

Original article

## Variations in Coital and Noncoital Sexual Repertoire among Adolescent Women

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### Abstract

**Purpose:** Little is known about factors associated with the day-to-day selection and orchestration of sexual repertoire among adolescent women. Analyzing differences in adolescent women's sexual activity may augment both the clinical and behavioral understanding of sexuality development and sexual decision making, and may yield important points to enhance existing programs for prevention of sexually transmitted infection or pregnancy.

**Methods:** Adolescent women ( $N = 387$ , aged 14–17 years at enrollment) were recruited from primary care adolescent clinics serving primarily lower- and middle-income patients. Data were taken from daily sexual diaries. A four-category outcome variable, using generalized estimating equation multinomial logistic regression assessed the likelihood of specific sexual behaviors on a given day: none (abstinence), non-coital-only, coital-only, and dual noncoital/coitus. Separate models were analyzed for fellatio, cunnilingus, and anal sex. Predictor variables included age, menstrual bleeding, alcohol or marijuana use, positive or negative mood, recent coitus, recent noncoital sexual activity, partner support or negativity, sexual interest, feeling in love, time of the week, and same-day noncoital behaviors. Coital-only sexual behavior was used as the reference category.

**Results:** Among adolescent women, abstinence is prevalent on the majority of days. When sexual activity does occur, coital-only activity is most common; however, noncoital behaviors alone and/or in tandem with coitus are not rare.

**Conclusions:** Differing associations of intrapersonal, partner and situational variables with specific types of day-to-day sexual activity underscores a complex sexual repertoire which may be insufficiently examined with a simple focus on coital risk. © 2008 Society for Adolescent Medicine. All rights reserved.

### Keywords:

Adolescent women; Diary data; Coital and noncoital sexual activity; Sexual repertoire

Sexual activity among adolescent women is typically defined in terms of penile–vaginal sex, and is often depicted as sporadic and unplanned, primarily driven by external pressures and opportunity [1,2]. This perspective both ignores the complex combinations of genital and nongenital contact that may characterize a specific sexual encounter, as well as the ways in which these sexual encounters may be negotiated within the context of interpersonal, relational,

cultural, and situational influences [3–13]. Approximately 50% of young women have ever participated in both penile–vaginal intercourse and oral–genital sex, and about 25% have experienced a repertoire of penile–vaginal, oral, and anal sexual behaviors. However little is known about the phenomenology, or the day-to-day selection and orchestration of these behaviors within young women's lives. Such information may augment understanding of young women's sexual health [5,13,14] by providing a more detailed description of how aspects of sexuality are associated with event-level behaviors.

Little is understood about the composition of the repertoire of sexual behaviors or the ways in which multiple

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behaviors are incorporated within a single sexual episode. Although oral sex, coitus, and even anal sex may occur as the only sexual contact within a given sexual event, two or more sexual behaviors may also be combined in the same encounter. In isolation, noncoital behaviors may be used to maintain a sense of oneself as a “virgin,” or because of perceived lower risk of adverse health or social consequences [3,8,15]. Noncoital behaviors may, in some circumstances, serve as a sexual substitute for coitus (for example, in the presence of menstrual bleeding or when contraception is unavailable). Specific behaviors may also be chosen to represent a level of intimacy and trust (or lack thereof) within a given relationship. Combinations of antecedent noncoital sexual behaviors (kissing, manual genital stimulation, oral–genital contact) and coitus may also fulfill a common cultural script known as “foreplay” that underscores an expected reciprocity of pleasure, with coitus as the *sine qua non* of sexual activity [10,12,13,16–19].

