

## **Campus Sex Ratios, Romantic Relationships, and Sexual Behavior\***

Jeremy E. Uecker  
Mark D. Regnerus  
University of Texas at Austin

March 2, 2009

The authors would like to thank the FAMDEM research group at the University of Texas at Austin for their helpful comments on a previous draft of this paper, Norval Glenn for data access, and NICHD for the center grant (5 R24 HD42849) made to the Population Research Center at the University of Texas at Austin.

\* Direct correspondence to Jeremy E. Uecker, Department of Sociology, University of Texas at Austin, 1 University Station A1700, Austin, TX 78712-0118. Email: [juecker@prc.utexas.edu](mailto:juecker@prc.utexas.edu).

## **ABSTRACT**

Contemporary college campuses are thought to be characterized by a “hookup culture,” wherein students engage in casual physical encounters with little thought given to further relationship obligations. Following social exchange theory and sexual economics theory, we suggest that the relative scarcity of men on college campuses may contribute to this culture by allowing men to diminish their level of commitment to relationships and lowering the “price” they have to “pay” for sex. We explore these hypotheses using a nationally-representative sample of 986 college women on 212 college campuses. Our results suggest that women on campuses where they comprise a higher proportion of the student body exhibit more negative appraisals of men on campus, hold more negative views of campus relationships, go on fewer dates, are less likely to have had a boyfriend since entering college, and receive less (in the way of relationship commitment) in exchange for sex. These findings suggest that dramatic shifts in campus sex ratios over the last 60 years may have contributed to the current sexual climate on campus and highlight the importance of market characteristics for understanding romantic and sexual relationships.

College students' romantic and sexual relationships have a way of grabbing people's attention. Writers from across the professional spectrum have taken up the topic in recent years, including novelists (Wolfe 2000, 2004), journalists (Stepp 2007), sexual health educators (Grossman 2007), and academics (Glenn and Marquardt 2001; England, Shafer, and Fogarty 2007; Bogle 2008; Freitas 2008). And they have good reason: Sex and romance are a significant part of most college students' lives. By age 18, 58 percent of Americans have already had sex, and in just two years time that number climbs to 75 percent (Finer 2007). Moreover, some suggest a "hookup culture" has emerged on many college campuses, wherein casual physical encounters of varying intimacy—with no obligation for further commitment—are common between college men and women.<sup>1</sup> Although there is disagreement over the prevalence of hooking up, as well as its exact definition, most agree that heterosexual relationships on college campuses are different than they used to be. The formal dating script that calls for men to ask women out on—and pay for—dates seems no longer the primary heterosexual relationship script on campus. Instead, men and women meet at parties and engage in hookups which may or may not lead to a romantic relationship (Bogle 2008). Dating is not dead, but it seems increasingly understood as commencing *after* an exclusive (and perhaps even sexual) relationship is formed (England et al. 2007).

There are several plausible explanations for the development of this so-called hookup culture. The popularity of artificial contraception, increasing societal tolerance of nonmarital sex, rising individualism, the demise of *in locos parentis*, and the rising age at first marriage have all been implicated in its formation (Glenn and Marquardt 2001; Bogle 2008). An additional, or perhaps supplemental, explanation is the change in the sex ratio—the number of men per 100 women—among college students. Whereas in 1947 there were more than twice as many men on

campus as women (245 men for every 100 women), in 2005 there were only 74 men for every 100 women (National Center for Education Statistics 2008). This dramatic reversal may ironically give men “power in lack of numbers” (Bogle 2008:55). Indeed, what we refer to as the “sex ratio hypothesis,” articulated most prominently by Guttentag and Secord (1983), suggests that an oversupply of women on college campuses in the United States gives men more power in romantic and sexual relationships, which translates into lower levels of relationship commitment and less favorable treatment of women on the part of men, and a more sexually permissive climate wherein women receive less in exchange for sex.

Although we cannot track the effect of sex ratios on the development of the hookup culture over time, we argue and offer evidence, rooted in social exchange theory (e.g., Homans 1958; Thibaut and Kelley 1959; Blau 1964) and sexual economics theory (e.g., Baumeister and Vohs 2004), that campus sex ratios shape the romantic and sexual relationships of today’s college women in this way. We also explore—and offer limited evidence for—an alternative explanation for how campus sex ratios affect romantic relationships, one we refer to as the “opportunity hypothesis.” Women on campuses with higher proportions of women may be less likely to have both romantic and sexual relationships because there are simply fewer men with whom to pair. To test these hypotheses, we use a nationally-representative sample of 986 unmarried, heterosexual college women on 212 campuses. We explore how differences in campus sex ratios affect women’s attitudes toward campus men and relationships, their dating behavior and romantic relationship status, and their sexual behavior. Because hooking up is an ambiguous concept that can mean anything from kissing to intercourse, we focus our attention not on hookups per se, but on romantic relationships and sexual activity. Before that, however,

we first explain how—within the social exchange and sexual economics frameworks—sex ratios are thought to influence relationships.

## **THEORETICAL FRAMEWORK**

### **Sex Ratio Hypothesis**

The “sex ratio hypothesis” is informed by social exchange theory and places a heavy emphasis on power within relationships. Most applications of social exchange theory to relationships, including the sex ratio hypothesis, operate from the assumptions that (1) social behavior is a series of exchanges where one person gives something to another and gets something in return, that (2) individuals seek to maximize their rewards and minimize their costs, and that (3) individuals feel an obligation to reciprocate when they receive rewards from others (Sprecher 1998). Social exchange is thus understood as the “voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring from others” (Blau 1964:91). Social exchange also assumes that relationships form and survive within a market system. A market, in terms of relationships, is the social structure in which individuals search for a partner (Ellingson et al. 2004). Relationship markets are often operationalized in different ways, ranging from whole nations (e.g., South 1988; South and Trent 1988) to labor-market areas (e.g., Lichter et al. 1992) to neighborhoods (e.g., Billy et al. 1994; Brewster 1994; Browning and Olinger-Wilbon 2003; Laumann et al. 2004) to high schools (Bearman, Moody, and Stovel 2004). Of course, individuals are not strictly bound by these markets and may search for partners outside of them—something that may be becoming increasingly common with Internet dating—but individuals’ searches for partners are typically bounded by space and geography, and influenced by that area’s demographic, social, and cultural characteristics

(Ellingson et al. 2004).<sup>2</sup> Furthermore, individuals in markets are interconnected and are subject to processes of supply and demand within the market (Becker 1976).

Power within relationships—a central principle in the sex ratio hypothesis—is determined not only by intra-relationship factors, such as the relative social status and physical attractiveness of partners, but also by market characteristics. One key determinant of relationship power is the level of a partner’s dependency within a relationship: The more dependent individuals are on their partners for resources, the more power they give to the independent partners. All else being equal, the availability of attractive alternatives outside of the relationship but inside the market reduces individuals’ dependency and results in lower levels of commitment to and investment in a relationship (Rusbult 1983; Rusbult, Johnson, and Morrow 1986; Sprecher 1988; Jemmott, Ashby, and Lindenfeld 1989; Davis et al. 2000; Crawford et al. 2003).

Proponents of the sex ratio hypothesis argue that alternatives are more readily available in markets where there is an oversupply of the individuals’ opposite sex, or—put another way—where the market sex ratio is imbalanced: “The individual member whose sex is in short supply has a stronger position and is less dependent on the partner because of the larger number of alternative relationships available to him” (Guttentag and Secord 1983:23). Individuals in the majority sex may perceive their only alternative as being alone. This places the individuals in the minority sex in a position of “dyadic power,” from which they can maximize their rewards while paying only limited costs (Guttentag and Secord 1983:23).

The sex ratio hypothesis is also a gendered approach to social exchange in that it assumes men and women vary in how badly they want certain things from relationships. Put simply, men desire sex more than women, and women desire commitment more than men. Certainly there are many women that assert at least as much interest in sex as men (Hamilton and Armstrong 2008).

But they are less common than the stereotype they seek to thwart (see Baumeister, Catanese, and Vohs 2001; Oliver and Hyde 1993; Peplau 2003; Byers and Wang 2004). Men consistently score higher on a variety of measures tapping sex drive, including sexual desires, thoughts, and fantasies; desired frequency of intercourse and number of partners; masturbation; and initiating sex (Baumeister et al. 2001; Schmitt et al. 2003). In one well-known study that exemplifies this, fully three-fourths of college men agreed to have sex with a complete stranger, while no college women agreed to such a request (Clark and Hatfield 1989). Similarly, more single young adult men (65%) than women (41%) agree that there are people with whom they would have sex even though they had no intention of marrying them (Whitehead and Popenoe 2001).

