How are Sociosexuality, Sex Drive, and Lifetime Number of Sexual Partners Related?

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In two studies (ns = 277 and 221), the authors examined the relationships among sex drive, sociosexuality, lifetime number of sex partners, and gender identity. They found that sex drive is highly and positively correlated with sociosexual orientation, and that both sex drive and sociosexual orientation are positively correlated with lifetime number of sex partners. However, partial correlations revealed that sociosexual orientation is an independent predictor of lifetime number of sex partners, whereas sex drive is not. The authors were also able to replicate and extend Mikach and Bailey's (1999) finding that gender identity is related to women's lifetime number of sex partners. More masculine women had more sex partners and had a less restricted sociosexual orientation than did less masculine women; less masculine men had a higher sex drive than did more masculine men. The findings are discussed with regard to theory and research on sex drive and sociosexuality.

Keywords: sex drive; sociosexuality; gender identity

 $oldsymbol{A}$ lfred Kinsey, in his landmark studies on human sexual behavior (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhart, 1953), found not only the expected between-gender variability in sex drive, but also substantial within-gender variability in what he termed "sociosexual attitudes and behaviors." These included such variables as preferred and actual frequency of sexual intercourse, number of sexual partners, frequency of extradyadic sex, and frequency of uncommitted sex. Although Kinsey's focus was on how sex drive (or, in his terminology, a biologically determined "total sexual outlet," or frequency of orgasm; Kinsey et al., 1948) is related to sexual behavior, his work served also to highlight the idea that sociosexual attitudes and behaviors have a strong impact on sexual behavior, perhaps even stronger than the biological need for orgasm.

Simpson and Gangestad's (1991) Sociosexual Orientation Inventory (SOI) was designed to measure the attitudes and behaviors that Kinsey had described more than 40 years earlier. Their first step toward developing the SOI was a series of studies they coauthored with Snyder on how self-monitoring and sexual behaviors are related (Snyder, Simpson, & Gangestad, 1986). Snyder and colleagues demonstrated in several studies that high self-monitors have different sexual lives than do low self-monitors. They found, for example, that high selfmonitors had more frequent casual sex than did low self-monitors (Snyder et al., 1986); that they expected to engage in more casual sex than did low self-monitors (Snyder et al., 1986); and that they were more attentive to physical appearance and less attentive to personality in picking dates than were their low self-monitoring counterparts (Snyder, Berscheid, & Glick, 1985). But why should this be so? Simpson and Gangestad (1991) argued that self-monitoring is one of several personality traits and attitudes (including extraversion, low degree of religiosity, and political liberalism) associated with the possession of relatively permissive attitudes about casual sex. The SOI was developed to distinguish between individuals who have these permissive traits and attitudes,

Authors' Note: This research was supported by a doctoral fellowship awarded to the first author by the Social Sciences and Humanities Research Council of Canada, and was conducted in partial fulfillment of the requirements for her Ph.D. degree at the University of Pennsylvania. Thanks to Joseph Roberta, Irene Papajohn, and Christine Vassallo for their assistance with data collection, and thanks as well to our anonymous reviewers for their helpful suggestions. Please address correspondence to Jennifer M. Ostovich, Department of Psychology, University of Pennsylvania, 3720 Walnut Street, Philadelphia, PA 19104; e-mail: ostovich@cattell.psych.upenn.edu.

PSPB, Vol. 30 No. 10, October 2004 1255-1266 DOI: 10.1177/0146167204264754 © 2004 by the Society for Personality and Social Psychology, Inc.

and individuals who do not have these permissive traits and attitudes.

The SOI

The SOI is predicated on the idea that some people have "restricted," and others "unrestricted," orientations toward sexuality and that these orientations are trait-like in nature. An unrestricted orientation involves being comfortable with engaging in casual sex, whereas a restricted orientation involves being uncomfortable with the idea of engaging in sex without love. Simpson and Gangestad argued on evolutionary grounds that although in general being sociosexually restricted was the adaptive strategy for women, an unrestricted sociosexual orientation was a frequency-dependent, alternative strategy: In a population in which most women were restricted, an advantage would accrue to women who were unrestricted. Such women would suffer the cost of giving up commitment-based resources, but they would gain the advantage of access to the best male genes. All things equal, then, the majority of women should follow a sociosexually restricted strategy, but some women should follow a more opportunistic, unrestricted strategy. Our question here is whether the strategy one selects is related to the level of one's sex drive.

Simpson and Gangestad (1991) argued that the SOI provided explanatory power (with regard to human sexual behavior) independent of that provided by measures of sex drive alone. Their assertion was based on the following finding: In committed sexual relationships, sociosexually unrestricted individuals had no more sex than did sociosexually restricted individuals; outside of such relationships, however, there was a significant correlation between SOI and frequency of sex, such that those with unrestricted sociosexual orientations had more extradyadic sex than did those with restricted sociosexual orientations. They argued that frequency of sex within a sexual relationship was a good measure of sex drive, that this frequency was unrelated to SOI, and that SOI must therefore measure the desire to have specifically extradyadic sex, not any old sex.

This argument, however, depends on one's accepting the notion that frequency of sex in an enduring relationship is a good measure of a person's sex drive. But is this so? Certainly in relationships one can have either less or more sex than one would like, to accommodate one's partner's desires, or at least compromise with them (this is a well-documented phenomenon; see Ard, 1977; Blumstein & Schwartz, 1983; Julien, Bouchard, Gagnon, & Pomerleau, 1992). Furthermore, as Kinsey and colleagues (1948, 1953) have made clear, a person's "total sexual outlet" consists of more than intercourse with a regular partner. We would argue that Simpson and

Gangestad (1991) were hasty in concluding that sociosexuality and sex drive are independent, given their less than adequate measure of sex drive. We view the relationship between these two variables as a still-open question.

Measuring Sex Drive

To address the question of whether sex drive and sociosexuality are related, one must use a measure of sex drive unconfounded with sociosexual orientation. The best measure of sex drive, then, will not involve questions about activities that require a partner (such as intercourse with a regular or extradyadic partner), but instead should focus on other aspects of Kinsey's "total sexual outlet"—the number of orgasms respondents have during any given time period. Elsewhere (Ostovich, 2004), one of us has reported on the development of the Sex Drive Questionnaire (SDQ), a brief, four-item measure of sex drive (see Methods for more details). The SDQ is ideal for a study of this sort because no item asks about sexual activities requiring a partner.

