

A Methodological Analysis of the Sexual Behavior Questions on the General Social Surveys¹

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Abstract: The accurate measurement of sexual behavior is an important but difficult task. This paper assesses the sexual behavior data collected on the 1988-1990 General Social Surveys of the National Opinion Research Center, University of Chicago. This assessment reveals both reasons for confidence and concern. For example, while there is little evidence of non-response bias,

men and women report substantially different and unreconcilable numbers of sex partners. Much detailed, methodological work is needed to ascertain the error structure of sexual behavior data and to develop procedures to minimize error.

Key words: Sexual behavior; non-response bias; response effects; sensitive questions.

1. Introduction

Sexual behavior is among the most difficult subjects to collect reliable information on. First, sexual behavior concerns intimate, personal matters. Reporting on such matters, even in fully confidential or anonymous settings, conflicts at least in part with the inherently private nature of sexual behavior (Bradburn and Sudman 1979; Catania, McDermott, and Pollack 1986). Second, sexual behavior is closely tied to issues of self-image and personality. Sexual behaviors are associated with basic notions of self-esteem and are integral parts of self-

definition. Third, a number of sexual behaviors are either morally condemned by large segments of American society (e.g., homosexuality and infidelity - Smith 1992) or illegal (e.g., prostitution, rape, incest, and child molestation). Admitting to such behaviors opens respondents to moral disapproval (by an interviewer) and potential social and legal repercussions (should confidentiality be breached). Finally, sexual behaviors may relate to unpleasant experiences ranging from having been sexually victimized to love affairs that ended unhappily.

Because of these factors questions about sexual behavior create discomfort on the part of both respondents and interviewers and prompt respondents to distort their responses in a socially desirable direction (Bradburn and Sudman 1979; DeMaio 1984; Clark and Tift 1966). Many respondents report that discussing sexual topics

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such as masturbation and intercourse on a survey would make most people very uneasy.³ Likewise, sex surveys report unease on the part of the interviewers (Commission 1971; Johnson and DeLamater 1976).

Moreover the above inherent difficulties of studying sexual behavior are exacerbated by the dearth of experience in collecting sexual behavior data. Despite the manifest importance and centrality of sexual behavior, there have been few surveys designed to collect such data (Smith 1991) and even less methodological work on developing optimal collection procedures (Catania, Gibson, Chitwood, and Coates 1990; DeLamater 1974; DeLamater and MacCorquodale 1975). In addition, efforts to identify and minimize measurement error on sexual behavior items are complicated by the fact that most reports of sexual behavior cannot be validated and even the validation that is theoretically possible can be achieved only through elaborate and expensive research designs (Miller, Turner, and Moses 1990). As a result, there is not a well-established survey tradition to draw upon and little empirical evidence on error structures or how best to ask questions.

2. Sexual Behavior Data on the General Social Surveys

To help provide information on sexual behavior in general and in relation to AIDS in particular, the National Opinion Research Center (NORC) at the University of Chicago has been sponsoring questions on NORC's General Social Survey (GSS) since

³ Masturbation topped the list with 56.4% saying it would make most people very uneasy, followed by Using Marijuana or Hashish (42.0%), Intercourse (41.5%), Using Stimulants or Depressants (31.3%), Getting Drunk (29.0%), Petting or Kissing (19.7%), Income (12.5%), Gambling with Friends (10.5%), Drinking Beer, Wine or Liquor (10.3%), Leisure Time and General Leisure Activities (2.4%), Sports Activities (1.3%) (Bradburn et al. 1979). See also Billiet and Loosveldt (1988).

1988. The GSSs are annual full-probability surveys of adults living in households in the United States. Respondents are interviewed in person and the survey lasts about 90 minutes. Response rates are generally 75% or greater. Details on the sample and other technical aspects are given in Davis and Smith (1990).

GSS questions on personal sexual behavior in 1988 consisted of items about the number of sex partners during the last year, the relation of these sex partners to the respondent, and the gender of the sex partners (See Appendix 1: Question Wordings). In 1989 and 1990 these questions were repeated along with new questions about the frequency of sexual intercourse and the number and gender of sex partners since age 18 (See Appendix 1: Question Wordings).

Given our anticipation of difficulties in the collection of high quality data, special care was taken in the design, administration, and coding of the sexual behavior questions. To minimize distortion from social desirability bias, the sexual behavior questions were placed on a self-completion card. The card was completed in privacy by the respondent and then placed in a sealed envelope so the interviewer was not aware of the respondent's sexual behavior.⁴ In addition, in 1988 an experiment was carried out using two different introductions to determine which encouraged franker reports (discussed below).