On the other hand, when asked to rate the benefits of romantic relationships, college women give higher marks than college men to characteristics associated with commitment, such as companionship and affection, exclusivity, feeling loved or loving another person, intimacy, and security; the only relationship benefit men rate higher than women is sexual gratification (Sedikides, Oliver, and Campbell 1994). Women do participate in casual sex, of course, but when they do they are also more likely than men to cite the increased probability of long-term commitment from their sex partner as a motivation (Regan and Dreyer 1999). Moreover, college women are more likely than college men to desire a relationship with their hookup partner both before and after their physical encounter (England et al. 2007).

Two very different accounts—one biological and one sociological—seek to explain why this gender difference exists. Evolutionary theorists (e.g., Symons 1979; Townsend 1989; Buss and Schmitt 1993; Buss 1994; Schmitt 2005) argue that men and women pursue different mating strategies based on their evolution-adapted desire to perpetuate their genes. Men can maximize their number of surviving offspring most effectively by having more frequent sex with more

numerous sex partners. While most young adult men no longer actively seek offspring, the preference for diverse sexual activity remains. Women, on the other hand, can only have one child at a time, irrespective of its father, and their best strategy to ensure the survival of their offspring is to form a long-term relationship with a man who can and is willing to provide resources for her child. These strategies manifest themselves in relationships in clear ways: Men will be more likely than women to desire sex and to seek out short-term sexual partnerships with a larger variety of women, while women will seek to limit their sexual partners and establish a long-term relationship.

A second, more sociological approach to gender differences in relationships emphasizes the role of structural power (e.g., economic, political, and legal power) in shaping men and women's relationship strategies. The sex that possesses more structural power in society is less dependent on the other for resources and has less motivation to pursue a committed relationship (Guttentag and Secord 1983; England and Farkas 1986). Not only does that sex have less incentive for committed relationships, but they can also use their structural power to create a "sexual double standard" that makes sexual behavior acceptable for them but stigmatized for the opposite sex. This stigmatization will put pressure on the sex with less structural power to downplay or devalue their desire for sex (Crawford and Popp 2003; Hamilton and Armstrong 2008). In nearly every human society men hold this structural power, and thus the pattern of men desiring sex and women desiring relationships appears universal. However, in societies where women's economic power is high, women are less dependent on relationship commitment. For example, the marriage rate is lower, and the divorce rate and average age at first marriage are higher, in more developed countries (South 1988; South and Trent 1988). Similarly, some college women from middle- and upper-class backgrounds view committed relationships as a



hindrance to their career plans (Hamilton and Armstrong 2008). So when structural power is conceived as a continuum, there is evidence that sociological factors are influential in the formation of sex roles and interest in commitment and sex.

For our analytical purposes, however, the root causes of gender differences in relationship strategies are irrelevant. It is sufficient to say that the reality in most societies—including the contemporary United States—is that men desire sex more than women, and women desire committed relationships more than men. Since this is empirically stable, sex can be conceptualized as a female resource (Baumeister and Vohs 2004).<sup>3</sup> In an exchange relationship, women bring their sexuality and men bring other resources like material goods, emotional connection, and commitment (among other possibilities).<sup>4</sup> The implication of this line of logic for the sex ratio hypothesis is straightforward. The “price” for women’s sex is contingent not only on women’s individual characteristics (e.g., attractiveness, age, sex drive, status), but also on market characteristics. In markets where there is a larger pool of women than men—that is, where the sex ratio is low—the price for women’s sex will be lower (Baumeister and Vohs 2004). Men in these markets will have to “pay” less in return for sex, meaning they will be less likely to commit to relationships and less willing to take women on dates, among other things, in exchange for sex. But importantly, the same principle cannot be applied to men’s sexuality, because it is not a valued resource. Instead, when there is a larger pool of men, women’s sexuality will be considered a scarce resource, and men will pay more for it in a variety of ways, including commitment to an exclusive relationship.

Guttentag and Secord (1983), in their seminal work on the topic, amass both historical and more recent evidence to support the sex ratio hypothesis. They argue that women in classical Greece were more protected and valued when the sex ratio was lower than when it was higher

(such as in post-war periods). The same pattern was found in the early and late middle ages in Europe. They further suggest that men in frontier America, with its high sex ratios, married servant women, remarried widows, and generally treated their wives well. And the “marriage squeeze” of the 1960s, where US women found it difficult to locate a slightly older marriage partner because of low fertility during World War II, contributed to the sexual revolution, and the dearth of Black men in the United States decreases their commitment levels.

Tests of this sex ratio hypothesis often find support for it. Both women and men seem to alter their taste in fashion in response to disadvantageous sex ratios and the concomitant increased competition for the opposite sex: Women’s skirt length tends to be shorter in societies where women are more numerous, and historically, men are more likely to wear facial hair—as an indicator of status and as a means of increasing their physical attractiveness—when women are scarce (Barber 1999, 2001a). Even teen pregnancy rates are higher where men are scarce, given the logic that an oversupply of women leads to a sexually permissive culture (Barber 2000, 2001b). There is countervailing evidence, however, regarding sex ratios and nonmarital childbearing in the United States (South and Lloyd 1992). Violence against women, including the incidence of homicides and rape in the United States, declines with higher sex ratios as men are more motivated to respect and protect women (O’Brien 1991; Avakame 1999). Cross-national data reveal that high sex ratio societies also have lower divorce rates since men perceive fewer relationship alternatives outside of marriage (Trent and South 1989; Barber 2003). Similarly, an examination of 117 countries suggests that those with higher sex ratios have higher marriage rates, lower divorce rates, and lower nonmarital fertility rates (South and Trent 1988). Finally, data from the Fragile Families and Child Wellbeing study suggest that women who were

unmarried at the birth of their child report higher relationship quality and higher rates of marriage following the birth when there are more men in the marriage market (Harknett 2008).

### **An Alternative Explanation: The Opportunity Hypothesis**

The sex ratio hypothesis articulated above is essentially a gendered, social psychological approach to the question of sex markets and relationships. But sex ratios' effect on romantic and sexual relationships may simply be a function of what Trent and South (2008) call demographic opportunity, or what we call the "opportunity hypothesis." Because relationships are by definition paired, an imbalanced sex ratio may hinder relationship formation by reducing the number of available partners. If diminished opportunity is the simple explanation driving the association between the sex ratio and relationships, we would expect women on low sex ratio campuses to go on fewer dates, be less likely to have a boyfriend, and be less likely to have sex when the sex ratio is low not for social psychological reasons, but for arithmetic reasons.

There is a great deal of evidence to support the opportunity hypothesis regarding sex ratios and marriage patterns in the United States, dating all the way back to at least the early-to-mid-20<sup>th</sup> century (e.g., Groves and Ogburn 1928; Cox 1940). More recent studies confirm that American women are more likely to marry when there are more men in their marriage market (e.g., Lichter et al. 1992; McLaughlin, Lichter, and Johnston 1993; Angrist 2002), and men are likewise more likely to marry when there are more women available (Lloyd and South 1996). This last study is particularly notable because the opportunity hypothesis and the sex ratio hypothesis predict the same outcome for women—higher marriage rates when there are more men—but different outcomes for men. Lloyd and South (1996) find that men, like women, are more likely to marry when there are more available partners in the marriage market, a finding that supports the opportunity hypothesis but not the sex ratio hypothesis.

Studies of the opportunity hypothesis and sexual behavior are less common and generally less conclusive. One study suggests that the presence of more adolescent boys corresponds to a lower level of virginity and more frequent intercourse among adolescent girls as more partners are available (Billy, Brewster, and Grady 1994). Another study of modern-day China, where men far outnumber women, similarly finds that the sex ratio is positively associated with premarital sex among women (Trent and South 2008). But Brewster (1994) finds no association between the neighborhood sex ratio and the timing of first sex among black adolescent girls, and Browning and Olinger-Wilbon (2003) report that the sex ratio is *positively* associated with men's number of short-term partners. Sex ratios may have less of an impact on sexual behavior than on marriage rates because people may have multiple sex partners but only one marriage partner. Put another way, people are not removed from the sex market once they have sex, but they are removed from the marriage market (for a time, at least) once they marry. Notably, however, none of these studies of sex ratios and sexual behavior take into account what women receive *in exchange* for sex.

### **This Study**

The framework provided by social exchange and sexual economics is appropriate for the study of sexual behavior on college campuses. The college campus can be viewed as a market for romantic and sexual partners. Colleges tend to attract individuals with similar backgrounds, tastes, and abilities, and thus facilitate the search for partners. It is certainly true that campuses are not closed markets. College students can, and often do, find partners from their hometown, from the communities surrounding their campus, from religious congregations, or online (among other possible markets). Nevertheless, we argue college campuses can and do facilitate partner

searches through the extensive social interaction that marks on-campus housing, parties, classes, etc.

Furthermore, social exchange is a plausible way to understand the hookup culture on college campuses. Individuals are seeking to maximize their rewards and minimize their costs. As one student in an ethnographic study explains, “College [is] the only time in your life when you should be a hundred percent selfish” (Hamilton and Armstrong 2008:14). This self-interested pursuit often takes a gendered form. As Bogle (2008:82) explains, “In general, men are more likely to pursue women for sex and women are more likely to pursue men for relationships.” Though women are willing participants in the hookup scene, this may be in part because alternatives to it never cross their mind (Bogle 2008), or because they hope it leads to a long-term relationship (Regan and Dreyer 1999).

