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BARE MARKET: Campus Sex Ratios, Romantic Relationships, and Sexual Behavior

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Abstract

Using a nationally-representative sample of college women, we evaluate the effect of campus sex ratios on women's relationship attitudes and behaviors. Our results suggest that women on campuses where they comprise a higher proportion of the student body give more negative appraisals of campus men and relationships, go on fewer traditional dates, are less likely to have had a college boyfriend, and are more likely to be sexually active. These effects appear to stem both from decreased dyadic power among women on campuses where they are more numerous and from their increased difficulty locating a partner on such campuses.

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). Collegiate sexual and romantic relationships have captured the attention of writers from across the professional spectrum, including novelists (Wolfe 2004), journalists (Stepp 2007), and not a few scholars (e.g., Glenn and Marquardt 2001; England, Shafer, and Fogarty 2007; Bogle 2008; Burdette, Ellison, Hill, and Glenn 2009; Hamilton and Armstrong 2009; Meier and Allen 2009; McClintock 2010). These observers note that the formal dating script that calls for men to ask women out on—and pay for—dates is no longer the primary heterosexual relationship script on campus, a change that began as early as the 1960s (Bogle 2008). Instead, men and women often meet at parties and engage in "hookups"—an ambiguous term describing casual physical encounters that range in intimacy from kissing to intercourse—which sometimes, but often do 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). Despite the attention that has been paid to college relationships, however, little research has explored how institutional characteristics may influence the romantic and sexual relationships of college students and how these relationships may vary across college campuses with different demographic, cultural, and structural characteristics.

One institutional factor that may shape the nature of romantic and sexual relationships among American collegians is the campus sex composition.1 In 2005 there were only 74 men for every 100 women in college (National Center for Education Statistics 2008). This gender imbalance could influence romantic and sexual relationships in two ways. First, it may ironically give men "power in lack of numbers" (Bogle 2008:55). Indeed, what we term the "dyadic power thesis"—articulated most prominently by Guttentag and Secord (1983) in

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[1]We are not the first to suggest campus sex ratios may influence romantic and sexual relationships on campus. This idea is raised by Glenn and Marquardt (2001) and Bogle (2008), as well as in a recent *New York Times* article (Williams 2010). We are to our knowledge, however, the first to test the idea empirically.

their book *Too Many Women? The Sex Ratio Question*—suggests that an oversupply of women on a college campus gives men more dyadic 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. Second, according to what we call the "demographic opportunity thesis," the gender imbalance on university campuses may simply mean there are fewer men available with whom women can pair; women's relationship searches will be less successful because there is a diminished supply of potential partners. In this study, we use a nationally-representative sample of 986 unmarried, heterosexual college women from 2001 to examine differences in women's attitudes toward campus men and relationships, their dating behavior and boyfriend history, and their sexual behavior by their campus sex ratio, and how these potential mechanisms—differences in dyadic power and demographic opportunity—help explain these disparities.2

Although these empirical findings are important in and of themselves for understanding college relationships, college campuses are relatively closed relationship markets compared to other markets (e.g., counties, neighborhoods) and make excellent laboratories for studying contextual effects on relationship outcomes. Thus, studies of college students such as this one provide valuable insight into how market characteristics (in this case, sex ratios) shape romantic and sexual relationships more generally. Before moving to our findings, however, we first explain the two possible mechanisms through which sex ratios are thought to influence relationships: dyadic power and demographic opportunity.

MECHANISMS EXPLAINING THE EFFECT OF SEX RATIOS ON RELATIONSHIPS

The Dyadic Power Thesis

The dyadic power thesis argues that the gender in the numerical minority in a population gains dyadic power within their heterosexual relationships because of their gender's relative scarcity. This thesis is derived from social exchange theory and assumes that individuals seek to maximize their rewards and limit their costs and that this occurs within a market system (Blau 1964; Sprecher 1998). 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 to neighborhoods to high schools. Of course, individuals are not strictly bound by these markets and may search for partners outside of them, but individuals' searches for partners are typically bounded by space and geography, and influenced by that area's demographic, cultural, and structural characteristics (Ellingson et al. 2004). Furthermore, individuals in markets are interconnected and are subject to processes of supply and demand within the market (Becker 1976). Therefore, dyadic power within relationships 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 dyadic relationship power that is shaped in part by market characteristics is the level of a partner's dependency within a relationship: The more dependent individuals are on their partners, the more power they cede. 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

[2]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.

1988; Jemmott, Ashby, and Lindenfeld 1989; Davis et al. 2000; Crawford et al. 2003). Alternatives are more readily available in markets where there is an oversupply of the individuals' opposite gender, or—put another way—where the market sex ratio is imbalanced. This places the individuals in the minority gender in a position of dyadic power, from which they can maximize their rewards while paying only limited costs (Guttentag and Secord 1983).

Guttentag and Secord (1983) add a gendered component to the dyadic power thesis. They consider the role of structural power (e.g., economic, legal, and political power) and its interaction with dyadic power. The gender with more structural power in a given society, which is nearly universally men,[3] can use that power to establish norms that help them to maximize their rewards within relationships (e.g., sexual pleasure).[4] Thus, men use their structural power to create gender roles wherein the freedom of women is limited. When women hold dyadic power, they can use that power to negotiate within relationships in order to ensure that men treat them well, even if they are powerless to affect gender norms. However, when men hold both structural and dyadic power women have little with which to bargain. Women's economic dependence on men leads to "traditional" gender roles, and their lack of dyadic power allows for sexual permissiveness (i.e., women have less power to demand relational commitment—upon which they are more reliant due to their more limited structural power—in return for sexual access). The implications of imbalanced sex ratios then are clear. When the sex ratio is high and there is a shortage of women, structural and dyadic power are held by different genders and the first scenario—men treating women well—emerges. When the sex ratio is low and there is a surplus of women, men hold both structural and dyadic power; there is no need for them to compromise within relationships, and they can get more out of relationships with women while putting in less. Men will be less likely to treat women well and to commit to relationships, even as they get more of what they want out of these relationships (e.g., access to sex).

There is some evidence to support this gendered aspect of Guttentag and Secord's (1983) argument, though there has actually been relatively little empirical examination of this part of their thesis. Teen pregnancy rates are higher in countries 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 metropolitan areas in the United States (South and Lloyd 1992). Cross-national data reveal that high sex ratio societies (i.e., those with a higher number of men per woman) 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, unmarried mothers report higher relationship quality with and higher rates of marriage to their partners following the birth of their child when there are more men in the marriage market (Harknett 2008).