STUDY 1

Sex Drive, Sociosexuality, and Lifetime Number of Sex Partners

As we discussed above, we were hesitant to accept Simpson and Gangestad's (1991) claim that sociosexuality and sex drive are unrelated. We contend that it would benefit someone with a high sex drive to hold a positive attitude toward casual sex: an unrestricted sociosexual orientation gives one "permission" (if you will) to seek out more sexual situations than does a restricted sociosexual orientation, and thus, with luck, to engage in more sex than one otherwise could. We hypothesize that sociosexuality is not, in fact, independent of sex drive, when sex drive is appropriately measured: The higher one's sex drive, the less restricted should be one's sociosexual orientation.

We further hypothesize that gender differences will emerge in the strength of correlations between sex drive and lifetime number of sex partners, and between sociosexuality and lifetime number of sex partners. Evolutionary theorists such as Trivers (1972) have argued that women should be the ones driving sexual relations because of gender differences in parental investment. Women's biology forces them to invest much more time and energy into their offspring than does men's biology. A high degree of parental investment (such as that required by human women) results in a "choosy" mating strategy, whereas a lower degree of parental investment (such as that required by human men) results in an "opportunistic" mating strategy. Therefore, as Trivers (1972) convincingly argues, women's choices drive mat-

ing relations: Women choose when and with whom to mate.

We expect that our data will support this theoretical framework. Women's sexual behaviors should be more highly correlated with their sex drive and with their sociosexual orientation than should men's sexual behaviors; moreover, women's sex drive should be more highly correlated with their sociosexual orientation than should men's sex drive. Our reasoning is as follows. Presumably, women can attract ("opportunistic" male) sexual partners more often than not when they desire them; men, on the other hand, are limited by their ability to find willing ("choosy" female) sexual partners.

Sex Drive, Sociosexuality, and Gender Identity

Thus far, we have discussed three major goals of Study 1: First, we hope to clarify the relationship between sex drive and sociosexuality; second, we hope to develop some understanding of how sex drive and sociosexuality are related to sexual behaviors, especially lifetime number of sexual partners; and third, we hope to fit our findings vis-à-vis sex drive and sociosexuality into Trivers's (1972) parental investment/mating strategy framework.

A fourth goal of this study, inspired by recent research by Mikach and Bailey (1999), was to explore the relationship between sexual attitudes and behaviors and gender identity. Mikach and Bailey (1999) found that the more masculine their female participants, the more sex partners they had had by age 25. Mikach and Bailey's aim was to characterize women with an "unusually" high number of sex partners, which they operationalized as having had more than 20 sex partners by age 25; these results, then, apply to a small, special category of women. These participants not only self-reported having been more masculine in their childhoods and feeling more masculine currently than did participants with fewer sex partners, but also were judged by raters as being more masculine than women without an "unusually" high number of sex partners, both physically and behaviorally. Mikach and Bailey (1999) suggest two basic causal models for this relationship: Either these women are more masculine to begin with (because of hormonal and/or developmental reasons), and the pursuit of many sex partners is a part of being masculine, or these women desire more sexual partners than "feminine" women should desire (by sociocultural standards) and thus come to view themselves as being masculine. In any case, this is a controversial finding that should be further investigated.

Mikach and Bailey (1999) did not discuss how gender identity is related to male sexual behavior. Our goal here, then, was not only to replicate the Mikach and Bailey finding in our female participants, but also to explore how these findings might extend to male participants.

Method

PARTICIPANTS

We used fliers, newspaper advertisements, and the University of Pennsylvania's psychology subject pool message board to recruit participants. We advertised the study as a study of "personality and behavior," not of human sexuality, to avoid some of the more serious problems associated with volunteer bias in sex research (see Bogaert, 1996; Strassberg & Lowe, 1995; Trivedi & Sabini, 1998). No participants dropped out of this study when they discovered the true focus of our research, although they were given the opportunity to do so. Participants not recruited through the subject pool were compensated for their participation with \$8 or \$10 gift certificates, whereas participants from the subject pool received one research credit in exchange for their participation.

Our participants were 129 men and 148 women (total N=277). Men's age ranged from 18 to 54 years; mean age was 22.4 (SD=6.3); median age was 21; modal age was 19. Women's age ranged from 18 to 48 years; mean age was 21.8 (SD=5.5); median age was 20; modal age was 19. Our participants were 58.8% White, 27.0% Asian or Asian Indian, 4.3% Black, 3.2% Hispanic, and 6.7% "Other." Our participants' religious affiliations were 26.3% no religious affiliation, 20.6% Catholic, 20.1% Other Christian, 19.2% Jewish, 5.8% Hindu, and 2.2% Muslim.

MATERIALS

We measured sexual orientation using a 7-point Likert-type scale (the "Kinsey Scale") ranging from 0 (exclusively attracted to the other gender) to 6 (exclusively attracted to the same gender), with 3 as our midpoint (equally attracted to both genders). For men, 90.7% of our participants scored a 0 or 1 (exclusively or mostly attracted to the other gender, or "straight"); 7.0% scored a 5 or 6 (exclusively or mostly attracted to the same gender, or "gay"); and the remaining 2.3% scored a 2, 3, or 4 ("bisexual"). For women, 84.4% scored as "straight," 8.1% as "gay," and 7.5% as "bisexual." Finally, 75.2% of our male participants reported having been sexually active, as did 63.3% of our female participants.

Sex drive. The SDQ is a measure of sex drive consisting of four items meant to assess the strength of respondents' sex drive without necessitating that respondents have a romantic or sexual partner to be classified as high in sex drive:

1. How often do you experience sexual desire? (scored on a 7-point Likert-type scale: *never*; *less than once a month*;

- about once a month; about once a week; several times a week; daily; several times a day)
- How often do you orgasm in the average month? (never, 1-2 times, about once per week; several times a week; daily; several times a day)
- How many times do you masturbate in the average month? (never, 1-2 times; about once per week; several times a week; daily; several times a day)
- 4. How would you compare your level of sex drive with that of the average person of your gender and age? (scored on a 7-point Likert-type scale anchored by *very much lower* and *very much greater*).

We converted scores on these items into z scores because of scaling differences.