Following the sex ratio hypothesis, we expect that, on campuses with higher proportions of women, women will have more negative views of their campus men and their relationships (since men have less incentive to commit to relationships). Furthermore, the sex ratio hypothesis suggests that women will go on fewer dates and be less likely to have a boyfriend because men will be less likely to commit. The opportunity hypothesis suggests the same dating outcome, though if the sex ratio hypothesis is correct, we would expect women’s attitudes toward campus men to attenuate, at least partially, the difference in dating behavior. Lastly, as we understand sex to be a female resource, we expect women to be more sexually active on campuses with higher proportions of women, and this difference will be amplified once we account for their dating behavior. The opportunity hypothesis, however, predicts sexual behavior will be less common on these campuses.

Before addressing these specific hypotheses, however, we first address the possibility that different types of women are drawn to campuses with different sex ratios. For example, women with feminist attitudes may perceive something about a campus culture—like the absence of a sexual double standard—and choose to attend that school in higher numbers. Thus, the result would be that women on these campuses would have different attitudes and behaviors because of selection onto a campus and not because of the campus sex ratio itself. Alternatively, one might imagine women from conservative backgrounds choosing colleges with higher proportions of women because of “safety in numbers.” To account for these possibilities, we explore whether women’s attitudes toward sex and committed relationships vary by the campus sex ratio. If they do, any observed differences in women’s romantic and sexual relationships may well be due to selection and not the campus sex ratio per se.

## **DATA**

The data for this study come from a nationally-representative survey of unmarried, heterosexual undergraduate women ( $N = 1,000$ ). The survey was conducted in early 2001 by the research firm of Schulman, Ronca, and Bucuvalas, Inc., with a sample of telephone numbers of college women provided by Survey Sampling, Inc. A replacement procedure was used whereby a roommate of each called person was accepted as a respondent if the person called was unwilling or unable to be interviewed. The purpose of the survey was to examine the dating and courtship attitudes and values of contemporary college women (Glenn and Marquardt 2001). The list of telephone numbers used for the study was compiled from Fall 2000 student directories and is believed to have been the best available list of U.S. women college students. It underrepresented students on the West Coast, however, and overrepresented those in the Midwest. To compensate, we weighted the responses by region (census division). The campus-level data are from the

*Four-Year College Admissions Data Handbook 2001 – 2002*. Information on the number of male and female students was missing from this source for two of the campuses, so these data were obtained from *Peterson's 4-Year Colleges 2002* and *Barron's Profile of American Colleges 2001*.

For this study, we exclude women who were enrolled in a two-year college ( $n = 11$ ; 1.1% of the sample) or in a single-sex college ( $n = 3$ ; 0.3% of the sample). Thus, our sample for the study is 986 women spread across 212 four-year, co-ed college campuses. We imputed missing values for all study variables via multiple imputation (Allison 2002; Acock 2005). Ten datasets were created using Stata's *ice* command, and analyses were then performed using the *micombine* command (Royston 2005). Missing data were minimal; only 91 observations (9.2%) had any missing data at all, and none had more than six missing values. The average number of missing values per variable was 5.7 (0.6% missing data), and the largest number of missing values for any one variable was 25 (2.5% missing data). There were no missing data for the sex composition of the campus.

## **MEASURES**

### **Dependent Variables**

This study examines three types of outcomes: attitudes, dating behavior, and sexual behavior. The attitude questions all feature Likert-item response categories (strongly disagree, disagree, agree, strongly agree), which we recode as dichotomous variables where 1=agree or strongly agree. Initially, we retained the four-category ordinal variables and ran ordered logit regression models on these outcomes, but Brant tests revealed that many of the models violated the parallel regressions assumption of ordered logit regression. We also ran multinomial logit models on these outcomes. These models are substantively similar to the logit regression results

presented below; however, for the sake of simplicity, parsimony, and interpretability, we display only the logit regression results. Output from the ordered logit and multinomial logit models is available from the first author upon request. We analyze respondents' responses to each of the following statements about sex, committed relationships, campus men, and campus relationships:

1. "Sexual intercourse without commitment is wrong."
2. "I wish women were freer to have sex with as many partners as they wanted."
3. "When it comes to sex, there is no right or wrong."
4. "At this time in my life, I am not ready to be serious about romantic relationships."
5. "Being married is a very important goal for me."
6. "I would like to meet my future husband at college."
7. "There aren't many guys here who want a committed relationship."
8. "Men at my college generally treat women with respect."
9. "Men are not to be trusted."
10. "I don't expect a lot from the guys I go out with."
11. "I wish the guys I know would be more interested in me as a person and less as a sex object."
12. "It is hard to meet the right kind of guys at my college."
13. "I don't find many men at my college who are attractive as potential partners."
14. "Most of my relationships don't seem to work out."<sup>5</sup>
15. "You can't have a boyfriend unless you are willing to have sex."

A summed index of statements 7 – 13 ( $\alpha = 0.72$ ), women's assessments of men, is also used as a mediating variable between the sex ratio and women's dating behavior and relationship status.



To explore women's dating behavior, we analyze two variables: the number of dates the woman has been on since entering college and her relationship status. Women were asked, "How many dates have you had since coming to college, and by a date I mean when the guy asked you, picked you up, and paid for the date. Would you say no dates, one or two, three to six, or more than six?" This ordinal variable was recoded as a binary variable, with 1=more than six dates. As with the attitude measures, output from ordered logit and multinomial logit regression models on the four-category dating outcome is available from the author. The results are substantively similar to those presented below. Women were also asked if they currently have a boyfriend, or if they had had one since coming to college. We combine answers to these two questions to form a dichotomous outcome variable indicating whether the respondent has had a boyfriend since entering college. These dating variables are also employed as mediators (or independent variables) when we analyze sexual activity. In this case, we split the relationship status variable into two variables, one indicating a current boyfriend and one indicating a past boyfriend.

Finally, we analyze college women's sexual behavior. We analyze two dichotomous outcomes— still a virgin and had sex in the last month—based on respondents' answers to the questions, "Have you ever had sexual intercourse?" and "Have you had sexual intercourse in the past month?"

### **Key Independent Variable**

The key independent variable for this study is the campus sex composition. To calculate this variable, we divided the number of full-time undergraduate women by the total number of full-time undergraduate students and multiplied by 100. Thus, this variable is simply the percent of full-time undergraduate students who are women. We should note that this variable is *not* the sex ratio—the number of men per 100 women. Converting the percentage of women on campus

to a sex ratio produced similar results to those presented here, but extreme outliers masked some effects in the analysis. Furthermore, we feel the percentage of women on campus is a much easier variable to interpret and yet measures the same concept the sex ratio does.

### **Individual-level Control Variables**

Since a college's social life is a factor in students' decisions about where to attend college, women self-select a college based on a variety of personal traits and factors. These personal characteristics may also lead women to sort into peer groups once arriving on campus that influence their heterosexual relationships and their partner preferences. We thus control for respondents' class standing (which is highly correlated with age,  $r = .83$ ), as increased exposure likely leads to increased opportunity for relationships. Race is also controlled, because romantic and sexual relationships are known to vary by race (Carver, Joyner, and Udry 2003). Young adults who attend religious services more frequently are less likely to have premarital sex (Uecker 2008), so we also include a measure tapping this behavior. Finally, those with traditionalist attitudes about sex may exhibit different sexual behaviors and may also hold different attitudes about relationships (Regnerus 2007). This variable is a summed index of responses (strongly disagree to strongly agree) to three statements about sex: "Sexual intercourse without commitment is wrong," "I wish women were freer to have sex with as many partners as they wanted" (reverse-coded), and "When it comes to sex, there is no right and wrong" (reverse-coded). The alpha coefficient of reliability for this index is .69. When analyzing sexual behavior outcomes, we add a binary control variable indicating that the respondent lived off campus, since this living arrangement may provide more privacy for sexual encounters.

### **Campus-level Control Variables**

Different campus characteristics may also influence women's relationships. We control for Northeast campus, since the northeastern United States is the most sexually permissive region of the country (Smith 1994). We also include a dummy variable for attending a small college (5,000 or fewer students), as there may be fewer available partners on these campuses. Also, we include a dummy variable for whether there are fraternities on campus, as fraternity parties are commonly the breeding ground for casual sex encounters (Bogle 2008; Hamilton and Armstrong 2008), and for the type of college (public, private, and conservative Protestant), since institutional actors may affect the characteristics of the sex market (Ellingson et al. 2004). Private schools include nonreligious, mainline Protestant, and Catholic colleges; these colleges had similar effects in models where they were included separately, so they are combined in the final analysis. We also ran models with additional campus-level controls, including the graduation rate, the acceptance rate, the percent of students who are white, and the campus setting (i.e., urban, suburban, town, or rural). These variables were rarely significant, however, and did not appreciably alter the sex ratio effect, so we dropped them from our final models. Descriptive statistics for all variables included in the analysis are displayed in Table 1.