The organization of specific sexual encounters is also likely influenced by gender and sexual norms. Prescribed versions of gender and sexuality generally define a sexual double standard for young women, simultaneously casting them in a sexual persona at the same time that sexual activity outside of monogamous marriage is prohibited [10–14,20–22]. Within the confines of relationships, the sexual double standard positions males as active pleasure-seekers, and situates females as less interested in the physical rewards and more interested in the emotional rewards of sex [11,12]. The contemporary American sexual relationships may be imbued with notions of equality and shared responsibility for pleasure [16–18]; however some theorists suggest that social premium on heterosexual coitus dually shifts focus from young women’s sexual interest and continues emphasis on male-centered, coitus-as-goal pleasure patterns of sexual behavior [10,18,20–22]. Clinically these gender differences in emphasis within sexual relationships generate important health risks for young women, including decreased capacity for condom or contraceptive use [13,14,20–23].

Thus examining how young women choose and organize sexual behaviors within specific sexual encounters is important from both clinical and nonclinical perspectives. From a nonclinical perspective, understanding sexual encounters will better illuminate the complexities of adolescent women’s sexual decision making within the confines of romantic/sexual relationships [12–15]. From a clinical perspective, noncoital behaviors are associated with risk of sexually transmitted infections (STI) because most occur without use of barrier protection, perhaps because of perceptions of lesser risk of infection or pregnancy [3–9,15]. Understanding how adolescents integrate noncoital activities into a larger sexual repertoire (which may or may not include coitus on any given day) could improve existing STI and pregnancy intervention programs by providing explicit information on the prevalence and patterns of specific sex-

ual behaviors. Therefore the objective of this paper is to explore the factors associated with day-to-day variation in coital and noncoital sexual repertoire among adolescent women.

## Methods

### Study design and data

Data were collected as part of a longitudinal study of sexual relationships, sexual behaviors, and STI among young women in middle-to-late adolescence. The larger study (initiated in 1999) consisted of repetitive 84-day diary collection time frames over a period of up to 60 months. The study is ongoing; therefore not all participants have completed the same follow-up period. Subjects contributed several sources of data, including annual and quarterly individual and partner interviews, as well as individual daily diaries assessing day-by-day occurrences of sexual behaviors, substance use, mood, and partner-perceived interaction. A more detailed description of these methods is available elsewhere [24]. The larger study has been approved by the Institutional Review Board of Indiana University School of Medicine.

To focus on event-level interpersonal and circumstantial phenomena associated with variation in sexual repertoire, analyses in the present project were limited to diary data. Compared with retrospective reports and single-event studies, studies based on diaries provide the detailed data requisite to examine the complex day-to-day occurrences of coital and noncoital behavior [24,25]. Furthermore these methods are associated with low levels of dropout, high levels of diary completion, and relatively low levels of item-level missing data, even for reports of sensitive sexual behaviors [26,27]. Behavior changes in response to daily diary completion are possible [28]; however we find little evidence of this in extensive analyses of the current data set. Behavior did not differ significantly over time by contraceptive status, sexual experience, or partnership type (data not shown), and general levels of sexual behaviors have remained stable since the study’s inception. This supports most published research that finds little or only very short-lived diary reactivity effects [29,30].

### Participants

Subjects were 387 adolescent women receiving health care as part of the patient population in one of three primary care adolescent health clinics in Indianapolis. These clinics serve primarily lower- and middle-income families who reside in areas with high rates of pregnancy and STI. Potential participants were eligible if they were 14–17 years of age (mean 15.33, SD 1.06), spoke English, and were not pregnant at study enrollment.

Overall about 13% (50/387) reported ever performing fellatio, 31.2% (120/387) reported ever receiving cunnilingus, 6% (23/387) ever participating in anal sex, and about

74% (286/387) had ever engaged in penile–vaginal intercourse. Young women could have reported experience with multiple sexual behaviors; however, about one quarter (93/387) of subjects in the sample reported no lifetime coital or noncoital experience.

Focusing on the organization of sexual repertoire, of the young women reporting some type of sexual experience (294/387), more than half (54.1%; 160/294) had experienced coital-only, and about 2% (6/294) reported only one noncoital behavior. About 38% (114/294) of adolescents ever had coitus with one or two noncoital behaviors, whereas only 4.7% (14/294) reported ever having had coitus with fellatio, cunnilingus, and anal sex.