Coefficient alphas for the SDQ were .79 for men and .83 for women. The scale consists of one factor that accounts for 62.8% of the variance in men's scores and 66.3% of the variance in women's scores, and has a good test-retest reliability over a 6- to 8-week period (men's was $r_{(70)} = .91$, p < .001; women's was $r_{(103)} = .90$, p < .001; see Ostovich, 2004, for details on the psychometric properties of the SDQ).

Sociosexuality. We used the seven-item SOI (Simpson & Gangestad, 1991) to assess participants' degree of sexual restraint. Unrestrained participants are those who have engaged in and are comfortable with casual sex; restrained participants do not engage in, and are not comfortable with, casual sex. Coefficient alpha for the SOI was .77 for men and .83 for women.

Gender identity. Bailey, Finkel, Blackwelder, and Bailey's (1996) seven-item Childhood Gender Nonconformity scale (coefficient alphas = .78 for men and .87 for women) assesses the degree to which participants had behaved in ways similar to the other gender during childhood (e.g., the degree to which young boys had been "sissies" and young girls had been "tomboys"). Bailey and colleagues' (1996) eight-item Continuous Gender Identity scale, by contrast, assesses how masculine or feminine participants *currently* feel and behave (coefficient alphas = .78 for men and .76 for women).

PROCEDURE

Participants filled out our questionnaire packet either in our lab (n = 198) or on the World Wide Web (n = 79). All participants were screened for age (no one younger than age 18 was allowed to participate), and the Web version of the survey was password protected so that only screened participants were able to access it.

Lab participants were run individually. Upon arrival, they read and signed a consent form. Participants were left alone for 45 minutes to complete their questionnaires. We set up the following procedure to ensure anonymity: Participants were given a large unmarked envelope along with their questionnaires. We asked them to seal their questionnaire in this envelope and to drop the

envelope into a large sealed box through a slot cut into the top of the box. We assured participants that we would not open the box until we had finished our data collection, at which point their survey would be unidentifiable to us. After having filled out and handed in their questionnaires, participants were debriefed and given compensation for their participation. Web participants read the same consent form and completed the same questionnaires as did lab participants, also with a high degree of anonymity (data arrived without any identifying information about the sender of those data), but they received their compensation and debriefing through the mail.

Results

Web versus lab participants. There were no significant differences between Web participants (n = 96) and lab participants (n = 181) on gender (Mann-Whitney U =8036.0, p > .1), sociosexuality ($t_{(253)} = 1.50, p > .1$), or sex drive $(t_{(267)} = 1.0, p > .1)$. However, Web participants were significantly older than were lab participants ($t_{(275)}$ = 7.24, p < .001; Web participants' mean age = 25.32, SD = .0017.76; lab participants' mean age = 20.38, SD = 3.59), and also reported significantly more lifetime sex partners than did lab participants ($t_{(272)} = 4.07$, p < .001; Web participants' mean number of sex partners = 6.06, SD =11.90, median = 2.0, range = 0 to 80; lab participants' mean number of sex partners = 2.19, SD = 3.34, median = 1.0, range = 0 to 60). A regression analysis revealed a marginal effect of source (lab vs. Web) on number of sex partners once age had been entered, $\beta = -.104$, p = .084. Because of these minor differences, we chose to combine the data from these groups unless otherwise indicated.

Gender differences. Men had a significantly higher sex drive than did women ($t_{(263.97)} = 9.77$, p < .001), but were significantly more likely than women to be virgins ($t_{(273.87)} = 2.15$, p < .04). They also reported marginally more lifetime sexual partners than did women ($t_{(272)} = 1.86$, p = .06), and had significantly less restricted sociosexual orientations than did women ($t_{(253)} = 7.52$, p < .001). See Table 1 for means, standard deviations, and gender difference tests on all variables measured in Study 1.

Sociosexuality. Contrary to what Simpson and Gangestad (1991) reported, but in line with our predictions, sociosexuality and sex drive were moderately correlated for men ($r_{(117)} = .40$, p < .001), and highly correlated for women ($r_{(130)} = .60$, p < .001). The difference between men's and women's correlations on these variables was significant, Z = 2.18, p < .04. Thus, the higher the sex drive, the less restricted the sociosexual orientation, particularly for women.

TABLE 1: Means (and SDs) for Scores on Each Variable, by Gender

	Men	Women	Gender Difference?
SDQ	18.19 (3.40)	13.60 (4.30)	$t_{(263.97)} = 9.77, p < .001$
SOI full	0.35 (0.70)	-0.27 (0.62)	$t_{(253)} = 7.52, p < .001$
SOI attitude	0.49 (0.69)	-0.38 (0.71)	$t_{(264.89)} = 9.34, p < .001$
Childhood			(40.000)
gender	42.53 (7.43)	35.16 (11.22)	$t_{(255.63)} = 6.51, p < .001$
Adult gender	45.25 (8.60)	42.95 (9.16)	$t_{(270)} = 2.13, p < .04$
Virginity	0.75(0.43)	0.63(0.48)	$t_{(273.87)} = 2.15, p < .04$
No. of sex			(270.07)
partners	4.43 (8.87)	2.71 (6.35)	$t_{(272)}=1.86, p=.063$

NOTE: *n*s for male cells range between 120 and 129; *n*s for female cells range between 135 and 148. SDQ = Sex Drive Questionnaire, SOI = Sociosexual Orientation Inventory.

The SOI has several behavior-based items in which performance of the behavior depends on the respondent's ability to acquire a sexual partner. To rule out confounds between our measure of sex drive and these behavioral items, we removed them from the SOI, creating an attitude-based SOI subscale (coefficient alpha = .74 for men and .79 for women). We correlated scores on that subscale with scores on the SDQ, and found that the SDQ-SOI correlations remained significant for both genders (see Table 2 for these and all other correlations reported in this section), as did the gender difference, Z= 1.68, one-tailed p< .05. Thus, the stronger the sex drive, the less restricted the attitudinal sociosexual orientation, especially for women.

Sex drive, sociosexuality, and frequency of intercourse. Not surprisingly, sex drive was significantly correlated with the average number of times participants had sexual intercourse during the average month (see Table 2). The higher the sex drive, the more frequently participants—particularly female participants (Z = 2.04, p <.05)—had sexual intercourse. We split participants into groups based on whether they were currently involved in a romantic relationship, and measured the correlation between sex drive and frequency of sexual intercourse in each group. This correlation was significant for all groups (r_s s = .38 to .43, all ps < .001), and no significant group differences emerged (all Zs < 1.96, all ps > .1). Thus, sex drive, as we have measured it, is a good predictor of frequency of sexual intercourse, regardless of whether participants are currently in a relationship.