Table 1 about here

## **METHODS**

To address the selection argument, we examine how women's reports about sexual morality and committed relationships, including marriage, may vary by campus sex ratio (Table 2). We present odds ratios from logit regression models predicting six attitudinal outcomes. We move on to test the sex ratio hypothesis by reporting the effect (presented as odds ratios) of campus sex ratios on women's attitudes toward campus men and campus relationships (Table 3). We display one logit regression model for each outcome to isolate the effect of campus sex

ratios, net of individual and campus characteristics. Then, in order to provide a sense of the substantive significance of the sex ratio, we present predicted probabilities for each attitudinal outcome by five different levels of the sex ratio—the 10<sup>th</sup>, 30<sup>th</sup>, 50<sup>th</sup>, 70<sup>th</sup>, and 90<sup>th</sup> percentiles—in Table 4 using *Stata's pvalue* command (Long and Freese 2005). Table 5 is similar to Table 3 and reports odds ratios from logit regression models predicting women's number of dates and relationship status (i.e., whether she has had a boyfriend since entering college). The independent variables in the first models are parallel to those in Table 3. In the second models, we add an index variable measuring women's attitudes toward men to help determine whether possible differences in relationship behaviors are the result of simple opportunity or decreased interest in commitment (as perceived by women) on the part of men. Table 6 mirrors Table 4 and presents predicted probabilities for the dating and boyfriend outcomes by the campus sex ratio.

Table 7 displays results from logit regression models predicting sexual behavior. Model 1 is parallel to the first models in previous tables, and Model 2 adds the dating behavior variables in order to test the idea that when women are more plentiful, they receive less in return (operationalized here as dates and boyfriends) for sex. If there is a suppression effect on the sex ratio variable after the dating variables are included, this would suggest that women on campuses with lower sex ratios are getting less in return for sex. In other words, some of the sex ratio effect may be masked until we hold women's dating behavior constant, because women on campuses with low sex ratios may very well have sex, but are theoretically more likely to do so within a romantic relationship. Finally, as with previous outcomes, we present predicted probabilities for sexual behavior in Table 8 by the campus sex ratio and the respondents' relationship history (since relationships are highly predictive of sexual activity). All analyses are weighted to reflect the regional distribution of college students in the United States, and the standard errors are

adjusted to account for clustering within colleges. Though these data are multi-level, we do not conduct multi-level analyses because there are not enough women on each campus ( $\mu = 4.65$ ) to necessitate this strategy.

## **RESULTS**

Table 2 about here

### **Attitudes about Sex and Committed Relationships: Addressing Selection Issues**

If women are selecting onto college campuses based on their attitudes towards sex and committed relationships, then differences by campus sex ratios in women's romantic and sexual relationships might be explained by the fact that women who attend colleges with more or fewer women were different to begin with. To detect this type of selection, we analyze the effect of the sex ratio on agreement with three statements about sexual morality and three statements about women's interest in committed relationships. Table 2 reveals that the campus sex ratio is not significantly associated with any of these attitudes. Women on campuses with different sex ratios hold similar views about sexual morality, and they are neither more nor less likely to agree that they are not ready to be serious about romantic relationships, that being married is a very important goal, or that they would like to meet their husband in college. We find no support for the notion that women are attracted to campuses with different sex ratios based on their attitudes toward sex, commitment, and marriage.<sup>6</sup>

### **Attitudes about Campus Men and Campus Relationships**

Table 3 displays odds ratios from logit regression models predicting college women's agreement with a variety of statements that reveal their attitudes toward men and relationships in general. If the sex ratio hypothesis applies to college campuses, we would expect women on campuses with higher proportions of women to report that men are less willing to commit and

less likely to treat women well. This is indeed what we find. On campuses where women are more plentiful, women are more likely to agree that men are not interested in commitment and are not to be trusted. Moreover, women on these campuses expect less from the men they date, find it harder to meet the right kind of men, and do not find many attractive potential partners on campus. (These latter two findings may be attributable to opportunity.) The only attitudes toward men that are not significantly affected by campus sex ratios are women's perception of how respectfully men treat women ( $e^B = 0.98$ ;  $p = .211$ ) and their desire to be treated like a person instead of a sex object ( $e^B = 1.02$ ;  $p = .154$ ). And though these associations are not statistically significant, the direction of these effects is consistent with the sex ratio hypothesis. Women's attitudes toward campus relationships are also associated with their campus sex ratio. On campuses with higher proportions of women, women are more likely to report that their relationships don't work out and that a woman cannot have a boyfriend if she won't have sex.

Table 3 about here

Although the odds ratios in Table 3 appear small (1.02 – 1.08), recall that they refer to a one-percentage point increase in the percentage of women on campus. To better illustrate the sex ratio effect, in Table 4 we present predicted probabilities by campus sex ratio, generated from the logit regression models in Table 3 and setting all controls at either their mode or mean—with the exception of class standing, which we set at junior rather than freshmen to allow for prolonged exposure to campus life. Thus, the predicted probabilities presented correspond to a white junior woman who attends a large public university with Greek life outside the northeast, and who reports average levels of religious service attendance and traditionalist sex attitudes. Here we see that the effect of the campus sex ratio is in some cases quite substantial. For example, we see a marked increase—from .17 to .26—in the probability that our prototypical woman will agree that

men are not to be trusted when we adjust the sex ratio from the 10<sup>th</sup> percentile (47% women) to the 90<sup>th</sup> percentile (60% women). Similarly, the probability that a woman will agree that it is hard to meet the right kind of men jumps from .51 to .62 as she moves from the 10<sup>th</sup> to the 90<sup>th</sup> percentile of the campus sex ratio. Women's views of men's interest in commitment, their expectations of the men they date, their perceived ability to find attractive potential partners, and their perception of the necessity of sex for a relationship are all substantially affected by the sex ratio on their campus.

Table 4 about here

### **Formal Dating Behavior and Relationship Status**

In one sense, the effect of campus sex ratios on women's dating behavior could be understood strictly as a function of opportunity. That is, because dating and romantic relationships are paired activities, there are simply not as many men around to take women on dates or to pair off as boyfriend and girlfriend. Table 5 suggests that this may be the case. Each additional unit increase in campus percent women corresponds to a 3% reduction in the odds that a woman will have gone on more than six dates since entering college. Similarly, women on campuses with a higher percentage of women are less likely to report ever having had a boyfriend in college. Women's attitudes toward campus men do little to attenuate the sex ratio effect, so we conclude that most of the disparity in dating behavior on campuses with different sex ratios is a function of opportunity, and not necessarily decreased interest in relationships among men.

Table 5 about here

Again, it is difficult to ascertain the substantive significance of the sex ratio effect from the odds ratios in Table 5. Table 6 shows the predicted probabilities for each of the dating

outcomes by different values of the campus sex ratio. When women comprise just 47% of the student body, the probability that our prototypical woman would have gone on more than six dates is .62. In contrast, the probability that a woman on a campus with 60% women will have been on more than six dates is only .53. The differences are notable for women's boyfriend history as well. Here the predicted probabilities for having had a boyfriend in college range from .91 for women on a campus with 47% women to .87 for women on a campus with 60% women.

Table 6 about here

### **Sexual Behavior**

Table 7 evaluates the hypothesis that sex ratios affect women's sexual behavior. The sex ratio hypothesis we articulated predicts that women on campuses with low sex ratios will receive less in return for their sex, meaning they will be more likely to provide it, especially after their dating behavior is considered. Alternatively, the opportunity hypothesis predicts that women on these campuses will be less likely to have sex because there are fewer available partners. The first column of Table 7 reveals the odds of having had sex in the last month by campus sex ratio, individual characteristics, and campus characteristics. Net of individual and campus characteristics, sexual behavior (in the last month) does not vary by campus sex ratio. Women on campuses with a higher percentage of women are neither more nor less likely to have had sex recently. The second column (Model 2), however, adds the dating behavior and relationship history variables. These items—dates and boyfriends—should be interpreted as resources offered to women in exchange for their sex. Interestingly, as our sex ratio hypothesis predicts, these variables suppress the effect of campus sex ratios on women's sexual behavior. Once dates and boyfriends are considered, women on campuses are indeed more likely to have had sex in the last month. Put another way, women on campuses with a higher percentage of women are not less



likely to have had recent sex, but they have received less in return—in the way of dates and boyfriends—for that sex.

Table 7 about here

The third and fourth columns of Table 7 tell a similar story. However, when we consider virginity status—42 percent of the women in our sample say they are virgins—we find that women are less likely to be a virgin on campuses where there are higher percentages of women. Still, the final column suggests—as with sex in the last month—that dating and relationship history suppresses some of the campus sex ratio effect. As with sex in the last month, once these factors are accounted for, women on campuses with higher proportions of women are even less likely to be a virgin. For both sex outcomes, the opportunity hypothesis receives no support.