[3]The distribution of structural power between genders is best conceived of as a continuum, meaning men and women in different societies have more or less structural power. In societies where women's structural power is higher, 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). Still, it should be uncontroversial to say that men hold *more* structural power than women in the contemporary United States, the population of interest for our study, and women remain more dependent on relationship commitment than men.

[4]Men can also use their structural power to establish a sexual double standard wherein women are held to a stricter sexual standard than are men. As England and her colleagues (2007) discuss, such a sexual double standard still exists on college campuses.

The Demographic Opportunity Thesis

The dyadic power thesis articulated above emphasizes power dynamics between men and women. But sex ratios' effect on romantic and sexual relationships may also be a function of what some scholars call demographic opportunity (Trent and South 2008; South and Trent 2010). Because relationships are by definition paired, an imbalanced sex ratio may hinder relationship formation by reducing the number of potential partners in the market that an individual may encounter during a search for a relationship. The demographic opportunity thesis is ungendered and unconcerned with power dynamics. More women in the market means women will have fewer available partners and thus will be less likely to establish relationships, and fewer women in the market means women will have more available partners and be more likely to establish relationships. Conversely, more men in the market means men will have fewer available partners and be less likely to establish relationships, and fewer men in the market means men will have more available partners and be more likely to establish relationships. Importantly, the dyadic power thesis and the demographic opportunity thesis—while distinct—are not necessarily mutually exclusive. Both mechanisms may be operative in any given context.

There is a great deal of evidence to support the demographic opportunity thesis regarding sex ratios and marriage patterns in the United States, dating all the way back to at least the early-to-mid-20th 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 demographic opportunity thesis and the gendered aspect of Guttentag and Secord's (1983) thesis 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 demographic opportunity thesis. As further evidence for the demographic opportunity thesis, both women and men historically seem to alter their taste in fashion in response to poor marriage markets stemming from disadvantageous sex ratios and the concomitant increased competition for the opposite sex (Barber 1999, 2001a).

Studies of the demographic opportunity thesis 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). Two studies of modern-day China, where men far outnumber women, similarly find that the sex ratio is positively associated with premarital sex among women and negatively associated with premarital sex among men (Trent and South 2008; South and Trent 2010). 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 marital behavior 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.

SEX RATIOS AND AMERICAN COLLEGE CAMPUSES

College campuses can be viewed as markets 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. These campuses have unique institutional characteristics that shape college students' relationships, among them the campus sex ratio. But do campus sex ratios actually influence relationships, and if so, how?

The dyadic power thesis produces a number of hypotheses regarding college women's relationships. On low sex ratio campuses with a surplus of women, women have less negotiating power within relationships and men have more. This line of argument leads us to expect several things about the relationship between campus sex ratios and collegiate relationships. On campuses where women comprise a higher proportion of the student body, we expect women will be less likely to agree that men treat them well and are interested in commitment. Furthermore, they will report greater difficulty in finding men that are suitable partners. Their relationships will be less likely to work out, and they will be more likely to report having to do more (e.g., have sex) to secure a romantic partner. Because men are less interested in relationships, women on campuses with a surfeit of women will go on fewer dates and be less likely to have had a boyfriend in college or to have one currently. Lastly, Guttentag and Secord's (1983) gendered extension to the dyadic power thesis has implications for college women's sexual behavior. Men continue to hold more structural power than women in American society, which may lead to gender differences in what they seek from the other gender: "In general, men are more likely to pursue women for sex and women are more likely to pursue men for relationships" (Bogle 2008:82).5 The extent to which they are successful in obtaining their relationship goals is at least somewhat dependent on their bargaining power with members of the other gender (i.e., dyadic power), a factor that varies with the campus sex ratio. Women on campuses with more women will be more likely to be sexually active because they have less power in their relationships and can demand less commitment in return for sex. Their sexual activity will be greater both within and outside of a romantic relationship.

The demographic opportunity thesis also produces certain hypotheses about college women's relationships. The demographic opportunity thesis makes no predictions about men's treatment of women and their interest in relationships, though we would expect women on campuses with more women may report difficulty finding suitable partners because there are fewer to go around. We would also expect women in a female skewed market to go on fewer dates and be less likely to have (had) a boyfriend in college not because men are less interested in relationships, but because there are not enough men with whom women can form relationships. Finally, we would expect women on campuses with low sex ratios to be less sexually active for the same reason: There are not as many men in

[5]Certainly there are many women that assert at least as much interest in sex as men (Hamilton and Armstrong 2009). 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). In contrast, 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 casual sex partner both before and after their physical encounter (England et al. 2007). Women may also view casual sex as a "normal" part of campus life, and thus alternatives to it may never cross their minds (Bogle 2008).

the market with whom they can pair. Moreover, the sex ratio would not affect the sexual behavior of women who are in a relationship.

As we mentioned above, the mechanisms of dyadic power and demographic opportunity—or the dyadic power thesis and the demographic opportunity thesis—are not mutually exclusive: One or both (or neither) of these mechanisms may be influencing particular outcomes. With respect to dating behavior and boyfriend histories, women on campuses with fewer men may encounter both issues: fewer men to go around (less demographic opportunity) and less interest in relationships among those men (less dyadic power). With respect to sexual behavior, women on campuses where they are in the numerical majority may have difficulty locating a sexual partner (less demographic opportunity) but may be more likely to have sex with the men they are able to locate (less dyadic power).

Before examining these outcomes empirically, 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 less restrictive campus sexual norms or 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. To account for this possibility, 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. The campus-level data are from the *Four-Year College Admissions Data Handbook 2001–2002*.

For this study, we exclude women at two-year colleges (n = 11; 1.1% of the sample) and single-sex colleges (n = 3; 0.3% of the sample). Thus, our sample is 986 women attending four-year, co-ed colleges. We imputed missing values for all study variables via multiple imputation (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 103 observations (10.5%) had any missing data at all, and none had more than six missing values. 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.6 We analyze respondents' responses to the following 15 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. It is hard to meet the right kind of guys at my college.
12. I don't find many men at my college who are attractive as potential partners.
13. I wish the guys I know would be more interested in me as a person and less as a sex object.
14. Most of my relationships don't seem to work out.
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. The four-category responses are retained for this index.

To explore women's dating behavior and relationship history, we analyze the number of dates the woman has been on since entering college and her boyfriend history. Respondents 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?" Although we recognize that this definition of a date is anachronistic, it taps what was once the normative behavior; it is interesting to consider, despite its clear limitations. This ordinal variable was recoded as a binary variable, with 1=more than six dates.7 We combine answers to two questions about boyfriends—whether the respondent has one currently or has ever had one since coming to college—to form a dichotomous outcome variable indicating whether the respondent has had a boyfriend since entering college. The boyfriend variable is also employed as a mediator (or independent variable) when we analyze sexual activity. In this case, we split the boyfriend 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: had sex in the last month and still a virgin.