Contrary to Simpson and Gangestad (1991), sociosexual orientation, too, was significantly correlated with frequency of sexual intercourse, for both men and women (gender difference was not significant, Z<1.96, p>.1): The less restricted the sociosexual orientation, the more frequently participants engaged in sexual intercourse. This was true regardless of whether participants were currently in a relationship: males in a

TABLE 2: Correlations Among Sex Drive, Sociosexuality, Sexual Behavior Measures, and Gender Identity, by Gender

	SDQ		SOI	
	Men	Women	Men	Women
Virginity	.28**	.56**	.41**	.47**
No. of sex partners	.39**	.61**	.62**	.60**
SOI attitude	.34**	.50**	.90**	.97**
Intercourse/month	.34**	.53**	.35**	.36**
Childhood gender	17*	11	.03	16
Adult gender	11	07	.08	16

NOTE: Virginity was scored as yes = 1, no = 0. Male ns ranged from 122-127; female ns ranged from 140-143. SDQ = Sex Drive Questionnaire, SOI = Sociosexual Orientation Inventory. *p < .01. **p < .001.

relationship, $r_{s(66)} = .49$, p = .001; females in a relationship, $r_{s(64)} = .60$, p < .001; males not currently in a relationship, $r_{s(53)} = .40$, p = .003; females not currently in a relationship, $r_{s(69)} = .27$, p = .025. Note that although no group differences emerged in the analogous correlations using the SDQ, there did emerge both group and relationshipstatus differences in the degree to which SOI predicted frequency of intercourse. The correlation between sociosexual orientation and frequency of sexual intercourse was, contrary to Simpson and Gangestad (1991), marginally higher for men (Z=1.80, p<.08) and significantly higher for women (Z = 3.63, p < .001) who were in a relationship than it was for men and women not in a relationship. Note as well that even though the correlation between sociosexuality and frequency of intercourse is significantly stronger for women currently in a relationship than it is for men currently in a relationship (Z = 2.21, p < .04), the same correlation for men and women not currently in a relationship is significantly weaker for women than for men (Z = 2.06, p < .05).

We computed partial correlations between sex drive and frequency of intercourse, controlling for sociosexual orientation, for males ($r_{(113)} = .17$, p = .07) and for females ($r_{(126)} = .39$, p < .001; gender difference was marginally significant, Z = 1.83, p = .075). We also computed partial correlations between sociosexual orientation and frequency of intercourse, controlling for sex drive, for males ($r_{(113)} = .23$, p < .02) and for females $(r_{(126)} = .05, p > .1;$ gender difference was not significant, Z = 1.40, p > .1). Thus, holding sociosexual orientation constant, women's frequency of sexual intercourse is marginally more related to their sex drive than is men's frequency of sexual intercourse. By contrast, holding sex drive constant, there is no significant gender difference in the relationship between sociosexual orientation and frequency of sexual intercourse.

Finally, we computed these same statistics after having divided our sample by relationship status. We found the following for the correlation between sex drive and frequency of intercourse, controlling for sociosexual orientation: men not currently in a relationship, $r_{(61)} = .05$, p >.1; men currently in a relationship, $r_{(49)} = .27$, p < .06 (relationship status difference not significant, Z=1.15, p>.1); women not currently in a relationship, $r_{(59)} = -.12$, p > .1; women currently in a relationship, $r_{(64)} = .33$, p = .007(relationship status difference significant, Z = 2.50, p <.02). Thus, the correlation between sex drive and frequency of intercourse, holding sociosexual orientation constant, is significantly higher for women currently in a relationship than it is for women not currently in a relationship, but the correlation for men is unaffected. We found the following for the correlation between sociosexual orientation and frequency of intercourse, controlling for sex drive: men not currently in a relationship, $r_{(61)} = .42$, p = .001; men currently in a relationship, $r_{(49)} = .26$, p = .07 (relationship status difference not significant, Z = 0.92, p > .1); women not currently in a relationship, $r_{(59)} = .45$, p < .001; women currently in a relationship, $r_{(64)} = .09$, p > .1 (relationship status difference significant, Z = 2.12, p = .04). In other words, the correlation between sociosexual orientation and intercourse, holding sex drive constant, is significantly higher for women not currently in a relationship than it is for women in a relationship, but the correlation for men is, again, unaffected. Therefore, women's sex drive, and not their sociosexual orientation, was related to their frequency of intercourse when they were in a relationship, but their sociosexual orientation, and not their sex drive, was related to their frequency of intercourse when they were *not* in a relationship. Men's sex drive, on the other hand, was only weakly related to their frequency of intercourse when they were in a relationship, and was unrelated to their frequency of intercourse when they were not in a relationship; their sociosexual orientation was related to their frequency of intercourse regardless of whether they were currently in a relationship.

Sex drive, sociosexuality, and lifetime number of sex partners. We correlated scores on the SDQ with self-reported virginity ("Have you ever been sexually active?") and with self-reported lifetime number of sexual partners. Sex drive was highly correlated with both, and—in line with the "choosy female" logic—particularly for women: The gender difference for the correlation between sex drive and virginity was significant (Z = 2.62, p = .01), as was the gender difference for the correlation between sex drive and number of sexual partners (Z = 2.99, p <.005). Participants higher in sex drive were not only less likely to be virgins than were participants lower in sex drive, but also had more sexual partners during their lifetimes than did participants lower in sex drive, and this was significantly more true of women than of men. The correlation between scores on the SDQ and lifetime number of sex partners remained significant when

controlled for age (r = .40, p < .001 for men; r = .60, p < .001 for women), as did the gender difference for this correlation (Z = 2.17, p < .04).

We conducted these same analyses for scores on the SOI. Sociosexual orientation was significantly correlated with self-reported virginity and with self-reported lifetime number of sexual partners. The gender difference for the correlation between sociosexual orientation and virginity was significant (Z = 2.17, p < .04); however, the gender difference for the correlation between sociosexual orientation and number of sexual partners was not significant (Z = 1.42, p > .1). Participants (especially women) with less restricted sociosexual orientations were less likely to be virgins than were participants with more restricted sociosexual orientations. Furthermore, as one would expect, participants with less restricted sociosexual orientations had more sexual partners during their lifetimes than did participants with more restricted sociosexual orientations. The correlations between scores on the SOI and lifetime number of sex partners remained significant when controlled for age (r = .53, p < .001 for men; and r = .57, p < .001 forwomen); the gender difference between these two correlations, controlling for age, was marginally significant (Z = 1.86, p = .07).