Table 8 reports predicted probabilities for the sex outcomes by both the campus sex ratio and boyfriend status. The differences across the sex ratio are quite large. Women who have not had a college boyfriend on a campus with 60% women have a .12 probability of having had sex in the last month, compared to a probability of just .08 for women on campuses with 47% women. Similarly, women with past college boyfriends have a .27 probability of having had sex in the last month if they're on a 60% female campus, compared to .19 for women on 47% female campuses. Women's probability of recent sex falls from .72 to .63 for women with current boyfriends as we move from a higher to a lower campus percent women. The differences in predicted probabilities are also striking for virginity status. The probabilities for a woman who has not had a boyfriend in college reporting never having had sex range from just .51 on a campus with 60% women to .68 for a woman on a campus with 47% women. The range is nearly as great for women who had a past boyfriend in college (.30 – .48) and for those with a current boyfriend (.19 – .33).

Table 8 about here

## **DISCUSSION AND CONCLUSION**

The results suggest that the sex composition of college campuses has a persistent effect on the romantic and sexual relationship experiences of college women. As the sex ratio hypothesis predicts, women who attend college on campuses where they are more numerous tend to view men as less interested in commitment and less trustworthy. They are less likely to expect much from men and more likely to report that her relationships don't work out and that a woman can't have a boyfriend if she won't have sex. They also report more difficulty locating partners, and when they do locate them and begin a sexual relationship, they receive less in exchange for their sex: Though women's recent sexual activity does not differ by campus sex ratios, once we consider their dating behavior and relationship status, we find that women on campuses with higher proportions of women are more likely to have had sex in the last month. Furthermore, women on campuses with lower sex ratios are less likely to be virgins, an effect that strengthens once we account for their dating behavior and relationship status. All this supports the sex ratio hypothesis. The sexual behavior results do not support the opportunity hypothesis, but those pertaining to dating behavior do. Women on campuses with higher proportions of women are less likely to go on more dates or to have had a boyfriend since entering college. This is likely not attributable to differences in men's commitment, however, since the effect persists even after considering women's appraisals of the men on their campus. Rather, it appears dating is less common on lower sex ratio campuses simply because there are less men to go around. The same cannot be said about sex, however. These findings should not be considered contradictory. Men can only exclusively date one woman (typically), but they can have sex with many of them, so dating is more likely to be subject to "opportunity effects."

In some cases, such as women's perceived ability to find partners and women's dating behavior, it is difficult to adjudicate between the sex ratio hypothesis and the opportunity hypothesis because they predict the same outcome: fewer men results in fewer relationships. In the case of dating behavior, we have attempted to report differences after accounting for women's appraisals of campus men, but this may not eliminate the possibility that the sex ratio hypothesis is playing out for dating behavior. Ideally we could analyze data on men's dating behavior, since different outcomes are predicted by the different hypotheses for men. Such analysis would be a worthy undertaking for future research. Unfortunately, our sample is limited to women.

This study has important implications for understanding what has been termed the "hookup culture" on contemporary college campuses. Although our data are only a snapshot of college campuses at the turn of the 21<sup>st</sup> century, the differences in women's attitudes, dating behavior, relationship status, and sexual behavior by campus sex ratios that this study reveals suggest that trends in campus sex ratios have in fact contributed to the romantic and sexual climate we see today on college campuses. So while women have made great advances in educational attainment and achievement over the past half-century, these advances may have had unintended consequences for women's romantic and sexual relationships.

These findings also suggest that a market framework is an appropriate and useful approach to understanding romantic and sexual relationships in college. Many studies of relationships in college ignore campus (i.e., market) characteristics and how they might shape relationship attitudes, formation, and development. These studies treat college students as actors whose decisions have no bearing on the decisions of other students, but this is not the case. College campuses are interconnected market systems, and individuals' behavior is conditioned

by their market characteristics. Furthermore, college administrators play the role of “local brokers” (Ellingson et al. 2004) who structure the market by their decisions regarding campus policies and whom to admit. Essentially, this study can be viewed as a call to pay closer attention to structural and cultural factors that may constrain or cultivate different types of relationships among college students.

### **Limitations and Qualifications**

There are several limitations to this study. First, although we believe that it is appropriate to treat college campuses as relationship markets, we do not think it is the case that every college student on campus is a potential partner for another. Relationship markets are bounded by many things, including race, religion, socioeconomic status, and certainly physical attractiveness, that we have not accounted for here. Second, our sample is only a sample of college women. It would be helpful to hear from college men on these issues as well, especially in cases where the sex ratio hypothesis and opportunity hypothesis predict the same outcomes for women. But this should not devalue the data we have for women: Women’s perceptions of men on campus (as well as their relationship alternatives) may be more important for their relationship formation and development than men’s perceptions of themselves (Jemmott et al. 1989). Third, the data collection procedure used—a telephone survey—may have reached a select group of respondents, though we doubt this would explain the sex ratio findings presented here. Finally, we would benefit from longitudinal data on this topic. Although we are confident that the relationships among our dependent variables and the campus sex ratio are unidirectional, some of our mediating variables may be bidirectionally associated with the outcomes. For instance, women may perceive men more negatively because they have never had a boyfriend or never been asked on a date, and they may report having a boyfriend because they are having sex.

We might also offer some qualifications regarding the sex ratio hypothesis, social exchange theory, and sexual economics theory. First, one completely rational strategy for men to obtain frequent sex is to commit to romantic relationships with women. Even on campuses with a surplus of women, securing a sex partner is not always a sure thing. Committing to a partner may be a fair price for men to pay for consistent access to sex, and certainly many college men do this. Our sex ratio hypothesis is merely a probabilistic assertion; men are *less likely* to commit to women on campuses where there are more alternatives available to them outside of a relationship. Second, we do not mean to suggest that the social exchange or sexual economics theories employed here are theories of human behavior that can be applied universally across different settings and different types of behaviors. Certainly the sex ratio effect may be more or less applicable in different contexts, and such conditional effects should be the focus of future research. While we did explore possible statistical interaction effects between the sex ratio and individual and campus characteristics, we did not identify any clear patterns. We hesitate to make strong conclusions from this because of our small cell sizes for these interactions. But in the case of this study, because their assumptions about maximizing rewards and minimizing costs fit well with the individualism narrative that governs the lives of many Americans (Bellah et al. 1985; Smith 2003), including many college students, social exchange and sexual economics theories are appropriate frameworks from which to understand the dominant relationship script on contemporary college campuses.

## **Conclusion**

Campus sex ratios influence the way women view their campus men and their relationships. They also affect women's dating and sexual behavior. Drastic changes in campus sex ratios over the past half-century have likely contributed to development of the so-called

hookup culture seen on college campuses across the United States. Future research on romantic and sexual relationships in college should pay attention to market characteristics like sex ratios that might influence individuals' behavior.

## NOTES

<sup>1</sup> Estimates of the proportion of students who have hooked up vary from just two fifths (Glenn and Marquardt 2001) to about three fourths (England et al. 2007).

<sup>2</sup> Even Internet dating typically draws partners from a local community.

<sup>3</sup> Here we move beyond the sex ratio hypothesis as articulated by Guttentag and Secord (1983) and draw from sexual economics theory (Baumeister and Vohs 2004).

<sup>4</sup> Interestingly, men perceive monetary losses to be a more salient cost of romantic relationships, vis-à-vis their female counterparts (Sedikides et al. 1994).

<sup>5</sup> This variable does not specify whether these are romantic relationships or same-sex friendships, but there is evidence that the sex ratio influences women's relationships with each other as well: Women are more violent with each other when men are scarce (Campbell 1995).

<sup>6</sup> As further evidence against a selection argument, there is no correlation between the campus sex ratio and women's virginity status among freshmen women ( $r = .0001$ )—only among those who are sophomores and older.

<sup>7</sup> Another explanation for this finding could be that women view the men on their campus as undesirable relationship partners, and they never wanted a relationship with them.

## REFERENCES

- Acock, A. C. 2005. "Working with Missing Values." *Journal of Marriage and Family* 67:1012–1028.
- Allison, P. D. 2002. *Missing Data*. Thousand Oaks, CA: Sage.
- Angrist, J. 2002. "How Do Sex Ratios Affect Marriage and Labor Markets? Evidence from America's Second Generation." *Quarterly Journal of Economics* 117:997–1038.
- Avakame, E. F. 1999. "Sex Ratios, Female Labor Force Participation, and Lethal Violence Against Women: Extending Guttentag and Secord's Thesis." *Violence Against Women* 5:1321–1341.
- Barber, N. 1999. "Women's Dress Fashions as a Function of Reproductive Strategy." *Sex Roles* 40:459–471.
- . 2000. "On the Relationship between Country Sex Ratios and Teen Pregnancy Rates: A Replication." *Cross-Cultural Research* 34:26-37.
- . 2001a. "Mustache Fashion Covaries with a Good Marriage Market for Women." *Journal of Nonverbal Behavior* 25:261–272.
- . 2001b. "On the Relationship between Marital Opportunity and Teen Pregnancy: The Sex Ratio Question." *Journal of Cross-Cultural Psychology* 32:259-67.
- . 2003. "Divorce and Reduced Economic and Emotional Interdependence: A Cross-National Study." *Journal of Divorce and Remarriage* 39:113-24.
- Baumeister, R. F., K. R. Catanese, and K. D. Vohs. 2001. "Is There a Gender Difference in Strength of Sex Drive? Theoretical Views, Conceptual Distinctions, and a Review of Relevant Evidence." *Personality and Social Psychology Review* 5: 242–273.