[6]Initially, we ran ordered logit regression models on the four-category ordinal variables, 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.

[7]As with the attitudinal measures, the parallel regressions assumption was violated when ordered logit models were employed.

Key Independent Variable

The key independent variable for this study is the campus sex composition. 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, though the effect on dating behavior (i.e., the number of dates the respondent had been on) was more muted. Nevertheless, we feel the percentage of women on campus is a better measure than the sex ratio per se. For one, most people are more apt to think in terms of percentages than ratios, and statistics are more typically reported in percentage form. For example, it is more common to hear of a campus being 60 percent women than to hear that there are 67 men to every 100 women (or two men to every three women). But beyond this, a ratio of men to women actually gives more weight to male skews than to female ones.8 When measured as a ratio, a campus with 60 percent women would be given a value of 67, 33 units less than an equal sex composition of 100; but a campus with 60 percent men would be given a value of 150, a 50 unit departure from 100. Using the percentage women avoids this bias for which there is no theoretical justification. Percentages also reduce outliers. For example, in our data the campus percent women ranges from 24.13 to 92.59. Measuring this variable as a the ratio of men per 100 women increases the range to 8.00–314.42, an artificially wide distribution. For these reasons we use the percentage of students who are women as our measure of the campus sex composition. When discussing results, we sometimes refer to the "campus sex ratio"—this is referring to the campus percent women.

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; Giordano, Manning, and Longmore 2005). 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: whether sex without commitment is wrong, whether they wish women were freer to have sex with more partners, and whether there are rights and wrongs with regard to sex. 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 individuals in these living arrangements may have differential opportunity for sexual encounters. In some cases, like living with parents, these opportunities may be reduced. In others, such as living with a roommate in an apartment with a private bedroom, these opportunities may be enhanced.

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 and less

[8]We are indebted to one of the anonymous reviewers for making this point.

anonymity 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 2009), 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 control for the college acceptance rate and the percent of students who live on campus. We ran models with additional campus-level controls, including the graduation rate, the percent of students who are white, and the campus setting. These variables were rarely significant, however, and did not appreciably alter the sex ratio effect, so we dropped them from our final models. Table 1 displays descriptive statistics for all study variables.

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. We present odds ratios from logit regression models predicting each of the six attitudinal outcomes on these topics. 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. 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^{th}, 30^{th}, 50^{th}, 70^{th}, and 90^{th} percentiles—using *Stata*'s *prvalue* command (Long and Freese 2005). Next, we report odds ratios from logit regression models predicting women's number of dates and relationship history (i.e., whether she has had a boyfriend since entering college). The independent variables in the first models are parallel to those in the analysis of attitudes. 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. As with the attitudinal outcomes, we present predicted probabilities for the dating and boyfriend outcomes by campus sex ratio.

Finally, we display results from logit regression models predicting sexual behavior. Model 1 is parallel to the first models in previous tables, and Model 2 adds the boyfriend variables in order to account for differential opportunity on campuses with more or fewer men. Finally, as with previous outcomes, we present predicted probabilities for sexual behavior by the campus sex ratio and the respondents' relationship history. In this figure we split probabilities by women's boyfriend history to evaluate whether the sex ratio effect varies by women's opportunity. 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.[9]

[9]Though these data are both individual- and campus-level, we do not conduct multilevel analyses for two reasons. First, the women in the study were selected randomly at the national level (not from within colleges). Second, because of this, they data contain a large number of singletons (i.e., only one respondent per campus)—representing 46 (21.7%) of the campuses—and a low number of observations per campus in general ($\mu = 4.65$), which makes multilevel modeling problematic (Duncan, Connell and Klebanov 1997).

RESULTS

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. 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.10

Attitudes about Men and 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 their relationships. If the dyadic power thesis 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—though this last finding is only significant at $p < .10$. These latter two findings may also be attributable to demographic opportunity; that is, men may be harder to find because there are fewer of them. The only attitudes toward men that are not significantly affected by campus sex ratios are women's perception of how respectfully men treat women and their desire to be treated like a person instead of a sex object. Though these associations are not statistically significant, the direction of these effects is consistent with the idea that men are more likely to treat women well when women are scarce. 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. These findings generally support the hypothesis that women have less dyadic power when they are the numerical majority.

Although the statistically significant odds ratios in Table 2 appear substantively small (1.020–1.079), recall that they refer to a change in the odds resulting from a one-percentage point increase in the percentage of women on campus. To better illustrate the sex ratio effect, in Figure 1 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 with an average acceptance rate and average percentage of students living on

[10]It might be that women's attitudes toward sex and commitment change as a result of exposure to the culture on their campus. If this were the case, differences by campus sex ratio may be evident among freshmen but not among older women. Multiplicative interaction terms (i.e., sex ratio times dummy variables for class standing) revealed that the sex ratio was not significant among freshmen for any variable except one, where freshmen women on campuses with more women were *more likely* to agree that sex without commitment is wrong (the opposite effect of what the selection argument would predict). 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 sophomores, juniors, and seniors.

campus, 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 .15 to .24—in the probability that our prototypical woman will agree that men are not to be trusted when we adjust the sex ratio from the 10th percentile (47% women) to the 90th percentile (60% women). Similarly, the probability that a woman will agree that it is hard to meet the right kind of men jumps from .52 to .63 as she moves from the 10th to the 90th percentile of the campus sex ratio. Women's views of men's interest in commitment, their expectations of the men they date, the success of their relationships, and their perception of the necessity of sex for a relationship are all substantially affected by the sex ratio on their campus.

Traditional Dating Behavior and Boyfriend History

In one sense, the effect of campus sex ratios on women's dating behavior and boyfriend could be understood as a function of demographic 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. In another sense, campus sex ratios could influence women's dating behavior and relationship status by making men less interested in relationships because they hold more dyadic power. Table 4 presents odds ratios regressing women's dating behavior and boyfriend history on their campus sex ratio and other control variables. The first column reveals that each additional unit increase in campus percent women corresponds to a 3.3% reduction in the odds that a woman will have gone on more than six traditional dates since entering college. Similarly, according to the third column, women on campuses with a higher percentage of women are less likely to report ever having had a boyfriend in college. If the difference in these outcomes by campus sex ratio is due to dyadic power dynamics, we might expect women's assessments of their campus men to explain the difference in dating behavior. The second and fourth columns of Table 4 (Models 2) show that women's attitudes toward campus men attenuate the sex ratio effect only slightly, so we conclude that most of the disparity in dating behavior on campuses with different sex ratios is a function of opportunity, and only a small part of the difference can be attributed to decreased interest in relationships among men.