Next, we tested whether sex drive or sociosexual orientation was a better predictor of virginity status and of lifetime number of sex partners, by gender. For men, sociosexual orientation was a significantly better predictor of virginity status than was sex drive (Z = 2.98, p < .005), and was also a significantly better predictor of lifetime number of sex partners than was sex drive (Z = 4.33, p < .0001). For women, however, *sex drive* was a better predictor of virginity status than was sociosexual orientation (Z = 2.87, p < .007), and sex drive and sociosexual orientation were equally good predictors of lifetime number of sex partners (Z = 1.03, p > .1).

Predicting lifetime number of sex partners. Finally, we conducted partial correlations to better understand the roles of sex drive and sociosexuality in predicting lifetime number of sex partners. The correlation between sociosexual orientation and lifetime number of sex partners, controlling for sex drive, was $r_{(114)} = .51$, p < .001 for men, and was $r_{(127)} = .55$, p < .001 for women (gender difference was not significant, Z = 0.43, p > .1). By contrast, the correlations between sex drive and lifetime number of sex partners, controlling for sociosexual orientation, was $r_{(114)} = .04$, p > .1 for men, and was $r_{(127)} = .01$, p > .1 for women. Sociosexuality, then, appears to be an independent predictor of lifetime number of sex partners, but sex drive does not.

Gender identity. Sex drive and Childhood Gender Conformity were significantly correlated for men but not for women (see Table 2). The gender difference between these correlations was not significant, however, Z = 0.50, p > .1. Men with a higher current sex drive reported a less masculine gender identity as children than did men with a lower current sex drive. In addition, sex drive was unrelated to (adult) Continuous Gender Identity for both genders.

Sociosexual orientation was unrelated to Childhood Gender Conformity and Continuous Gender Identity for men but was marginally related to each for women (ps for each scale < .07; gender differences were not significant, Zs < 1.96, ps > .1). Women with a less restricted sociosexual orientation were somewhat more masculine, both as children and currently, than were women with a more restricted sociosexual orientation.

Finally, lifetime number of sex partners was significantly correlated with Childhood Gender Conformity for females ($r_{s(145)} = -.20$, p < .02), but not for males ($r_{s(129)} = .04$, p > .1; gender difference was marginally significant, Z = 1.98, p < .06). However, lifetime number of sex partners was unrelated to Continuous Gender Identity for both genders (females' $r_{s(142)} = -.12$, p > .1; males' $r_{s(128)} = -.01$, p > .1; gender difference was not significant, Z < 1.96, p > .1). Thus, women with a more masculine childhood gender identity reported more lifetime sexual partners than did women with a less masculine childhood gender identity.

Discussion

Several theoretically interesting findings emerged in Study 1, which we were keen to replicate and extend in a second study.

First, contrary to Simpson and Gangestad (1991), scores on the SDQ and the SOI were substantially correlated. Second, even though sex drive and sociosexuality are moderately to strongly correlated with one another, sociosexuality nonetheless appears to be an independent predictor of lifetime number of sex partners, whereas sex drive does not. Having a high sex drive does not, in and of itself, lead to having many sexual partners: An individual must have an unrestricted sociosexual orientation for sex drive to affect his or her sexual behavior.

Third, sex drive was more strongly related to lifetime number of sexual partners, frequency of intercourse, and SOI for women than for men, which lends credence to the evolutionary psychology suggestion (e.g., Trivers, 1972) that, due to hypothesized differences in mating strategies, "choosy" women's sexual needs should drive partnered sexual relations more than should "opportunistic" men's sexual needs.

Fourth, and finally, gender identity was somewhat related to sex drive, sociosexuality, and lifetime number of sex partners in our sample. The higher men's current sex drive, the more feminine was their self-reported childhood gender identity. And, replicating Mikach and Bailey (1999), (a) the less restricted women's sociosexual orientation, the more masculine were their childhood and current gender identities, and (b) the more sexual partners women reported having, the more masculine was their childhood gender identity (this despite our not having female participants who fit Mikach and Bailey's standard for "unusually" high numbers of sex partners: Only one female participant out of the 114 participants who reported their lifetime number of sex partners reported as many as 20 partners). In other words, we can have some confidence that a more masculine gender identity is correlated with women having more sexual partners, perhaps because more masculine women are less sociosexually restricted than are less masculine women. We are unable to suggest why a more feminine gender identity might be correlated with a higher sex drive in adulthood for men.

STUDY 2

We conducted this follow-up study for four main reasons. First, we were eager to replicate our Study 1 findings that (a) sex drive and sociosexuality are correlated; (b) sociosexual orientation is, nonetheless, an independent predictor of lifetime number of sex partners, whereas sex drive is not; and (c) women's sex drive is more related to partnered sexual behavior than is men's sex drive. Second, we were curious to test whether these findings would replicate with a more uniform sample of college students only (recall that our Web sample from Study 1 was older and more sexually experienced than was our lab sample), and also whether sex drive and SOI were stable across two test periods. Sex drive and sociosexual orientation should be stable over time; if scores on these measures were to fluctuate over several weeks' time, then we would have to rethink our view that sex drive and sociosexuality are trait-like in nature.

Third, we thought it wise to test how sex drive, sociosexual orientation, and self-reported lifetime number of sex partners would be related to scores on a social desirability measure. The evolutionary model suggests that men and women should both present themselves to potential mates as loyal (i.e., as sociosexually restricted), and also that women should present themselves as chaste and as possessing a low sex drive. This is because of the problem of uncertainty of paternity: Men can feel relatively confident that their chaste, loyal, and low-sex-drive mate will not cheat on them with other men. We hypothesized, then, that analyses would reveal significant correlations between social desirability and sociosexual orientation, sex drive, and lifetime number of sexual partners, especially for women.

Fourth, and finally, we wanted to further explore the nature of the relations among sex drive, sociosexuality, and lifetime number of sex partners. Specifically, we wondered whether the correlations among sex drive, sociosexuality, and number of sex partners would change if we controlled for scores on a measure of trait self-control.