- Baumeister, R. F., and K. D. Vohs. 2004. "Sexual Economics: Sex as Female Resource for Social Exchange in Heterosexual Interactions." *Personality and Social Psychology Review* 8:339–363.
- Becker, G. 1976. *The Economic Approach to Human Behavior*. Chicago: University of Chicago Press.
- Bellah, R. N., R. Madsen, W. M. Sullivan, A. Swidler, and S. M. Tipton. 1985. *Habits of the Heart: Individualism and Commitment in American Life*. Berkeley, CA: University of California Press.
- Billy, J. O. G., K. L. Brewster, and W. R. Grady. 1994. "Contextual Effects on the Sexual Behavior of Adolescent Women." *Journal of Marriage and the Family* 56:387–404.
- Blau, P. M. 1964. *Exchange and Power in Social Life*. New York: John Wiley & Sons, Inc.
- Bogle, K. A. 2008. *Hooking Up: Sex, Dating, and Relationships on Campus*. New York: New York University Press.
- Bouchard, S. A., and K. A. French. 2001. *College Admissions Data Handbook 2001–2002*. Itasca, IL: Riverside Publishing.
- Brewster, K. L. 1994. "Neighborhood Context and the Transition to Sexual Activity among Young Black Women." *Demography* 31:977–1011.
- Browning, C., and M. Olinger-Wilborn. 2003. "Neighborhood Structure, Social Organization, and Number of Short-Term Sexual Partnerships." *Journal of Marriage and Family* 65:730–45.
- Buss, D. M. 1994. *The Evolution of Desire*. New York: Basic.
- Buss, D. M., and D. P. Schmitt. 1993. "Sexual Strategies Theory: An Evolutionary Perspective on Human Mating." *Psychological Review* 100:204–232.



- Byers, E. S., and A. Wang. 2004. "Understanding Sexuality in Close Relationships from the Social Exchange Perspective." Pp. 203-234 in *The Handbook of Sexuality in Close Relationships*, edited by J. H. Harvey, A. Wenzel, and S. Sprecher. Mahwah, NJ: Lawrence Erlbaum Associates.
- Campbell, A. 1995. "A Few Good Men: Evolutionary Psychology and Female Adolescent Aggression." *Ethology & Sociobiology* 16:99–123.
- Carver, K., K. Joyner, and R. Udry. 2003. "National Estimates of Adolescent Romantic Relationships." Pp. 23–56 in *Adolescent Romantic Relations and Sexual Behavior: Theory, Research, and Practical Implications*, edited by P. Florsheim. Mahwah, NJ: Lawrence Erlbaum Associates.
- Clark, R. D. and E. Hatfield. 1989. "Gender differences in receptivity to sexual offers." *Journal of Psychology & Human Sexuality* 2:39–55.
- College Division of Barron's Educational Series. 2000. *Profiles of American Colleges 2001*. Hauppauge, NY: Barron's Educational Series, Inc.
- Cox, O. C. 1940. "Sex Ratio and Marital Status among Negroes." *American Sociological Review* 5:937–947.
- Crawford, D. W., D. Feng, J. L. Fischer, and L. K. Diana. 2003. "The Influence of Love, Equity, and Alternatives on Commitment in Romantic Relationships." *Family and Consumer Sciences Research Journal* 31:253–271.
- Crawford, M., and D. Popp. 2003. "Sexual Double Standards: A Review and Methodological Critique of Two Decades of Research." *The Journal of Sex Research* 40:13–26.

- Davis, L. E., J. H. Williams, S. Emerson, and M. Hourd-Bryant. 2000. "Factors Contributing to Partner Commitment among Unmarried African Americans." *Social Work Research* 24:4–15.
- Ellingson, S., E. O. Laumann, A. Paik, and J. Mahay. 2004. "The Theory of Sex Markets." Pp. 3–38 in *The Sexual Organization of the City*, edited by E. O. Laumann, S. Ellingson, J. Mahay, A. Paik, and Y. Youm. Chicago: University of Chicago Press.
- England, P., and G. Farkas. 1986. *Households, Employment, and Gender: A Social, Economic and Demographic View*. New York: Aldine Publishing.
- England, P., E. F. Shafer, and A. C. K. Fogarty. 2007. "Hooking Up and Forming Romantic Relationships on Today's College Campuses." In *The Gendered Society Reader*, edited by M. Kimmel and A. Aronson. New York: Oxford University Press.
- Finer, L. 2007. "Trends in Premarital Sex in the United States, 1954–2003." *Public Health Reports* 122:73–78.
- Freitas, D. 2008. *Sex and the Soul: Juggling Sexuality, Spirituality, Romance, and Religion on America's College Campuses*. New York: Oxford University Press.
- Glenn, N., and E. Marquardt. 2001. *Hooking Up, Hanging Out, and Hoping for Mr. Right: College Women on Dating and Mating Today*. New York: Institute for American Values.
- Grossman, M. 2007. *Unprotected: A Campus Psychiatrist Reveals How Political Correctness in Her Profession Endangers Every Student*. New York: Sentinel.
- Groves, E. R., and W. F. Ogburn. 1928. *American Marriage and Family Relationships*. New York: Henry Holt.
- Guttentag, M., and P. F. Secord. 1983. *Too Many Women? The Sex Ratio Question*. Beverly Hills, CA: Sage.

- Hamilton, L., and E. A. Armstrong. 2008. "Gendered Sexuality in Young Adulthood: Double Binds and Flawed Options." Paper presented at the annual meeting of the American Sociological Association, Boston, MA.
- Harknett, K. 2008. "Mate Availability and Unmarried Parent Relationships." *Demography* 45:555–571.
- Homans, G. C. 1958. "Social Behavior as Exchange." *American Journal of Sociology* 62:597–606.
- Jemmott, J. B., III, K. L. Ashby, and K. Lindenfeld. 1989. "Romantic Commitment and the Perceived Availability of Opposite-Sex Persons: On Loving the One You're With." *Journal of Applied Social Psychology* 19:1198–1211.
- Laumann, E. O., S. Ellingson, J. Mahay, A. Paik, and Y. Youm (eds.). 2004. *The Sexual Organization of the City*. Chicago: University of Chicago Press.
- Lichter, D. T., D. K. McLaughlin, G. Kephart, and D. J. Landry. 1992. "Race and the Retreat from Marriage: A Shortage of Marriageable Men?" *American Sociological Review* 57:781–99.
- Lloyd, K. M., and S. J. South. 1996. "Contextual Influences on Young Men's Transition to First Marriage." *Social Forces* 74:1097–1119.
- Long, J. S., and J. Freese. 2005. *Regression Models for Categorical Outcomes Using Stata, Second Edition*. College Station, TX: Stata Press.
- McLaughlin, D. K., D. T. Lichter, and G. M. Johnston. 1993. "Some Women Marry Young: Transitions to First Marriage in Metropolitan and Nonmetropolitan Areas." *Journal of Marriage and the Family* 55:827–38.

- Miller, A. S., and R. Stark. 2002. "Gender and Religiousness: Can Socialization Explanations Be Saved?" *American Journal of Sociology* 107: 1399-1423.
- Bearman, P. S., J. Moody, and K. Stovel. 2004. "Chains of Affection: The Structure of Adolescent Romantic and Sexual Networks." *American Journal of Sociology* 110:44-91.
- National Center for Education Statistics. 2008. *Digest of Education Statistics: 2007*. NCES 2008-022. March. Retrieved July 11, 2008 ([http://nces.ed.gov/programs/digest/d07/tables/dt07\\_179.asp?referrer=report](http://nces.ed.gov/programs/digest/d07/tables/dt07_179.asp?referrer=report)).
- O'Brien, R. M. 1991. "Sex Ratios and Rape Rates: A Power-Control Theory." *Criminology* 29:99-114.
- Oliver, M. B., and J. S. Hyde. 1993. "Gender Differences in Sexuality: A Meta-Analysis." *Psychological Bulletin* 113:29-51.
- Peplau, L. A. 2003. "Human Sexuality: How Do Men and Women Differ?" *Current Directions in Psychological Science* 12:37-40.
- Peterson's. 2001. *4 Year Colleges 2002*. Lawrenceville, NJ: Peterson's.
- Regan, P. C. and C. S. Dreyer. 1999. "Lust? Love? Status? Young adults' motives for engaging in casual sex." *Journal of Psychology & Human Sexuality* 11:1-24.
- Regnerus, M. D. 2007. *Forbidden Fruit: Sex and Religion in the Lives of American Teenagers*. New York: Oxford University Press.
- Royston, P. 2005. "Multiple Imputation of Missing Values: Update." *The Stata Journal* 5:1-14.
- Rusbult, C. E. 1983. "A Longitudinal Test of the Investment Model: The Development (and Deterioration) of Satisfaction and Commitment in Heterosexual Involvements." *Journal of Personality and Social Psychology* 45:101-117.