Interviewers received standard NORC

⁴ It is generally believed that self-completion gets more truthful reports by reducing social desirability bias (Sudman (1967); Sudman and Bradburn (1974)) and this has also been found to be the case on NORC's 1970 study of sexual behavior and homosexuality and by Knudsen, Pope, and Irish (1967). Also oral interviews are reported to be more complete or more candid when no third persons are present (Bradburn, et al. 1979; Johnson (1970)). DeLamater and MacCorquodale (1975) however first report no difference between oral interviews and self-administration, but then argue that self-completion gets fewer reports of sexual activity which they judge as less accurate.

training on how to gain respondent cooperation and conduct interviews, general GSS instruction on how to administer the instruments, and specific guidelines on handling the self-completed card on sexual behavior. Interviewers' work was checked by standard NORC procedures: supervision by field managers and central office, edit and review of completed questionnaires, crucial question inspection and retrieval, and interview validation. In 1988, because of an unrelated project on cognitive recall, validations were carried out for almost 50% of all cases instead of the standard 10-15%.

Upon receipt at the central office, the data were manually coded and then entered into the computer and cleaned according to standard procedures, utilizing both single and inter-column cleaning specifications. After this usual cleaning, the analysis team conducted special data quality checks involving examining all cases showing extreme (but legitimate) values, unusual or unlikely combinations (e.g., male homosexuals married to females or married people reporting no sex partners), and any verbatim comments by respondents.

Finally, the methodological analysis reported here was conducted to test for measurement error in the data. We discuss (1) non-response bias, (2) the 1988 introduction experiment, (3) alternative measures of sexual abstinence, (4) alternative measures of frequency of sexual intercourse, (5) attitude-behavior consistency, and (6) differences between the reports of males and females.⁵

⁵ Substantive reports on sexual behavior from the GSS can be found in Michael, Laumann, Gagnon, and Smith (1988); Fay, Turner, Klassen, and Gagnon (1989); Greeley, Michael, and Smith (1990); Smith (1991); and Rogers and Turner (1991).

⁶ Or 94.1% in 1988 when the sample is weighted for number of adults in the household. In general we found that this adjustment made only small differences here and in other instances.

3. Non-response Bias

Non-response on the GSS sexual behavior questions comes in three types (1) total or survey non-response, (2) supplement non-response, and (3) item non-response. Survey non-response consists of non-participation in the GSS as a whole. The overall response rate was 77.3% in 1988, 77.6% in 1989, and 73.9% in 1991. This is about average for the GSS over the last eight surveys and higher than typical for attitudinal surveys. None of the survey non-response is believed to be related to the sexual behavior questions, since they made up only about one minute of the 90 minute survey and were the very last questions. (For a discussion of the general factors related to survey non-response on the GSS see Smith (1983, 1984).)

Supplement non-response consists of non-completion of the sexual behavior card. Overall, respondent cooperation on the self-administered questions on sexual behavior was quite high. The sexual behavior supplement was completed by 93.9% of GSS respondents in 1988, 91.2% in 1989, and 85.5% in 1990.⁶ These completion rates were higher than supplement completion rates for most earlier GSSs and other surveys (Smith 1986).

Much supplement non-response was unrelated to the content of these questions since many of the non-respondents had already ended their cooperation when asked to do the preceding International Social Survey Program (ISSP) self-completion module (47% in 1988, 46% in 1989, and 64% in 1990 broke off the interview at the ISSP module). The ISSP modules dealt with the effect on the family of the labor force participation of women (1988), attitudes towards work (1989), and the role of government regarding civil liberties, economic

regulation, and the welfare state services (1990).

Item non-response refers to missing data on individual questions. Item completion was quite high. In 1988 all applicable sexual behavior questions were answered by 86.2% of GSS respondents. One question was unanswered by 3.0% of respondents, while 4.6% did not answer another two or more questions ($93.9\% - 7.7\% = 86.2\%$). For 1989 the item completion rates for the items common to both years were 84.7% doing all, 1.7% not answering one, and 4.9% not answering two or more. Much of the item non-response seems to have been inadvertent, usually involving incorrect following of the skip patterns. Explicit refusals to answer items were very rare.

To assess the likelihood of non-response bias, we compared those who declined to do the supplement vs. those who did at least part of the supplement and those who answered all appropriate items vs. those who failed to answer all questions (i.e., complete and partial non-respondents). The former comparison considers only supplement non-response, while the latter approach looks at the combined effect of supplement and item non-response.