### Measures

**Outcome variables.** A four-category outcome variable was constructed to assess the likelihood of specific sexual behaviors on a given day: none (abstinence), noncoital only, coital-only, and both noncoital/coital. Separate models were run for each of three noncoital behaviors (fellatio, cunnilingus, and anal sex) for a total of three models. In each model, “none” referred to the absence of any coital or noncoital behavior, and “noncoital” was specific to the behavior (fellatio, cunnilingus, or anal sex) being analyzed. For example, in the fellatio model, the categories would be none (no sexual behavior, including fellatio or coitus), fellatio-only, coital-only, and both fellatio and coitus (representing a day in which both fellatio and coitus were reported).

The outcome variable categories were constructed through a combination of two diary items. The first item established the occurrence of penile–vaginal intercourse and was used in all outcome variables: “Did you have sex today?” (no/yes). Extensive investigation with the study population has established that this wording identified “vaginal sex” rather than other sexual activities; for example, levels of reported sexual activity have remained stable since the study’s inception and since the addition of other sexual variables into the study instrument. The second item examined the occurrence of noncoital behavior and was specific to the behavior being examined. For fellatio, cunnilingus, and anal sex, respectively, the second items were: “Had oral sex (I went down on my partner),” (no/yes), “Had oral sex (My partner went down on me),” (no/yes) and “Had anal sex,” (no/yes). Days with coitus-only was chosen as the reference category to highlight comparisons with the usual standard for sexual encounters (i.e., coitus). More complex sexual behavior outcomes than those chosen were possible (e.g., days on which coital and two noncoital behaviors occurred); however preliminary analyses showed that these types of days were relatively uncommon and markedly increased the complexity of the analyses without substantive contribution to the understanding of the research questions. Thus we did not include these combinations in these analyses.

**Predictor variables.** Six classes of predictor variables (demographic, situational, behavioral, temporal, intrapersonal, and relational) were chosen to represent the phenomenologic aspects of heterosexual sexual relations.

Age, the demographic measure, was constructed by subtracting diary date from date of birth. An exact day-level age measure was produced that does not confound, for example, 16.01 years of age with 16.99 years of age. Race was not included in the analysis because of the relative racial homogeneity (90% African American) of the sample.

Situational variables included three dichotomous measures: alcohol use (no/yes) and marijuana use (no/yes), as well as the presence of vaginal bleeding (no/yes).

Behavioral variables controlled for the potential influence of usual, or habitual, behavior patterns on sexual repertoire. Two time-lagged variables were created: recent coitus (coitus in the past 7 days: no/yes) and recent noncoital behavior (fellatio, cunnilingus, or anal sex, past 7 days, specific to model: no/yes).

The temporal variable, day of the week (weekday/weekend) examined choice of sexual repertoire as a function of opportunity based on the social distinction of school/work and leisure. Weekends were defined as two 24-hour periods of Saturdays and Sundays; the current diary methodology does not permit inclusion of Friday evenings/nights in the definition of “weekend.”

Intrapersonal variables recorded feelings associated with a given day. Positive mood was an additive index of three five-point items ( $\alpha = .86$ ) indicating the portion of the day the feeling was noted. Higher numbers indicated a greater amount of the day associated with a specific feeling: “I felt happy,” “I felt cheerful,” and “I felt friendly.” Negative mood was an additive index of three five-point items ( $\alpha = .83$ ): “I felt mad,” “I felt unhappy” and “I felt irritable.” The categories “feeling in love” and “sexual interest” were single five-point Likert-type items used to measure, respectively, the degree to which a day was associated with feeling in love and feeling interested in sex.

Relational variables allowed the assessment of how perceived partner-specific, within-dyad feelings, either positively or negatively, influenced the sexual repertoire. Partner support was an additive index ( $\alpha = .95$ ) of four dichotomous (no/yes) daily appraisals of positive partner interaction: “He made me feel special”; “We talked about my feelings”; “He let me know he cared about me”; and “He made me feel loved.” Partner negativity was an additive index ( $\alpha = .83$ ) of five dichotomous (no/yes) daily appraisals of negative partner interaction: “He made me feel mad”; “He made me feel bad”; “He made me feel stupid”; “He made me feel depressed” and “He made me feel disrespected.”