- Rusbult, C. E., D. J. Johnson, and G. D. Morrow. "Predicting Satisfaction and Commitment in Adult Romantic Involvements: An Assessment of the Generalizability of the Investment Model." *Social Psychology Quarterly* 49:81–89.
- Schmitt, D. P. 2005. "Sociosexuality from Argentina to Zimbabwe: A 48-Nation Study of Sex, Culture, and Strategies of Human Mating." *Behavioral and Brain Sciences* 28:247–311.
- Schmitt, D. P., et al. 2003. "Universal Sex Differences in the Desire for Sexual Variety: Tests from 52 Nations, 6 Continents, and 13 Islands." *Journal of Personality and Social Psychology* 85:85–104.
- Schoen, R., and J. Wooldredge. 1989. "Marriage Choices in North Carolina and Virginia, 1969–71 and 1979–81." *Journal of Marriage and the Family* 51:465–481.
- Sedikides, C., M. B. Oliver, and W. K. Campbell. 1994. "Perceived Benefits and Costs of Romantic Relationships for Women and Men: Implications for Exchange Theory." *Personal Relationships* 1:5–21.
- Smith, C.. 2003. *Moral, Believing Animals: Human Personhood and Culture* New York: Oxford University Press.
- Smith, T. W. 1994. "Attitudes toward Sexual Permissiveness: Trends, Correlates, and Behavioral Characteristics." Pp. 63–97 in *Sexuality across the Life Course*, edited by Alice S. Rossi. Chicago: University of Chicago Press.
- South, S. J. 1988. "Sex Ratios, Economic Power, and Women's Roles: A Theoretical Extension and Empirical Test." *Journal of Marriage and the Family* 50:19-31.
- South, S. J., and K. M. Lloyd. 1992. "Marriage Markets and Nonmarital Fertility in the United States." *Demography* 29:247–64.

- South, S. J., and K. Trent. 1988. "Sex Ratios and Women's Roles: A Cross-National Analysis." *American Journal of Sociology* 93:1096–1115.
- Sprecher, S. 1988. "Investment Model, Equity, and Social Support Determinants of Relationship Commitment." *Social Psychology Quarterly* 51:318–328.
- . 1998. "Social Exchange Theories and Sexuality." *The Journal of Sex Research* 35:32–43.
- Stepp, L. S. 2007. *Unhooked: How Young Women Pursue Sex, Delay Love and Lose at Both*. New York: Riverhead.
- Symons, D. 1979. *The Evolution of Human Sexuality*. New York: Oxford University Press.
- Thibaut, J. W., and H. H. Kelley. 1959. *The Social Psychology of Groups*. New York: Wiley.
- Townsend, J. M. 1989. "Mate Selection Criteria: A Pilot Study." *Ethology & Sociobiology* 10:241–253.
- Trent, K., and S. J. South. 1989. "Structural Determinants of the Divorce Rate: A Cross-Societal Analysis." *Journal of Marriage and the Family* 51:391–404.
- . 2008. "Too Many Men? Sex Ratios and Women's Marital Timing and Sexual Behavior in China." Unpublished manuscript, State University of New York at Albany.
- Uecker, J. E. 2008. "Religion, Pledging, and the Premarital Sexual Behavior of Young Adults." *Journal of Marriage and Family* 70:728–744.
- Whitehead, B. D., and D. Popenoe. 2001. *Who Wants to Marry a Soul Mate? New Survey Findings on Young Adults' Attitudes about Love and Marriage*. New Brunswick, NJ: The National Marriage Project.
- Wolfe, T. 2000. *Hooking Up*. New York: Farrar, Straus, Giroux.
- . 2004. *I Am Charlotte Simmons*. New York: Farrar, Straus, Giroux.

**Table 1: Descriptive Statistics for Study Variables**

	Mean	SD	Range
Sex without commitment is wrong	.66	.47	0, 1
Wishes women freer to have sex with as many partners as they want	.19	.39	0, 1
No right or wrong when it comes to sex	.18	.38	0, 1
Not ready to be serious about romantic relationships	.49	.50	0, 1
Marriage is an important goal	.84	.37	0, 1
Would like to meet husband in college	.65	.48	0, 1
Men aren't interested in committed relationship	.60	.49	0, 1
Men at her college generally treat women with respect	.84	.37	0, 1
Men are not to be trusted	.20	.40	0, 1
Doesn't expect much from men she goes out with	.29	.45	0, 1
Wish men would treat her more like person, less like sex object	.68	.47	0, 1
Hard to meet the right kind of guy at her college	.53	.50	0, 1
Doesn't find many men attractive as potential partners	.40	.49	0, 1
Most of her relationships don't work out	.35	.48	0, 1
Can't have a boyfriend if you won't have sex	.04	.20	0, 1
Has gone on more than six dates since entering college	.40	.49	0, 1
Has had a boyfriend since entering college	.79	.40	0, 1
Had sex in the last month	.36	.48	0, 1
Still a virgin	.42	.49	0, 1
Percent of students who are women	53.10	5.89	24.13–92.59
Freshman	.30	.46	0, 1
Sophomore	.22	.41	0, 1
Junior	.24	.43	0, 1
Senior	.24	.43	0, 1
White	.86	.34	0, 1
Black	.05	.22	0, 1
Asian	.04	.20	0, 1
Other race	.04	.21	0, 1
Religious service attendance	2.53	1.16	1 – 4
Traditionalist sex attitudes ( $\alpha = .69$ )	9.68	2.10	3 – 12
Lives off campus	.45	.50	0, 1
Campus in Northeast	.18	.39	0, 1
Campus has 5,000 or fewer undergrads	.18	.38	0, 1
Greek life	.89	.31	0, 1
Public college	.73	.44	0, 1
Private college	.17	.38	0, 1
Conservative Protestant college	.09	.29	0, 1
Attitudes toward campus men ( $\alpha = .72$ )	16.17	3.76	7 – 27
Has a current boyfriend	.48	.50	0, 1
Past boyfriend in college	.32	.47	0, 1
Number of dates since entering college	2.94	1.06	1 – 4

Note:  $N = 986$ .

**Table 2: Odds Ratios from Logit Regression Models Predicting College Women's Agreement With Statements about Sex and Committed Relationships**

	Sex without commitment is wrong	Wishes women were freer to have sex with as many partners as they want	No right or wrong when it comes to sex	Not ready to be serious about relationships	Marriage is very important goal	Would like to meet husband in college
Campus percent women	.98	1.01	.99	1.00	1.00	1.00
<i>Individual Characteristics</i>						
Sophomore	.71	.92	1.19	.92	1.59	1.01
Junior	.63+	1.49	1.26	.59*	.99	1.35
Senior	.48**	1.46	1.28	.77	.85	.51**
Black	.67	2.39*	1.83+	1.28	.72	.82
Asian	1.20	.19*	.56	3.07**	.96	.79
Other race	.46+	1.85	2.36*	1.46	.59	1.15
Religious service attendance	1.84***	.59***	.69***	1.11	1.47***	1.13
<i>Campus Characteristics</i>						
Campus in Northeast	.67+	1.31	1.66+	1.31	1.03	1.05
Campus has <= 5,000 students	1.04	.61	1.14	1.21	.51+	.65
Greek life	.53	1.00	1.24	1.93**	.34**	.82
Private college	.54*	1.41	.86	.94	.87	.97
Conservative Protestant college	1.02	.54	.19+	2.24**	.71	2.38*
<i>Model Fit Statistics</i>						
-2 log likelihood	1115.85	879.84	859.93	1329.24	829.61	1226.47
Pseudo R-square	.11	.09	.07	.03	.05	.04

+ p < .10    \* p < .05    \*\* p < .01    \*\*\* p < .001

Notes: Reference groups are freshman, White, and public college. Data are weighted to reflect the regional distribution of college students. Standard errors are adjusted to account for clustering within colleges.  $N = 986$ .