There exist several possible combinations of sex drive and sociosexuality: Individuals may have a high sex drive and an unrestricted sociosexual orientation, a high sex drive and a restricted sociosexual orientation, a low sex drive and an unrestricted orientation, or a low sex drive and a restricted orientation. All of these combinations seem relatively easy to maintain, with the exception of the high sex drive/restricted combination. We wondered whether, for individuals with this profile—and especially for women with this profile (because they appear to be in the "driver's seat," compared with men, when it comes to sexual encounters)—self-control might moderate the relationship between sex drive and sociosexuality.

Method

PARTICIPANTS

We used the University of Pennsylvania's psychology subject pool message board to recruit participants for Study 2. Once again, we advertised our study as being on "personality and behavior" to avoid recruitment biases, and once again, no participants dropped out of the study once they were told about its focus on sex. Participants were told that the study would require two Web-based sessions, and that they would be e-mailed about 6 weeks after their first session with a reminder to participate in their second session. Participants who completed both sessions received research credit in exchange for their participation.

Our participants were 90 men and 131 women (total n=221). Of these, 76 men and 111 women completed surveys at both Time 1 and Time 2 (completion rates = 84.4% and 84.7%, respectively). Men ranged in age from 18 to 25 years, and women ranged in age from 18 to 27 years. Men and women had the same mean age of 19.8 years (SD=1.3), the same median age of 20.0 years, and the same modal age of 19 years.

MATERIALS AND PROCEDURE

Participants filled out the four-item SDQ, the SOI, and reported their lifetime number of sexual partners on two occasions. They also filled out the 36-item Self-Control Scale (Tangney, Baumeister, & Boone, in press) and the 33-item Crowne and Marlowe (1964) Social Desirability Scale at Time 2. One group of participants filled out these questionnaires in October and December 2002 and another group filled out these questionnaires between January and April 2003. Participants were e-mailed 6 weeks after filling out their Time 1 sur-

vey with a request to return to our password-protected Web site to fill out their Time 2 survey. After we received their Time 2 responses, participants were debriefed and given research participation credit.

Results

Test-retest and internal reliability of the SDQ. Scores on the SDQ were roughly normally distributed at both testing sessions. Coefficient alpha was .82 for men at Time 1, .82 for women at Time 1, .81 for men at Time 2, and .82 for women at Time 2. The test-retest correlation for men's scores on the SDQ was $r_{(70)}$ = .91, p< .001; the analogous correlation for women was $r_{(103)}$ = .90, p< .001. These correlations indicate substantial stability of scores on the SDQ over a 6- to 8-week period.

Test-retest and internal reliability of the SOI. Scores on the SOI were left-skewed. Therefore, we used Spearman's *rho* to calculate all statistics in which the SOI was included.

The SOI's coefficient alpha was .83 for men at Time 1, .85 for women at Time 1, .81 for men at Time 2, and .80 for women at Time 2. Test-retest correlations were high: men's test-retest correlation was $r_{s(56)}$ = .89, p < .001, and women's test-retest correlation was $r_{s(68)}$ = .82, p < .001. Test-retest correlations for the attitudinal subscale of the SOI were of a similar magnitude ($r_{s(58)}$ = .84, p < .001 for males, and $r_{s(68)}$ = .78, p < .001 for females), as were test-retest correlations for the behavioral subscale ($r_{s(56)}$ = .88, p < .001 for males, and $r_{s(69)}$ = .75, for females).

Correlations between SDQ and SOI at Times 1 and 2. We correlated Time 1 SDQ scores with Time 1 SOI scores ($r_{s(75)} = .44$, p < .001 for males, and $r_{s(112)} = .36$, p < .001 for females; gender difference was not significant, Z = 0.63, p < .1) and Time 2 SDQ with Time 2 SOI scores ($r_{s(57)} = .51$, p < .001 for males, and $r_{s(68)} = .57$, p < .001 for females; gender difference was not significant, Z = 0.46, p > .1). These data replicate our Study 1 finding that sex drive and sociosexuality are statistically related.

Scores on the SDQ and SOI were correlated across Times 1 and 2. Time 1 SDQ and Time 2 SOI were significantly correlated at $r_{s(57)}$ = .52 for males and $r_{s(69)}$ = .50 for females (gender difference was not significant, Z< 1.96, p > .1). Correlations between Time 2 SDQ and Time 1 SOI were also significant, $r_{s(57)}$ = .51, p< .001 for males, and $r_{s(71)}$ = .39, p = .001 for females (gender difference was not significant, Z< 1.96, p> .1). Thus, the SDQ and SOI predict one another across several weeks' time.

Sex drive and lifetime number of sex partners. We replicated our finding from Study 1 that those with a higher sex drive had more lifetime sex partners than did those with a lower sex drive. The correlation between the SDQ and number of partners at Time 1 was $r_{s(58)} = .38$, p = .001 for males, and $r_{s(114)} = .40$, p < .001 for females; at Time 2,

it was $r_{s(58)} = .39$, p = .003 for males, and $r_{s(68)} = .48$, p < .001 for females (gender differences were not significant, $Z_S < 1.96$, $p_S > .1$).

Sociosexuality and lifetime number of sex partners. As expected, participants with a higher sex drive had more lifetime sex partners than did participants with a lower sex drive ($r_{s(75)} = .51$, p < .001 and $r_{s(112)} = .58$, p < .001, respectively, for males and females at Time 1, and $r_{s(57)} = .57$, p < .001 and $r_{s(69)} = .53$, p < .001, respectively, for males and females at Time 2; gender differences were not significant, Zs < 1.96, ps > .1).

Sociosexuality, sex drive, and lifetime number of sex partners. We partialled variance due to sociosexuality out of the correlation between sex drive and lifetime number of sex partners. Once we had controlled for scores on the SOI, the relationship between sex drive and number of sex partners was rendered nonsignificant for both males $(r_{s(72)} = -.05)$ and females $(r_{s(109)} = .07)$. We then partialled variance due to sex drive out of the correlation between sociosexuality and lifetime number of sex partners; this correlation remained significant $(r_{(72)} = .57, p < .001$ for males, and $r_{(109)} = .65, p < .001$ for females; gender difference was not significant, Z < 1.96, p > .1).