### Procedure

The unit of analysis was partner-based individual diary days; subjects contributed 1 day for each sexual

Table 1

Multivariate multinomial logistic regression odds ratios (ranges) for abstinence versus coital-only sexual activity among ( $N = 387$ ) adolescent women, for fellatio, cunnilingus, and anal sex models

Characteristic	Odds ratio <sup>a</sup>
Age	.90–.91*
Vaginal bleeding	2.91–3.32*
Marijuana use	.48–.50*
Alcohol use	.70–.74*
Partner support	.59–.62*
Partner negativity	.89–.91*
Sexual interest	.59–.62*
In love	1.04–1.06*
Positive mood	1.05–1.06*
Negative mood	1.11–1.12*
Usual coitus	.15–.16*
Usual noncoitus	1.38–1.71*
Weekend	.83–.84*

\*  $p < .05$ , for all three models.

<sup>a</sup> Coital-only is the reference in all models.

partner reported. These units reflect days on which different sexual events are possible. Multinomial logistic regression was used to assess predictor variable influence on an outcome variable category's (none, noncoital only, or both coital/noncoital) likelihood relative to the reference category (coital behavior only). A generalized estimating equation (GEE) approach adjusted estimates for multiple within-subject observations on the same individual [31]. Estimates were considered statistically significant at  $p < .05$  if the 95% confidence intervals did not contain 1.0. All analyses were performed using SUDAAN version 9.01 (Research Triangle, Research Triangle Park, NC) [32].

## Results

### Distribution of event-level sexual repertoire

In total, subjects contributed 82,208 diary days. In examining day-to-day sexual repertoire, participants reported 76,371 days (92.9% of all diary days) that occurred with no sexual behaviors (abstinence). In all, 1237 days (1.5% of all diary days) were noncoital-only days (130 days with fellatio only, 74 days with cunnilingus only, 35 days with anal sex only, and 998 days with two or more noncoital behaviors). A total of 3588 days were recorded as involving coitus only (4.4% of all days) and 879 days of coitus in conjunction with only one of the three noncoital behaviors (1.0% of all diary days). More than 900 days ( $N = 987$ ) days had recorded coitus with two noncoital behaviors (1.2% of all diary days), and 57 days had coitus performed with all three noncoital behaviors. The most common coital/noncoital combination was coitus and cunnilingus.

### Multivariate findings

To simplify presentation of results, Table 1 presents a summary of the results of three separate analyses of the factors associated with days with abstinence relative to days with coital-only behavior for each noncoital behavior model. The three models are identical in that both abstinence and coital-only days are defined by absence of fellatio, cunnilingus, and anal sex. Relative to days with coitus, days with no sexual behaviors were associated with younger age, vaginal bleeding, no alcohol or marijuana use, lower levels of partner support, lower partner negativity, lower sexual interest, higher feelings of being in love, higher positive and negative mood, no recent coitus, any type of recent noncoital behavior, and not being a weekend.

Table 2 shows the factors associated with days with

Table 2

Multivariate sexual repertoire multinomial logistic regression odds ratios for categories of fellatio, cunnilingus, and anal sex versus coital-only sexual activity among ( $N = 387$ ) adolescent women

