal of Adolescent Health*, 2008, 43(3):231–238.
- Haydon AA et al., Beyond age at first sex: patterns of emerging sexual behavior in adolescence and young adulthood, *Journal of Adolescent Health*, 2012, 50(5):456–463.
- Upchurch DM et al., Neighborhood and family contexts of adolescent sexual activity, *Journal of Marriage and the Family*, 1999, 61(4):920–933.
- Mendle J and Ferrero J, Detrimental psychological outcomes associated with pubertal timing in adolescent boys, *Developmental Review*, 2012, 32(1):49–66.
- Mendle J, Turkheimer E and Emery RE, Detrimental psychological outcomes associated with early pubertal timing in adolescent girls, *Developmental Review*, 2007, 27(2):151–171.
- Karofsky PS, Zeng L and Kosorok MR, Relationship between adolescent-parental communication and initiation of first intercourse by adolescents, *Journal of Adolescent Health*, 2001, 28(1):41–45.
- Bearman PS and Bruckner H, Promising the future: virginity pledges and first intercourse, *American Journal of Sociology*, 2001, 106(4):859–912.
- Paul C et al., The determinants of sexual intercourse before age 16, *Journal of Adolescent Health*, 2000, 27(2):136–147.
- Santelli J et al., Trends in sexual risk behaviors, by nonsexual risk behavior involvement, U.S. high school students, 1991–2007, *Journal of Adolescent Health*, 2009, 44(4):372–379.
- Halpern CT et al., Adolescent predictors of emerging adult sexual patterns, *Journal of Adolescent Health*, 2006, 39(6):926.e1–926.e10, doi: 10.1016/j.jadohealth.2006.08.005, accessed Jan. 15, 2012.
- Haydon AA, Herring AH and Halpern CT, Associations between patterns of emerging sexual behavior and young adult reproductive health, *Perspectives on Sexual and Reproductive Health*, 2012, 44(4):218–227.
- Huerta P, Harris KM and Halpern CT, The association between sexual initiation patterns and young adult relationship satisfaction, working paper, Chapel Hill, NC: University of North Carolina, (forthcoming).
- Reese BM et al., The association between sequences of sexual initiation and the likelihood of teenage pregnancy, *Journal of Adolescent Health*, 2013, 52(2):228–233.
- Jessor R, Risk behavior in adolescence: a psychosocial framework for understanding and action, *Journal of Adolescent Health*, 1991, 12(8):597–605.
- Harris KM et al., The National Longitudinal Study of Adolescent Health: research design, Chapel Hill, NC: Carolina Population Center, University of North Carolina, 1999, <<http://www.cpc.unc.edu/projects/addhealth/design>>, accessed Nov. 30, 2011.
- Rosenberg M, *Society and the Adolescent Self-Image*, Princeton, NJ: Princeton University Press, 1965.
- Centers for Disease Control and Prevention, About BMI for children and teens, 2011, <[http://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/about\\_childrens\\_bmi.html](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html)>, accessed Sept. 1, 2012.
- Harden KP et al., Rethinking timing of first sex and delinquency, *Journal of Youth and Adolescence*, 2008, 37(4):373–385.
- Zimmer-Gembeck MJ and Helfand M, Ten years of longitudinal research on U.S. adolescent sexual behavior: developmental correlates of sexual intercourse, and the importance of age, gender and ethnic background, *Developmental Review*, 2008, 28(2):153–224.
- Nonnemaker JM, McNeely CA and Blum RW, Public and private domains of religiosity and adolescent health risk behaviors: evidence from the National Longitudinal Study of Adolescent Health, *Social Science & Medicine*, 2003, 57(11):2049–2054.
- Cheng YH and Landale NS, Adolescent overweight, social relationships and the transition to first sex: gender and racial variations, *Perspectives on Sexual and Reproductive Health*, 2011, 43(1):6–15.
- Vogt Yuan AS, Body perceptions, weight control behavior and changes in adolescents' psychological well-being over time: a longitudinal examination of gender, *Journal of Youth and Adolescence*, 2010, 39(8):927–939.
- Akers AY et al., Exploring the relationship among weight, race and sexual behaviors among girls, *Pediatrics*, 2009, 124(5):e913–e920, doi: 10.1542/peds.2008-2797, accessed Mar. 15, 2012.
- Ellis BJ, Timing of pubertal maturation in girls: an integrated life history approach, *Psychological Bulletin*, 2004, 130(6):920–958.
- Dittus PJ and Jaccard J, Adolescents' perceptions of maternal disapproval of sex: relationship to sexual outcomes, *Journal of Adolescent Health*, 2000, 26(4):268–278.

**Acknowledgments**

Work on this article was supported by the North Carolina Minority Presence Fellowship for Doctoral Study in Maternal and Child Health, provided by the University of North Carolina at Chapel Hill Graduate School, and by grants R01-HD57046, 5 R24 HD050924 and 3R01HD057046-01A2S1 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). This research uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman and Kathleen Mullan Harris at the

University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from NICHD, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health Web site (<<http://www.cpc.unc.edu/addhealth>>). No direct support was received from grant P01-HD31921 for this analysis.

**Author contact:** [bmreese@live.unc.edu](mailto:bmreese@live.unc.edu)