Social desirability. We measured social desirability at Time 2 only; therefore, all statistical tests reported in this section were computed using Time 2 data only. Social desirability was significantly correlated with males' and females' scores on the SDQ, and with females' scores on the SOI, but was not significantly correlated with either gender's self-reported lifetime number of sex partners (see Table 3).

We conducted partial correlation analyses to test whether the relationship between sex drive and sociosexuality remained significant when controlled for social desirability, and indeed, these relationships survived this analysis ($r_{(65)} = .46$, p < .001 for males; $r_{(59)} = .46$, p = .001 for females). Furthermore, the correlation between sex drive and lifetime number of partners ($r_{(54)} = .33$, p = .01 for males; $r_{(59)} = .34$, p < .01 for females), and the correlation between sociosexuality and lifetime number of sex partners ($r_{(53)} = .64$, p < .001 for males; $r_{(60)} = .55$, p = .001 for females), remained significant when controlled for socially desirable scoring.

Finally, we conducted the same partial correlation analyses (among SDQ, SOI, and lifetime number of sex partners) reported earlier, but this time controlling as well for social desirability. The correlation between sex drive and lifetime number of sex partners, controlling for both sociosexuality and social desirability, was .06 for males (n = 52, p > .1) and .15 for females (n = 58, p > .1; gender difference was not significant, Z = .05, p > .1). The correlation between sociosexuality and lifetime number of sex partners, controlling for both SDQ and social

TABLE 3: Correlations Among Sex Drive, Sociosexuality, Lifetime Number of Sex Partners, and Social Desirability

Social Desirability	Men	Women	
SDQ	30**	25*	
SOI	17	41**	
No. of sex partners	11	20	

NOTE: Male ns ranged from 56-68; female ns ranged from 63-97. SDQ = Sex Drive Questionnaire, SOI = Sociosexual Orientation Inventory. *p < .01. **p < .001.

desirability, was .59 for males (n = 52, p < .001) and .48 for females (n = 58, p < .001; gender difference was not significant, Z = .79, p > .1). Thus, controlling for socially desirable scoring, sociosexual orientation remains an independent predictor of lifetime number of sex partners, and sex drive does not.

Self-control. We correlated scores on the Self-Control Scale with scores on the SDQ, on the SOI and its subscales, and with lifetime number of sexual partners. Self-control was not significantly correlated with SDQ for males, $r_{s(76)} = .18$, p > .1; however, it was for females, $r_{s(110)} =$.34, p < .001 (gender difference was not significant, Z <1.96, p > .1; note that high scorers on the Self-Control Scale *lack* self-control, and thus these correlations are positive). Thus, for females, the lower their self-reported self-control, the higher their sex drive. Self-control was marginally related to scores on the SOI ($r_{s(74)} = .21$, p <.08) and on the behavioral subscale of the SOI ($r_{s(74)}$ = .22, p<.06) for males, but not for females ($r_{s(109)}$ = .15 and .14, respectively, with ps > .1). The correlation between self-control and scores on the attitudinal subscale of the SOI did not achieve significance for either gender ($r_{s(74)}$ = .15, p = .20 for males, and $r_{s(110)} = .15$, p > .1, for females; gender difference was not significant, Z < 1.96, p > .1). Thus, for males, having less self-control appears to be somewhat related to having a less restricted sociosexual orientation, probably due to scores on the behavioral component of the SOI. Finally, the correlation between self-control and number of sex partners was $r_{s(76)} = .19$ (p <.10) for males, and $r_{s(110)} = .17$ (p < .07) for females. There is some evidence that women with less self-control might have more sex partners than women with more selfcontrol.

The relationship between sex drive and lifetime number of partners was weakened, but not significantly, for both males ($r_{(73)}$ = .21, p<.07, down from .39; Z= 1.19, p>.1) and females ($r_{(107)}$ = .21, p = .003, down from .39; Z = 1.46, p>.1) when we controlled for scores on the Self-Control Scale. By contrast, the relationship between SOI and lifetime number of partners was strengthened, but not significantly, for both males ($r_{(71)}$ = .55, p<.001, up from .51; Z= 0.33, p>.1) and females ($r_{(106)}$ = .67, p<.001, up from .58; Z = 1.08, p> .1) when we controlled for

scores on the Self-Control Scale. In other words, self-control had little to no effect on these relationships.

Finally, the correlation between sex drive and lifetime number of sex partners, controlled for by scores on both the SOI and the Self-Control Scale, was -.04 (p > .1, n = 70) for males, and .04 (p > .1, n = 105) for females; the correlations between sociosexual orientation and lifetime number of sex partners, controlled for by scores on the SDQ and the Self-Control Scale, were .53 (p < .001, n = 70) for males, and .65 (p < .001, n = 105) for females, replicating our earlier findings.

Discussion

We were able to replicate the Study 1 finding that sex drive and sociosexual orientation are correlated, even across a 6- to 8-week period. Those higher in sex drive are less sociosexually restricted than are those lower in sex drive. As in Study 1, sociosexuality, but not sex drive, was an independent predictor of lifetime number of sex partners. It seems that sex drive predicts number of sex partners only for those with an unrestricted sociosexual orientation; for those with a restricted sociosexual orientation, sex drive is irrelevant to lifetime number of sex partners.

We were unable to replicate the Study 1 finding that sex drive, sociosexuality, and lifetime number of sex partners were significantly more interrelated for women than for men (note, however, that the Study 2 gender differences, although minimal, are in the correct direction). This may be because of the somewhat younger and less sexually experienced sample used in this study (the Study 1 participants were, on average, 22.1 years old and had 3.5 lifetime sex partners; the Study 2 participants were 19.7 years old and had had 2.2 lifetime sex partners).²

We found evidence of socially desirable responding in this study; however, when we controlled our main findings (i.e., the correlations among sex drive, sociosexuality, and lifetime number of sex partners) for socially desirably responding, they were unaffected.

Finally, we found evidence for a relationship between self-control and sex drive in women, and some indication that a relationship might exist between self-control and scoring on the SOI (particularly on its behavioral subscale) in men. Women with less self-control described themselves as having a higher sex drive than did their higher self-control counterparts, and men with less self-control described themselves as being less sociosexually restricted than did their higher self-control counterparts. However, self-control does not appear to moderate any relationships among sex drive, sociosexuality, and lifetime number of sexual partners.