Again, it is difficult to ascertain the substantive significance of the sex ratio effect from the odds ratios in Table 4. Figure 2 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 traditional dates is .58. In contrast, the probability that a woman on a campus with 60% women will have been on more than six traditional dates is only .49. The differences are notable for women's boyfriend history as well. Here the predicted probabilities for having had a boyfriend in college range from .92 for women on a campus with 47% women to .87 for women on a campus with 60% women.

Sexual Behavior

Table 5 evaluates the hypothesis that sex ratios affect women's sexual behavior. If Guttentag and Secord's (1983) gendered approach to the dyadic power thesis applies to this context, we would expect women on campuses with more women to be more likely to have had sex because of their reduced power within relationships. If the demographic opportunity thesis applies to this context, we would expect women on campuses with more women to be less likely to have sex. The two hypotheses, however, are not necessarily mutually exclusive; both mechanisms (i.e., dyadic power and opportunity) could be operative. If boyfriends are a function of demographic opportunity, as the previous analysis suggests, controlling for boyfriend history may reveal a positive effect of campus percent women on sex in the last

month and a negative effect on retaining virginity (i.e., a suppression effect), a finding that would support both theses.

The first column of Table 5 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, recent sexual behavior 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 in the last month. The second column (Model 2), however, adds the boyfriend history variables. Interestingly, these variables suppress the effect of campus sex ratios on women's sexual behavior. Once boyfriends are considered (i.e., once exposure to a romantic relationship is controlled), women on campuses with lower sex ratios are indeed more likely to have had sex in the last month (though the odds ratio is significant only at $p < .10$). This suggests that the effect of dyadic power is masked by differences in opportunity and that both the dyadic power thesis and demographic opportunity thesis apply: Both dyadic power and simple opportunity appear to play a role in women's sexual behavior.

The third and fourth columns of Table 5 provide stronger evidence for the dyadic power thesis. When we consider virginity status we find that women are less likely to be a virgin on campuses where there are higher percentages of women. The final column suggests that boyfriend history does have a suppression effect on the campus sex ratio effect. Once boyfriend history is accounted for, women on campuses with higher proportions of women are even less likely to be a virgin. As with the other sex outcome, this suggests that both the dyadic power thesis and demographic opportunity thesis explain college women's sexual behavior.

Figure 3 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 .11 probability of having had sex in the last month, compared to a probability of just .08 for women on campuses with 47% women (a 27 percent reduction in the probability of sex in the last month). 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 .20 for women on 47% female campuses. Women's probability of recent sex falls from .75 to .67 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 .54 on a campus with 60% women to .69 for a woman on a campus with 47% women. The range is the same for women who had a past boyfriend in college (.30–.45) and nearly as big for those with a current boyfriend (.17–.29). Interestingly, the sex ratio effect appears to be similar (and substantial) even among women with boyfriends, evidence that supports the dyadic power thesis.[11] All these women have secured a potential sexual partner, yet those with more dyadic power (i.e., those on campuses with fewer women) are less likely to have had sex in the past month and more likely to be a virgin, meaning some of these women may be in a better position to negotiate even more than a romantic relationship in return for sex.

DISCUSSION AND CONCLUSION

Women typically outnumber men on American college campuses, and our analysis suggests that this has a significant impact on the romantic and sexual relationships of college women. We have evaluated two explanations for why this is the case: the dyadic power thesis, which

[11]Multiplicative interaction terms between the campus percent women and boyfriend history were not significant (results not shown), confirming that the effect of the sex ratio is similar whether or not women have (had) a boyfriend.

emphasizes how gender imbalances affect dyadic power within relationships, and the demographic opportunity thesis, which emphasizes how gender imbalances affect the likelihood of a successful search for a relationship. Our results provide evidence supporting both of these theses. As the dyadic power thesis 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, find it more difficult to locate the right kind of men, and are more likely to report that their relationships don't work out and that a woman can't have a boyfriend if she won't have sex. If demographic opportunity were the only explanation for why campus sex ratios affect relationships, we would not expect to find these clear associations between the campus sex ratio and women's assessments of men and relationships. It appears men behave differently in different relationship markets (or at least women perceive their behavior differently).

Still, these findings do not imply that the demographic opportunity thesis does not apply to collegiate relationships. To be sure, that women report more difficulty finding the right kind of men and attractive potential partners could be because they simply cannot locate many men at all. Furthermore, our findings regarding traditional dating behavior and boyfriend histories suggest that it is mostly demographic opportunity that accounts for differences in these outcomes by the campus sex ratio. Holding constant women's perceptions of men's treatment of women and interest in relationships does little to attenuate the sex ratio effect on dating behavior and boyfriend history. This does not rule out the possibility that women on campuses with a higher proportion of women go on fewer dates and are less likely to have a boyfriend because men have less incentive to do so, but our evidence suggests this explains only a small part of the disparity in these outcomes.

Our analysis of college women's sexual behavior indicates that both the dyadic power thesis and the demographic opportunity thesis shed light on how campus sex ratios affect women's sex lives. While the demographic opportunity thesis predicts women will be less sexually active on campuses where they outnumber men, this is not the case. The campus sex ratio does not significantly influence women's recent sexual behavior (i.e., having had sex in the last month) until we control for women's boyfriend history (i.e., relationships that are more likely to provide opportunity for sexual activity), at which point the association between campus percent women and having had sex in the last month becomes significant and positive. This suggests that reduced demographic opportunity is masking the effect of diminished dyadic power on sexual behavior and that both of these mechanisms are operative. In the case of virginity, women on campuses where they are more plentiful are less likely to have had sex—a finding that supports Guttentag and Secord's (1983) gendered approach to the dyadic power thesis—and the association is stronger once boyfriend history is controlled, again suggesting that reduced demographic opportunity masks some of the effect of diminished dyadic power. Our finding that the sex ratio effect is evident even among women with a boyfriend—those who have found a partner—provides further evidence that the sex ratio alters dyadic power and simple opportunity is not the only story.

In some cases, such as women's perceived ability to find partners, women's dating behavior, and women's boyfriend history, it is difficult to determine precisely which mechanism is at work influencing women's relationships. Moreover, having data only for women makes it difficult to say whether men and women respond differently or similarly to the sex composition on campus with respect to many of these relationship outcomes [i.e., to test Guttentag and Secord's (1983) gendered argument], though the findings regarding sexual behavior do support Guttentag and Secord's (1983) argument. It would be ideal to have data from both genders, and analysis of such data is a worthy undertaking for future research. Nevertheless, our study provides evidence that campus sex ratios do affect women's relationships, and they do so both by altering the distribution of dyadic power within

relationships and by providing more or fewer opportunities to pair with members of the opposite gender. These results further demonstrate 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. But 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 demographic, structural, and cultural factors that may constrain or cultivate different types of relationships among college students.