	Fellatio		Cunnilingus		Anal sex	
	Noncoital <sup>a</sup>	Tandem <sup>a</sup>	Non-coital <sup>a</sup>	Tandem <sup>a</sup>	Noncoital <sup>a</sup>	Tandem <sup>a</sup>
Age	1.08*	1.01	1.05	.98	.99	.90*
Vaginal bleeding	8.52*	.81	.80	.37*	11.13*	1.58
Marijuana use	.46*	.92	.72	.73*	.53	1.42
Alcohol use	1.14	1.29	1.14	1.39*	3.32	1.89*
Partner support	.61*	1.18*	.94	1.11*	.80	.96
Partner negativity	.97	1.03	1.02	1.03	.91	1.08
Sexual interest	.75*	1.06*	.88*	1.06*	.77	1.21*
In love	1.51*	1.07	1.02	.93	1.20	.93
Positive mood	.90*	1.03*	1.00	1.05*	1.00	.99
Negative mood	.97	.98	1.05	.98	1.19	1.07*
Usual coitus	.05*	.72*	.02*	.44*	.15*	.56*
Usual noncoitus	36.37*	10.33*	51.00*	12.76*	27.66*	31.97*
Weekend	.83	1.05	.90	1.06	.45	1.25

\*  $p < .05$ .

<sup>a</sup> Coital-only is the reference in all models.



fellatio, cunnilingus, or anal sex only and days with both coital/noncoital behaviors, relative to days with coital-only behavior. For the model evaluating fellatio, days with fellatio-only were more likely than days with coital only behavior when participants were older, and on days with vaginal bleeding, without marijuana use, with lower partner support and lower partner negativity, lower sexual interest, higher feelings of being in love, lower positive mood, without recent coitus, but with fellatio in the past week. Days with both fellatio and coitus were more likely than days with coital-only behavior when there was higher partner support, greater sexual interest, higher positive mood, no reported coitus in the previous week, and fellatio reported in the previous week.

Days with cunnilingus only were more likely than days with coital-only behavior when the day was characterized by lower sexual interest, no coitus in the past week, and cunnilingus in the past week. Presence of both cunnilingus and coitus in the same day was more likely than coitus only on days with no vaginal bleeding, without marijuana use, when alcohol was used, with higher partner support, with greater sexual interest, with more positive mood, without coitus reported in the previous week, and with cunnilingus in the previous week.

Finally, days with anal sex only compared with days with coitus only were significantly associated with days with vaginal bleeding, without coitus reported in the previous week, and with anal sex reported in the previous week. Anal sex and coitus in the same day was more likely than coitus only on days characterized by younger age, alcohol use, higher sexual interest, greater negative mood, without coitus reported in the previous week, and with anal sex reported in the previous week.

In alternative analyses, history of STI, contraceptive method and prior condom use were analyzed as potential additional influences on sexual repertoire on a given day. None of these alternative models yielded substantively different results from the final models presented here (data not shown).

## Discussion

These data demonstrate the marked variety within adolescent women's sexual repertoire, as well as the multiple and often complex sources of influence on day-to-day expressions on that repertoire. In support of existing literature [3–9], oral genital sexual experience was common, even among those who reported never having coitus [3,4,6–9]. More young women reported ever receiving oral sex than performing oral sex [7]; this contradicts some studies suggesting that fellatio is more prevalent among adolescent women [5,6]. Approximately 6% of our sample reported having anal sex, consistent with data from other research [5–7,26,27].

The significance of these data stems from the detailed

insight into the complexity of sexual activity (coital, oral-genital, and anal) within specific sexual encounters. Although the event level patterns generally support effects observed in the cross-sectional studies, they also illustrate an intricacy insufficiently addressed in the present literature. Specifically these findings underscore a need for more precise language to represent the sexual behavior of adolescents. Many widely used terms inaccurately group together or mislabel behaviors which in fact have different structure and sources of influence. For example, “abstinence,” although imbued with political and public health meaning, has little behavioral meaning to adolescents: over 90% of their days contain no sexual activity, suggesting that for them, a majority of their days are “abstinent.” Furthermore, terms such as “sexually active”—long-used as a euphemism for coitus—ignores a substantial proportion of sexual encounters defined only by a noncoital sexual behavior or those in which both coital and noncoital behaviors occur. Although our data show that coitus is a predominant type of sexual activity, young women's range of behavior encompass a much larger range of actions that may occur alone or in multiple combinations.