**Table 3: Odds Ratios from Logit Regression Models Predicting College Women’s Agreement With Statements About Men and Relationships**

	Men							Relationships	
	Men don’t want committed relationship	Men treat women with respect	Men not to be trusted	Doesn’t expect much from men she goes out with	Wishes men treated her as person, not sex object	Hard to meet the right kind of men	Doesn’t find many attractive potential partners	Most of her relationships don’t work out	Can’t have boyfriend if you won’t have sex
Campus percent women	1.03*	.98	1.04**	1.04*	1.02	1.04*	1.02+	1.03*	1.08**
<i>Individual Characteristics</i>									
Sophomore	1.13	.90	.74	.68	.98	1.19	.78	.87	1.15
Junior	1.17	.62+	1.05	.61+	1.35	1.61*	1.29	.88	1.73
Senior	1.08	.84	.78	.95	.94	2.15**	1.48*	1.09	2.13
Black	3.51***	.36**	2.20*	2.43**	2.13	3.26**	2.25*	1.73+	1.27
Asian	.70	1.42	.53	1.54	1.25	1.22	.93	1.14	— <sup>b</sup>
Other race	.96	.44+	1.67	1.45	2.02	2.02+	1.48	1.08	1.47 <sup>b</sup>
Religious service attendance	.78**	1.49***	.84*	.89	.95	.82**	.93	.93	1.09
Traditionalist sex attitudes	1.04	.98	.99	.94	1.08+	1.01	1.04	.94	.82+
<i>Campus Characteristics</i>									
Campus in Northeast	1.40	.69	1.62+	.72	1.09	1.43*	1.01	1.13	1.94
Campus has <= 5,000 students	.99	.93	1.13	.94	1.41	.91	.82	1.06	.45
Greek life	1.54	.54	1.20	1.27	.67	3.17**	1.83*	1.08	.74
Private college	1.23	1.44 <sup>a</sup>	.73	.87	.72	1.44	2.25***	.77	.70
Conservative Protestant college	.25***	— <sup>a</sup>	.43+	.88	.41**	.23**	.86	.91	.29
<i>Model Fit Statistics</i>									
-2 log likelihood	1219.29	824.26	933.74	1139.91	1208.05	1217.59	1285.70	1257.13	322.49
Pseudo R-square	.08	.06	.05	.04	.02	.11	.03	.02	.07

+ p < .10    \* p < .05    \*\* p < .01    \*\*\* p < .001

Notes: Reference groups are freshman, White, and public college. Data are weighted to reflect the regional distribution of college students. Standard errors are adjusted to account for clustering within colleges. *N* = 986. <sup>a</sup> All women at conservative Protestant colleges agreed men treat women with respect; in order to retain these women, we group them with private college women for this outcome. <sup>b</sup> No Asian women agreed that you can’t have a boyfriend if you won’t have sex; in order to retain these women, we group them with other race women for this outcome.

**Table 4: Predicted Probabilities of College Women’s Agreement With Statements About Men and Relationships, by Campus Percent Women**

	Men							Relationships	
	Men don’t want committed relationship	Men treat women with respect	Men not to be trusted	Doesn’t expect much from men she goes out with	Wishes men treated her as person, not sex object	Hard to meet the right kind of men	Doesn’t find many attractive potential partners	Most of her relationships don’t work out	Can’t have boyfriend if you won’t have sex
<i>Campus Percent Women</i>									
46.6% (10 <sup>th</sup> percentile)	.59	.83	.17	.20	.70	.51	.39	.28	.03
51.9% (30 <sup>th</sup> percentile)	.62	.82	.20	.23	.72	.56	.41	.32	.04
53.2% (50 <sup>th</sup> percentile)	.63	.81	.21	.23	.72	.57	.42	.33	.04
55.8% (70 <sup>th</sup> percentile)	.65	.80	.23	.25	.73	.59	.43	.35	.05
59.6% (90 <sup>th</sup> percentile)	.67	.79	.26	.28	.75	.62	.45	.37	.07

Notes: Predicted probabilities are generated from logit regression models identical to those in Table 3, with all variables set at their modal or mean value (with the exception of class standing, which is set at junior instead of freshman).  $N = 986$ .

**Table 5: Odds Ratios from Logit Regression Models Predicting College Women's Number of Dates and Boyfriend Status**

	Gone on more than six dates since entering college		Has had boyfriend since entering college	
	Model 1	Model 2	Model 1	Model 2
Campus percent women	.97**	.97*	.96**	.96*
<i>Individual Characteristics</i>				
Sophomore	2.35***	2.32***	1.86**	1.85**
Junior	4.00***	4.22***	3.38***	3.46***
Senior	4.16***	4.38***	5.45***	5.57***
Black	.44+	.56*	.66	.78
Asian	.86	.85	.27***	.27***
Other race	.53	.60	.71	.76
Religious service attendance	1.15+	1.11	.76**	.75**
Traditionalist sex attitudes	.97	.97	1.00	1.00
<i>Campus Characteristics</i>				
Campus in Northeast	.62+	.65+	.99	1.01
Campus has <= 5,000 students	.53*	.52*	1.16	1.15
Greek life	.61	.66	.64	.69
Private college	.97	.99	.62+	.63
Conservative Protestant college	1.15	.95	.49*	.44*
<i>Attractiveness of Potential Partners</i>				
Attitudes toward campus men		.93**		.95*
<i>Model Fit Statistics</i>				
-2 log likelihood	1194.01	1181.28	896.79	892.94
Pseudo R-square	.10	.11	.10	.11

+ p < .10    \* p < .05    \*\* p < .01    \*\*\* p < .001

Notes: Reference groups are freshman, White, and public college. Data are weighted to reflect the regional distribution of college students. Standard errors are adjusted to account for clustering within colleges.  $N = 986$ .

**Table 6: Predicted Probabilities of Dating Behavior and Boyfriend Status, by Campus Percent Women**

---

	Gone on more than six dates since entering college	Has had boyfriend since entering college
<hr/>		
<i>Campus Percent Women</i>		
46.6% (10 <sup>th</sup> percentile)	.62	.91
51.9% (30 <sup>th</sup> percentile)	.58	.90
53.2% (50 <sup>th</sup> percentile)	.57	.89
55.8% (70 <sup>th</sup> percentile)	.55	.88
59.6% (90 <sup>th</sup> percentile)	.53	.87

---

Notes: Predicted probabilities are generated from logit regression models identical to Models 2 in Table 5, with all variables set at their modal or mean value (with the exception of class standing, which is set at junior instead of freshman).  $N = 986$ .

**Table 7: Odds Ratios from Logit Regression Models Predicting College Women's Sexual Behavior**

	Had sex in last month		Still a virgin	
	Model 1	Model 2	Model 1	Model 2
Campus percent women	1.01	1.03*	.96*	.94**
<i>Individual Characteristics</i>				
Sophomore	1.13	1.06	.86	1.05
Junior	2.64***	2.06*	.59+	.88
Senior	1.54	1.27	.67	1.00
Black	1.25	1.77	1.18	.92
Asian	.73	.95	3.06***	2.54**
Other race	.65	.67	2.36*	2.29*
Religious service attendance	.61***	.56***	1.63***	1.67***
Traditionalist sex attitudes	.85***	.79***	1.27***	1.31***
Lives off campus	.89	.87	.71	.69
<i>Campus Characteristics</i>				
Campus in Northeast	1.31	1.84**	.84	.73
Campus has <= 5,000 students	.96	.88	1.19	1.16
Greek life	1.45	1.82	.80	.76
Private college	.85	1.16	1.39	1.29
Conservative Protestant college	.24+	.51	4.76**	4.31*
<i>Dating Behavior and Relationship Status</i>				
Number of dates since entering college		1.32**		.72***
Has a boyfriend now		18.68***		.23***
Past boyfriend in college		2.58*		.43**
<i>Model Fit Statistics</i>				
-2 log likelihood	1099.16	874.90	1073.33	988.97
Pseudo R-square	.15	.32	.20	.26

+ p < .10    \* p < .05    \*\* p < .01    \*\*\* p < .001

Notes: Reference groups are freshman, White, public college, and no boyfriend in college. Data are weighted to reflect the regional distribution of college students. Standard errors are adjusted to account for clustering within colleges. *N* = 986.

**Table 8: Predicted Probabilities of Sexual Behavior, by Campus Percent Women and Relationship Status**

	Sex in the last month			Still a virgin		
	No boyfriend in college	Past boyfriend	Current boyfriend	No boyfriend in college	Past boyfriend	Current boyfriend
<i>Campus Percent Women</i>						
46.6% (10 <sup>th</sup> percentile)	.08	.19	.63	.68	.48	.33
51.9% (30 <sup>th</sup> percentile)	.10	.22	.67	.61	.40	.27
53.2% (50 <sup>th</sup> percentile)	.10	.23	.68	.60	.39	.25
55.8% (70 <sup>th</sup> percentile)	.11	.24	.70	.56	.35	.23
59.6% (90 <sup>th</sup> percentile)	.12	.27	.72	.51	.30	.19

Notes: Predicted probabilities generated from logit regression models identical to Models 2 in Table 7, with all variables set at their modal or mean value (with the exception of class standing, which is set at junior instead of freshman).  $N = 986$ .