More generally, this study sheds light on how market sex ratios influence romantic and sexual relationships. We find support for both the dyadic power thesis and the demographic opportunity thesis, and these theses likely apply to other relationship markets. These explanations both deserve scholarly attention from researchers studying sex ratios across different contexts. And although we can only test it in a limited fashion here, Guttentag and Secord's (1983) gendered approach to the dyadic power thesis has important implications for scholars interested in gender, sexuality, and family life that are important to consider. Where possible, scholars should examine whether men and women respond differently or similarly to different relationship market conditions.

Finally, although our measurement decision did not significantly affect the results of our study, we recommend that researchers interested in sex ratio effects measure sex compositions as percentages and not ratios. Percentages are more intuitive, less likely to produce outliers, and do not give added weight to certain types of gender imbalances—in the traditional measurement of sex ratios as the number of men per 100 women, male skews receive added weight (and the reverse would be true if the ratio is calculated as the number of women per 100 men).

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, every student on campus is not a potential partner for every other one. 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. As we mentioned above, it would be helpful to hear from college men on these issues as well. 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. Fourth, although we believe we have adequately controlled for factors that select women onto campuses with different sex ratios and shown that the sex ratio does not affect attitudes toward sexual morality, commitment, and marriage, we cannot categorically rule out selection bias as an explanation for these findings. Finally, and related to the previous point, 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. Indeed, many relationship terms and definitions are ambiguous and may vary across different contexts and on different campuses. Many students may not

themselves be sure whether they are in “dating,” “hanging out,” “hooking up,” have a “boyfriend,” or something else. The categories used in this study are helpful but may not capture some of the ambiguity and complexity of college relationships.

We might also offer some qualifications regarding the dyadic power thesis, Guttentag and Secord’s gendered approach to it, and the exchange theory from which it is derived. 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. The dyadic power thesis 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. Similarly, the dyadic power thesis does not imply that women do not like sex; it simply states that in markets where men hold more structural power women will be more likely to value relationships and men will be more likely to value sex. The studies we reference in note 5 bear this out. Second, we are not suggesting that social exchange theory 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 is an appropriate framework from which to understand the dominant relationship script on contemporary college campuses.12

Conclusion

Campus sex ratios influence the way women view their campus men and relationships, their dating behavior, their boyfriend history, and their sexual behavior. Women on low sex ratio campuses experience decreased dyadic power in their heterosexual relationships and more difficult relationship searches. This study highlights the importance of market characteristics for understanding romantic and sexual relationships in college and more generally. Future research on romantic and sexual relationships in college, and in other populations, should pay attention to market characteristics like sex ratios that might influence individuals’ behavior.

References

Acock, Alan C. Working with Missing Values. Journal of Marriage and Family. 2005; 67:1012–1028.

Angrist, Josh. How Do Sex Ratios Affect Marriage and Labor Markets? Evidence from America’s Second Generation. Quarterly Journal of Economics. 2002; 117:997–1038.

Barber, Nigel. Women’s Dress Fashions as a Function of Reproductive Strategy. Roles. 1999; 40:459–471.

Barber, Nigel. On the Relationship between Country Sex Ratios and Teen Pregnancy Rates: A Replication. Cross-Cultural Research. 2000; 34:26–37.

Barber, Nigel. Mustache Fashion Covaries with a Good Marriage Market for Women. Journal of Nonverbal Behavior. 2001a; 25:261–272.

12One student’s remark in Hamilton and Armstrong’s (2009:602) ethnographic study typifies this approach to college life: “College [is] the only time in your life when you should be a hundred percent selfish.”

Barber, Nigel. On the Relationship between Marital Opportunity and Teen Pregnancy: The Sex Ratio Question. Journal of Cross-Cultural Psychology. 2001b; 32:259–67.

Barber, Nigel. Divorce and Reduced Economic and Emotional Interdependence: A Cross-National Study. Journal of Divorce and Remarriage. 2003; 39:113–24.

Baumeister, Roy F.; Catanese, Kathleen R.; Vohs, Kathleen D. 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. 2001; 5:242–273.

Becker, Gary. The Economic Approach to Human Behavior. Chicago: University of Chicago Press; 1976.

Bellah, Robert N.; Madsen, Richard; Sullivan, William M.; Swidler, Ann; Tipton, Steven M. Habits of the Heart: Individualism and Commitment in American Life. Berkeley, CA: University of California Press; 1985.

Billy, John OG.; Brewster, Karin L.; Grady, William R. Contextual Effects on the Sexual Behavior of Adolescent Women. Journal of Marriage and the Family. 1994; 56:387–404.

Blau, Peter M. Exchange and Power in Social Life. New York: John Wiley & Sons, Inc; 1964.

Bogle, Kathleen A. Hooking Up: Sex, Dating, and Relationships on Campus. New York: New York University Press; 2008.

Bouchard, Stephanie A.; French, Kristin A. College Admissions Data Handbook 2001–2002. Itasca, IL: Riverside Publishing; 2001.

Brewster, Karin L. Neighborhood Context and the Transition to Sexual Activity among Young Black Women. Demography. 1994; 31:977–1011.

Browning, Christopher; Olinger-Wilborn, Matisa. Neighborhood Structure, Social Organization, and Number of Short-Term Sexual Partnerships. Journal of Marriage and Family. 2003; 65:730–45.

Burdette, Amy M.; Ellison, Christopher G.; Hill, Terrance D.; Glenn, Norval D. 'Hooking Up' at College: Does Religion Make a Difference? Journal for the Scientific Study of Religion. 2009; 48:535–551.

Byers, E Sandra; Wang, Adrienne. Understanding Sexuality in Close Relationships from the Social Exchange Perspective. In: Harvey, John H.; Wenzel, Amy; Sprecher, Susan, editors. The Handbook of Sexuality in Close Relationships. Mahwah, NJ: Lawrence Erlbaum Associates; 2004. p. 203-234.

Carver, Karen; Joyner, Kara; Udry, Richard. National Estimates of Adolescent Romantic Relationships. In: Florsheim, Paul, editor. Adolescent Romantic Relations and Sexual Behavior: Theory, Research, and Practical Implications. Mahwah, NJ: Lawrence Erlbaum Associates; 2003. p. 23-56.

Clark, Russell D.; Hatfield, Elaine. Gender differences in receptivity to sexual offers. Journal of Psychology & Human Sexuality. 1989; 2:39–55.