The phenomenologic, intra- and inter-personal differentiation of days with different types of sexual behaviors suggests an understanding and enactment of complex social, gender, and sexual scripts [10–13,19,20–22]. This observation suggests that artificial distinctions between “adolescent” and “adult” sexuality should be more carefully considered in the construction of policy, with perhaps greater attention given to ways in which sexuality in adolescence reflects the development of and experience with sexuality across the lifespan.

Perhaps most importantly, the data demonstrate the importance of thinking about young women as proactive sexual agents capable of purposive sexual decision making. In contrast to the notion that adolescent sexual activity is completely opportunity-driven, sporadic, impulsive [1,2], young women enact behaviors in ways congruent with emotional and sexual interests, larger gender and sexual norms, as well as relational and situational influences. Successful negotiation of these factors is remarkable in considering that social and educational models for sexual behavior are usually contradictory, indirect, or poorly illustrated [10,12,19]. For example, our data show that abstinence or noncoital behaviors such as fellatio and anal sex are more likely on days with vaginal bleeding. This may suggest a relatively faithful enactment of social and religious prohibitions of coitus during menstruation [33–35].

There is also evidence that young women are able to uphold norms about relationships, sexual desire, mood, and love within romantic/sexual partnerships. For example, the association of partner support and partner negativity with coitus rather than abstinence suggests that sexual activity may serve multiple within-dyad functions: on the one hand, as relationship affirmation and strengthening of the pair

bond [36,37], and on the other hand, as a method of conflict resolution or distress amelioration [37,38]. Furthermore, sexual interest was associated with increased likelihood of coitus (rather than abstinence) and increased likelihood of all coital/noncoital behaviors (rather than coital-only). This suggests that young women are capable of recognizing sexual desire and behaving in a fashion consistent with that desire. In contrast, days associated with feeling “in love” were associated with greater likelihood of abstinence compared with days when only coitus occurred, but days of feeling “in love” were also associated with greater likelihood of fellatio-only rather than coital-only sexual behavior. These findings underscore the complex ways in which sex is enacted in young women’s relationships, as expression of the “sexual voice,” as well as a means of maintaining relationships and satisfying a partner’s sexual needs [13,14,20–23]. The balance within this complexity found for any given sexual encounter may lead to events that are more or less healthy in the sense of satisfaction of sexual and relational needs, as well as risks of STI and unintended pregnancy [13,22–24]. This may suggest that clinicians need continually to revisit sexual risk reduction with their adolescent patients—targeting specific relationships, partners, and behaviors on those relationships, rather than asking more general questions about sexual activity.

Our data should be considered in the context of its limitations. First, the sample is primarily selected from urban, low-to-middle-income areas marked by high rates of STI. Although these findings are therefore not representative of other adolescent populations, they do offer useful insight into the day-to-day sexual behaviors made in a high-risk population. Second, although the daily diaries do offer a level of behavioral specificity not available to most survey-based studies, within-day causal effects cannot be distinguished. Finally, although the data were collected at a partner-specific level, the models presented here do not incorporate information about the couples’ histories before a given day. Elaboration of the models presented here would be of interest, although several conceptual and statistical issues remain to be resolved. Future research may seek to implement a more complex event level selection of behavior or contraceptive variables or to explore multi-level models.

Almost 20 years ago, Fine [20] pointed out that young women carried on an intense intra- and interpersonal discourse attempting to understand their own sexuality in the context of relationships and social expectations. The larger scientific and political community of the time largely missed this discourse while focusing on the emotional and physical dangers of sex, especially STI and unintended pregnancy. In a recent follow-up paper, Fine [39] states that little has been done to amend this missing discourse. She also notes that a renewed emphasis on abstinence has perpetuated this paucity of information, such that much of our understanding of young women’s sexuality remains focused on its adverse outcomes rather than on its place in young

women’s lives. Clinically, combating negative health outcomes requires a basic understanding of how young women’s sexual identity drives their sexual behavior. As illustrated by this research, the orchestration of sexual decision making is multi-faceted and complex, and requires a deeper analysis than a simple focus on coital risk.

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