GENERAL DISCUSSION

Relationships Among Sex Drive, Sociosexuality, and Lifetime Number of Sex Partners

Simpson and Gangestad (1991) claimed that sex drive and sociosexuality are unrelated. They used as evidence for this their finding that sociosexuality and frequency of intercourse were unrelated for those in committed relationships, but that those with an unrestricted sociosexual orientation had more frequent intercourse than did those with a restricted sociosexual orientation outside of such relationships. Our data paint a different picture. Sex drive and frequency of intercourse were related regardless of whether participants were in a relationship. Sociosexual orientation and frequency of intercourse also were related, however, particularly for those in a relationship—contrary to Simpson and Gangestad's expectations. The results of our partial correlations indicate that, as Simpson and Gangestad suggested, frequency of intercourse for women in a relationship is determined by their levels of sexual desire and not by their sexual attitudes, but that the reverse is true for women not in a relationship. For men, however, relationship status was irrelevant: Sociosexual orientation and sex drive were each correlated with frequency of intercourse, regardless of relationship status. Thus, Simpson and Gangestad were partly correct in making their assertions about how frequency of intercourse, sex drive, and sociosexality are related, but they were also mistaken on some points, particularly for male participants.

Their most serious mistake was in accepting frequency of intercourse as a measure of sex drive. Our data, using the SDQ instead of frequency of intercourse as a measure of sex drive, indicate that sex drive and sociosexuality are, indeed, moderately to highly correlated. As predicted, the higher the sex drive, the less restricted the sociosexual orientation, and the lower the sex drive, the more restricted the sociosexual orientation. This arrangement makes sense especially for those with a higher sex drive, because it gives them "permission" to engage in many sexual experiences.

Our results also indicate, however, that this correlation between sex drive and sociosexuality does not negate the predictive power of the SOI as far as lifetime number of sex partners is concerned. Indeed, as Kinsey observed, sociosexuality is more important than is sex drive in predicting lifetime number of sex partners: When we controlled for variation due to sex drive in the correlation between sociosexuality and number of sex partners, the correlation remained strong; when we controlled for variation due to sociosexuality in the correlation between sex drive and number of partners; however, the correlation fell to zero. Thus, it appears that sociosexuality, although quite convincingly correlated

with sex drive, brings something extra to the table when it comes to predicting how many sexual partners a person will have in their lifetime.

Sex and Self-Control

We wondered whether this extra "something" might have to do with trait self-control: After all, having a high sex drive but denying oneself sex except under certain circumstances (feelings of love and commitment) must take a certain degree of self-control. Of course, some people (i.e., men, unattractive people of both genders) are not necessarily in a position to engage in casual sexual encounters, regardless of their sexual desires, and thus self-control would not be an issue for them. But it seems unlikely that all people who are high in sex drive and also sociosexually restricted are male or are unattractive. Therefore, we hypothesized that there should be some indication that self-control moderates the relationships among sex drive, sociosexuality, and lifetime number of sex partners.

Trait self-control was indeed related to sex drive (in women) and to SOI (in men, but only marginally so). However, self-control appears not to be that extra "something" that would help us understand the relationships among sex drive, sociosexuality, and number of sex partners: Variance due to scores on the Self-Control Scale did not affect the relationship between sex drive and number of sex partners for men and did not affect the relationship between sociosexuality and number of sex partners for either gender.

Are Women in the Driver's Seat?

We did not replicate, in Study 2, our Study 1 finding that sex drive is more strongly related to lifetime number of sexual partners, frequency of intercourse, and SOI for women than for men, although note that the Study 2 gender difference in the correlation between sex drive and number of sex partners is in the correct direction. Our failure to replicate may be because our participants were slightly different across the two studies. Additional analyses (see Note 2) have indicated to us that this gender difference in "sexual power" may be somewhat dependent on age or on intentions (short-term vs. longterm couplings). It may be the case that women who are not interested in long-term relationships do not exert as much sexual power over men as do women who are interested in long-term relationships. This statement is, of course, speculative, and further research is needed to test whether the data bear it out.

Causality

One problem with retrospective self-report studies like the ones reported here is that they (of course) do not distinguish cause from effect. We are not able to address whether people report having a high sex drive because they have engaged in many sexual behaviors, or whether people have engaged in many sexual behaviors because they have a high sex drive. Or, more to the point, whether strength of sex drive and sociosexual orientation are causally related. Prospective research would, of course, provide some answers as to causality; in the meantime, our evidence that there exist relationships among sex drive, sociosexuality, and lifetime number of sexual partners is a critical step in helping researchers better understand the nature of human sexual relations.

Concluding Remarks

Our results suggest that sex drive and sociosexuality are related but that sociosexuality retains its predictive power with regard to number of sex partners, whereas sex drive loses its predictive power once variation due to the other variable is controlled for.

This leaves us with a final question: How do sociosexuality and sex drive come to be related as they are? One possibility is that people select their sexual attitudes based on their desires: The stronger their desires, the more they endorse unrestricted attitudes. Seen in this light, attitudes simply ex post facto justify behavior. Another possibility is that some third factor—genes strike us as a particularly likely candidate—lead people both to their sex drive and to their sexual attitudes.

NOTES

- 1. We used Levene's test for equality of variances on all *t* tests and used the appropriate correction (and thus show degrees of freedom with decimals) whenever indicated.
- 2. We went back to our Study 1 data to test whether these differences emerged for both the lab and Web samples, and found that this "women in the driver's seat" gender difference did not occur for the younger (lab) sample. For example, the correlation between sex drive and lifetime number of sex partners, controlling for age, was $r_{(37)} = .18$, p > .1 for male Web participants and was $r_{(47)} = .35$, p = .01 for female Web participants (gender difference was not significant, Z = 0.80, p > .1), whereas the same correlations for lab participants were $r_{(83)}$ = .42, p < .001 for men and $r_{(87)} = .46$, p < .001 for women (gender difference was not significant, Z < 1.96, p > .1). The within-gender venue differences, despite being in the expected direction, were nonsignificant for men (Z=1.30, p>.1) and for women (Z=0.71, p>.1). Future studies should examine whether the "women in the driver's seat" effect is age related or perhaps mating-market related (i.e., perhaps our younger sample was not currently interested in the long-term-mating market, whereas our older sample was).

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Received July 21, 2003 Revision accepted December 10, 2003