Cox, Oliver C. Sex Ratio and Marital Status among Negroes. American Sociological Review. 1940; 5:937–947.

Crawford, Duane W.; Feng, Du; Fischer, Judith L.; Diana, Lisa K. The Influence of Love, Equity, and Alternatives on Commitment in Romantic Relationships. Family and Consumer Sciences Research Journal. 2003; 31:253–271.

Davis, Larry E.; Williams, James Herbert; Emerson, Shirley; Hourd-Bryant, Maggie. Factors Contributing to Partner Commitment among Unmarried African Americans. Social Work Research. 2000; 24:4–15.

Duncan, Greg J.; Connell, James P.; Klebanov, Pamela K. Conceptual and Methodological Issues in Estimating Causal Effects of Neighborhoods and Family Conditions on Individual Development. In: Brooks-Gunn, Jeanne; Duncan, Greg J.; Lawrence Aber, J., editors. Neighborhood Poverty: Context and Consequences for Children. New York, NY: Russell Sage Foundation; 1997. p. 219-250.

Ellingson, Stephen; Laumann, Edward O.; Paik, Anthony; Mahay, Jenna. The Theory of Sex Markets. In: Laumann, Edward O.; Ellingson, Stephen; Mahay, Jenna; Paik, Anthony; Youm, Yoosik, editors. The Sexual Organization of the City. Chicago: University of Chicago Press; 2004. p. 3-38.

England, Paula; Shafer, Emily Fitzgibbons; Fogarty, Alison CK. Hooking Up and Forming Romantic Relationships on Today's College Campuses. In: Kimmel, Michael; Aronson, Amy, editors. The Gendered Society Reader. New York: Oxford University Press; 2007.

Finer, Lawrence. Trends in Premarital Sex in the United States, 1954–2003. Public Health Reports. 2007; 122:73–78. [PubMed: 17236611]

Giordano, Peggy C.; Manning, Wendy D.; Longmore, Monica A. The Romantic Relationships of African-American and White Adolescents. The Sociological Quarterly. 2005; 46:545–568.

Glenn, Norval; Marquardt, Elizabeth. Hooking Up, Hanging Out, and Hoping for Mr. Right: College Women on Dating and Mating Today. New York: Institute for American Values; 2001.

Groves, Ernest Rutherford; Ogburn, William Fielding. American Marriage and Family Relationships. New York: Henry Holt; 1928.

Guttentag, Marcia; Secord, Paul F. The Sex Ratio Question. Beverly Hills, CA: Sage; 1983. Too Many Women?.

Hamilton, Laura; Armstrong, Elizabeth A. Gendered Sexuality in Young Adulthood: Double Binds and Flawed Options. Gender & Society. 2009; 23:589–616.

Harknett, Kristen. Mate Availability and Unmarried Parent Relationships. Demography. 2008; 45:555–571. [PubMed: 18939661]

Jemmott, John B., III; Ashby, Karen L.; Lindenfeld, Kathryn. Romantic Commitment and the Perceived Availability of Opposite-Sex Persons: On Loving the One You're With. Journal of Applied Social Psychology. 1989; 19:1198–1211.

Lichter, Daniel T.; McLaughlin, Diane K.; Kephart, George; Landry, David J. Race and the Retreat from Marriage: A Shortage of Marriageable Men? American Sociological Review. 1992; 57:781–99.

Lloyd, Kim M.; South, Scott J. Contextual Influences on Young Men's Transition to First Marriage. Social Forces. 1996; 74:1097–1119.

McClintock, Elizabeth Aura. When Does Race Matter? Race, Sex, and Dating at an Elite University. Journal of Marriage and Family. 2010; 72:45–72.

McLaughlin, Diane K.; Lichter, Daniel T.; Johnston, Gail M. Some Women Marry Young: Transitions to First Marriage in Metropolitan and Nonmetropolitan Areas. Journal of Marriage and the Family. 1993; 55:827–38.

Meier, Ann; Allen, Gina. Romantic Relationships from Adolescence to Young Adulthood: Evidence from the National Longitudinal Study of Adolescent Health. The Sociological Quarterly. 2009; 50:308–335.

National Center for Education Statistics. Digest of Education Statistics: 2007. NCES 2008–022. 2008 March. Retrieved July 11, 2008 (http://nces.ed.gov/programs/digest/d07/tables/dt07_179.asp?referrer=report)

Oliver, Mary Beth; Hyde, Janet Shibley. Gender Differences in Sexuality: A Meta-Analysis. Pscyhological Bulletin. 1993; 113:29–51.

Peplau, Letitia Anne. Human Sexuality: How Do Men and Women Differ? Current Directions in Psychological Science. 2003; 12:37–40.

Regan, Pamela C.; Dreyer, Carla S. Lust? Love? Status? Young adults' motives for engaging in casual sex. Journal of Psychology & Human Sexuality. 1999; 11:1–24.

Regnerus, Mark D. Forbidden Fruit: Sex and Religion in the Lives of American Teenagers. New York: Oxford University Press; 2007.

Royston, Patrick. Multiple Imputation of Missing Values: Update. The Stata Journal. 2005; 5:1–14.

Rusbult, Caryl E. A Longitudinal Test of the Investment Model: The Development (and Deterioration) of Satisfaction and Commitment in Heterosexual Involvements. Journal of Personality and Social Psychology. 1983; 45:101–117.

Rusbult, Caryl E.; Johnson, Dennis J.; Morrow, Gregory D. Predicting Satisfaction and Commitment in Adult Romantic Involvements: An Assessment of the Generalizability of the Investment Model. Social Psychology Quarterly. 1986; 49:81–89.

Schmitt, David P., et al. Universal Sex Differences in the Desire for Sexual Variety: Tests from 52 Nations, 6 Continents, and 13 Islands. Journal of Personality and Social Psychology. 2003; 85:85–104. [PubMed: 12872886]

Sedikides, Constantine; Oliver, Mary Beth; Keith Campbell, W. Perceived Benefits and Costs of Romantic Relationships for Women and Men: Implications for Exchange Theory. Personal Relationships. 1994; 1:5–21.

Smith, Christian. Moral, Believing Animals: Human Personhood and Culture. New York: Oxford University Press; 2003.

Smith, Tom W. Attitudes toward Sexual Permissiveness: Trends, Correlates, and Behavioral Characteristics. In: Rossi, Alice S., editor. Sexuality across the Life Course. Chicago: University of Chicago Press; 1994. p. 63-97.

South, Scott J.; Lloyd, Kim M. Marriage Markets and Nonmarital Fertility in the United States. Demography. 1992; 29:247–64. [PubMed: 1607051]

South, Scott J.; Trent, Katherine. Sex Ratios and Women's Roles: A Cross-National Analysis. American Journal of Sociology. 1988; 93:1096–1115.

South, Scott J.; Trent, Katherine. Imbalanced Sex Ratios, Men's Sexual Behavior, and STI Risk in China. Paper presented at the annual meeting of the Population Association of America; Dallas, TX. 2010.

Sprecher, Susan. Investment Model, Equity, and Social Support Determinants of Relationship Commitment. Social Psychology Quarterly. 1988; 51:318–328.

Sprecher, Susan. Social Exchange Theories and Sexuality. The Journal of Sex Research. 1998; 35:32–43.

Stepp, Laura Sessions. Unhooked: How Young Women Pursue Sex, Delay Love and Lose at Both. New York: Riverhead; 2007.

Trent, Katherine; South, Scott J. Structural Determinants of the Divorce Rate: A Cross-Societal Analysis. Journal of Marriage and the Family. 1989; 51:391–404.

Trent, Katherine; South, Scott J. Unpublished manuscript. State University of New York; Albany: 2008. Too Many Men? Sex Ratios and Women's Marital Timing and Sexual Behavior in China.

Uecker, Jeremy E. Religion, Pledging, and the Premarital Sexual Behavior of Young Adults. Journal of Marriage and Family. 2008; 70:728–744.

Whitehead, Barbara Dafoe; Popenoe, David. 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; 2001.

Williams, Alex. The New Math on Campus. New York Times; 2010 February 5. Retrieved February 8, 2010 (http://www.nytimes.com/2010/02/07/fashion/07campus.html?pagewanted=1&em)

Wolfe, Tom. I Am Charlotte Simmons. New York: Farrar, Straus, Giroux; 2004.

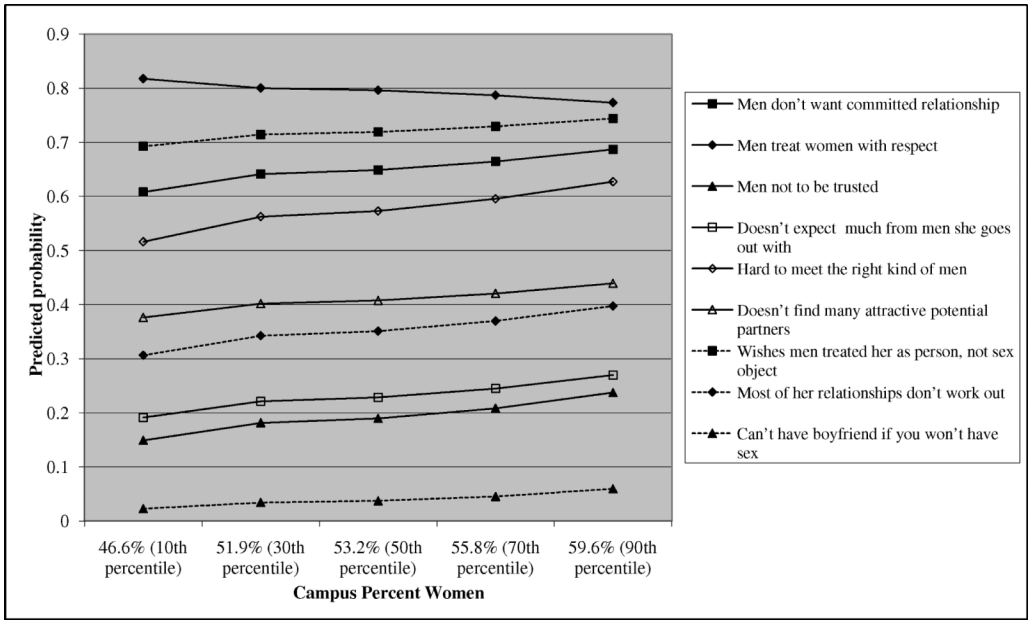

Figure 1.

Predicted Probabilities of College Women's Agreement with Statements About Men and Relationships, by Campus Percent Women

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). $N = 986$.

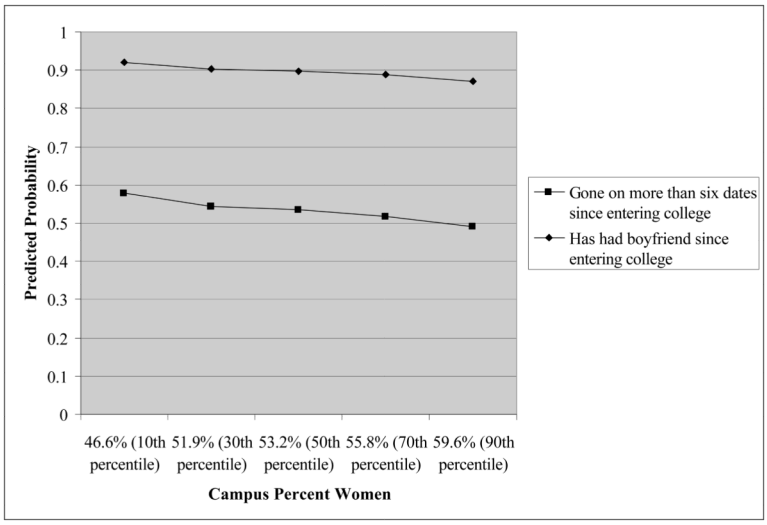

Figure 2.

Predicted Probabilities of Dating Behavior and Boyfriend Status, by Campus Percent Women

Notes: Predicted probabilities are generated from logit regression models identical to Models 2 in Table 4, with all variables set at their modal or mean value (with the exception of class standing, which is set at junior instead of freshman). $N = 986$.

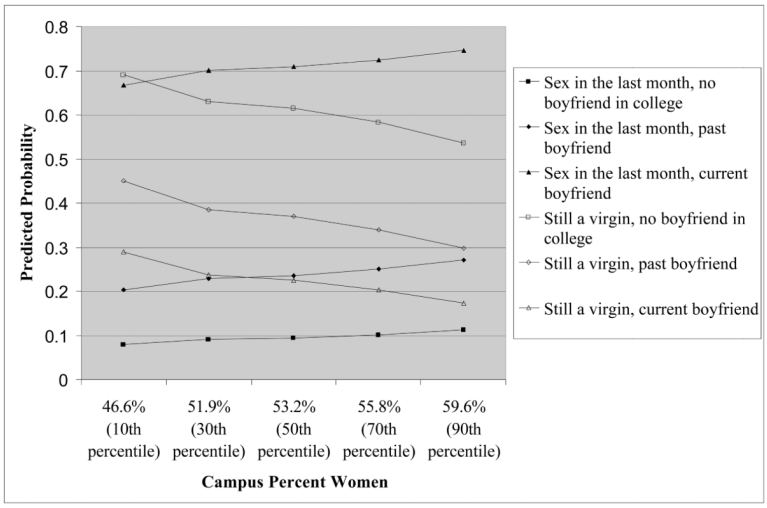

Figure 3.

Predicted Probabilities of Sexual Behavior, by Campus Percent Women and Relationship Status

Notes: Predicted probabilities 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 1

Descriptive Statistics for Study Variables

	Mean	SD	Range
Sex without commitment is wrong	.67	.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 (α = .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 (α = .72)	16.18	3.76	7 – 27
Has a current boyfriend	.48	.50	0, 1

	Mean	SD	Range
Past boyfriend in college	.32	.46	0, 1
Number of dates since entering college	2.94	1.07	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	.984	1.010	.989	1.001	.994	.998
Individual Characteristics						
Sophomore	.717	.911	1.201	.908	1.642	1.011
Junior	.637^{+}	1.476	1.291	.580*	1.057	1.338
Senior	.476**	1.456	1.284	.768	.860	.508**
Black	.673	2.505**	1.867^{+}	1.274	.746	.804
Asian	1.274	.196*	.597	3.179**	.947	.758
Other race	.469^{+}	1.823	2.452*	1.454	.630	1.125
Religious service attendance	1.824***	.590***	.684***	1.113	1.448***	1.144
Campus Characteristics						
Campus in Northeast	.701	1.480	1.599	1.450^{+}	.888	.977
Campus has <= 5,000 students	1.026	.661	1.081	1.316	.449*	.643
Greek life	.498^{+}	.988	1.225	1.966**	.302**	.841
Private college	.520^{+}	1.964	.677	1.235	.436*	.903
Conservative Protestant college	.962	.564	.178	2.407**	.518	2.445*
College acceptance rate	1.005	1.003	1.005	1.001	1.006	.994
Percent residential students	1.002	.990	1.008	.992	1.021**	1.002
Model Fit Statistics						
−2 log likelihood	1113.973	877.781	858.410	1326.086	820.720	1101.501
Pseudo R-square	.114	.092	.070	.030	.064	.044

$^{+}$ 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	1.027*	.979	1.045**	1.035*	1.020	1.036*	1.020+	1.031*	1.079**
Individual Characteristics									
Sophomore	1.122	.866	.725	.693	1.004	1.190	.786	.891	1.115
Junior	1.168	.577*	1.006	.622+	1.344	1.599*	1.296	.905	1.611
Senior	1.073	.821	.767	.953	.945	2.149**	1.489*	1.099	2.078
Black	3.644***	.345**	2.157*	2.510**	2.091	3.211**	2.234*	1.776+	1.237
Asian	.633	1.287	.567	1.692	1.390	1.129	.949	1.159	-------*b*
Other race	.932	.400*	1.627	1.547	2.046	1.967+	1.494	1.070	1.412*b*
Religious service attendance	.779**	1.512***	.844+	.878	.952	.824**	.925	.915	1.110
Traditionalist sex attitudes	1.043	.989	.987	.934	1.087+	1.008	1.044	.932+	.820+
Campus Characteristics									
Campus in Northeast	1.220	.687	1.762*	.821	1.167	1.361	1.081	1.064	2.104+
Campus has <= 5,000 students	.948	1.029	1.214	.942	1.369	.910	.845	.985	.499
Greek life	1.647+	.629	1.252	1.117	.636	3.326**	1.797+	1.011	.790
Private college	1.037	2.107*a*	1.002	.885	.772	1.409	2.520***	.577*	.948
Conserv. Protestant college	.256***	-------*a*	.484	.792	.399**	.236**	.864	.818	.331
College acceptance rate	.991	.985+	.997	1.014*	1.006	.995	1.004	1.005	.993
Percent residential students	1.004	.986*	.990	1.001	.999	1.000	.997	1.009+	.988
Model Fit Statistics									
−2 log likelihood	1212.900	817.140	928.678	1132.816	1205.758	1216.868	1284.324	1251.258	321.308
Pseudo R-square	.085	.073	.050	.042	.023	.107	.035	.021	.078

+ 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. $N = 986$.

[a] 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.

[b] 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

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	.967*	.973*	.955**	.959*
Individual Characteristics				
Sophomore	2.342***	2.318***	1.906**	1.892**
Junior	3.976***	4.223***	3.567***	3.664***
Senior	4.171***	4.405***	5.499***	5.639***
Black	.443+	.564	.684	.816
Asian	.961	.952	.326**	.328**
Other race	.534	.612	.759	.818
Religious service attendance	1.132	1.086	.746**	.725**
Traditionalist sex attitudes	.972	.974	.994	.994
Campus Characteristics				
Campus in Northeast	.779	.821	1.113	1.147
Campus has <= 5,000 students	.570*	.566*	1.140	1.132
Greek life	.569	.616	.536*	.583+
Private college	1.417	1.468	.575	.602
Conservative Protestant college	1.184	.970	.408*	.366**
College acceptance rate	1.011*	1.012*	1.018**	1.019**
Percent residential students	.990	.990	1.004	1.004
Attractiveness of Potential Partners				
Attitudes toward campus men		.925**		.947*
Model Fit Statistics				
−2 log likelihood	1185.743	1171.715	890.067	885.404
Pseudo R-square	.108	.119	.111	.115

+ 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 5

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	1.012	1.030^{+}	.962*	.950**
Individual Characteristics				
Sophomore	1.134	1.173	.855	.715
Junior	2.683***	2.358**	.585^{+}	.748
Senior	1.512	1.431	.678	.846
Black	1.272	1.616	1.161	1.088
Asian	.817	1.085	2.755**	2.285*
Other race	.677	.675	2.289*	2.333*
Religious service attendance	.605***	.582***	1.649***	1.594***
Traditionalist sex attitudes	.847***	.778***	1.275***	1.316***
Lives off campus	.908	.951	.678	.641^{+}
Campus Characteristics				
Campus in Northeast	1.394	1.766*	.801	.788
Campus has <= 5,000 students	.956	.836	1.198	1.260
Greek life	1.326	1.663	.860	.789
Private college	.812	1.028	1.605	1.469
Conservative Protestant college	.222^{+}	.482	5.265**	4.222**
College acceptance rate	1.008	1.007	.992	1.000
Percent residential students	1.002	1.005	.995	.994
Dating Behavior and Relationship Status				
Has a boyfriend now		23.356***		.182***
Past boyfriend in college		2.954**		.366**
Model Fit Statistics				
−2 log likelihood	1097.086	879.209	1070.100	1002.804
Pseudo R-square	.149	.318	.202	.253

$^{+}$ 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.