The first group of items examined in Table 1 includes demographics, attitudes, and behaviors that are most strongly associated with sexual behavior and thus most likely to contribute to supplement or item non-response bias. None of the differences are statistically significant for both years. In addition, the two differences significant in 1989 (approval of homosexual sex and legalization of pornography) show non-linear associations that are probably chance results.

In these comparisons, people who did at least one question on the supplement are counted as respondents. In a parallel set of comparisons respondents were defined as

Table 1. Probabilities that respondents and non-respondents to the sexual behavior questions differed on selected attributes¹

	1988	1989
<i>Sex related</i>		
Gender	.777	.842
Marital status	.594	.612
Approve of premarital sex	.699	.014
Approve of homosexual sex	.300	.564
Approve of extra-marital sex	.211	.175
Seen X-rated movies	.887	.364
Legalize pornography	.793	.003
<i>Demographics</i>		
Age	.090	.009
Race	.231	.781
Educational degree	.280	.097
Region	.002	.311
City type	.002	.056
<i>Cooperation variables</i>		
Visit with friends	.806	.446
Visit with neighbors	.094	.796
Visit with family	.969	.610
Refused income	.000	.000
Number Don't Knows	.000	.000
Rated as cooperative	.000	.000
Politically oriented	.000	.000

¹Probabilities were calculated using SRS assumptions. Since finding differences between the respondents and supplement non-respondents is undesirable, we are being conservative by not adjusting for design effects.

only those who completed all parts of the supplement that appeared in both years. Little differences appeared between these approaches (Smith 1988).

The second group shows standard demographics, most which have moderate-to-small associations with sexual behavior. Numerous significant relationships appear, but again none are significant across both years. Supplement non-response on community type, however, almost achieves statistical significance in both years. Supplement non-response was highest in suburbs of large cities in both years. The pattern of

non-response is not similar across years for the other categories however and does not follow the usual pattern of non-response being lowest in rural communities and highest in central cities (Smith 1983, 1984, 1986).

The third group includes variables that were found to be significantly related to supplement non-response in earlier research (Smith 1986). Unlike the earlier research, non-response was not found to be related to sociability. It was, however, related in both years to general cooperativeness (in terms of the interviewer's overall rating of respondent's cooperation and willingness to report income). For example, in 1988 while 95% of those reporting family income did the supplement, only 75% of those refusing to report income did the supplement. Non-response was also related to low political interest (reporting no political ideology and a high score to an additive scale that counted how many "Don't Knows" a respondent gave to 18 attitude questions). For example, in 1989 while 92% of those with a political ideology did the supplement, only 78% of those without any identification did the supplement.

In 1989 two of the new questions asking about number of male and female sex partners since age 18 had much higher levels of item non-response than the other items. Only 84.4% of those doing the supplement completed both of these items, 4.9% gave no answer to both, 6.1% gave no answer to the number of females, 3.1% gave no answer to the number of males, and 1.5% gave Don't Knows to one or both of the items. Based on both verbatim remarks on some questionnaires and the pattern of association between giving no answers and various demographics and attitude items, it appears that item non-response was related to three factors: (1) low cooperativeness, (2) low cognitive ability, and (3) a belief that these questions did not apply.

First, the proportion giving a response was significantly higher among those generally more cooperative and those giving few Don't Know responses to attitude questions (Table 2). Second, response was much higher among the better educated, those with high vocabulary scores, and those rated as having good comprehension. Third, there was little or no association between sexual attitudes and item response. Fourth, on sexual behaviors, marital infidelity, and sexual orientation (heterosexual/bisexual) were not related to response, but response was significantly higher among the sexually active than among the inactive. In particular, among those giving no answers to both questions, 48.5% were sexually inactive as compared to only 20.9% of those who answered both questions. Finally, among other demographics, response was unrelated to community type, marital status, and religious orientation (fundamentalist/moderate/liberal-none). It was lower among non-whites (probably a reflection of their lower education), the elderly, and women. The association between the elderly and women and low response is related to the higher level of sexual inactivity in these groups. It appears (and this is supported by several verbatims) that the sexually inactive, and especially the elderly inactives, tended to skip these questions as not applying to them. They felt that since they were not sexually active, questions about sex did not apply to them. This, of course, was not the case since even someone who had never been sexually active should have answered the questions on number of partners since 18. It appears that this misunderstanding was greater among the less cooperative and less cognitively able.

It is hard to assess what bias this non-response may have created in the adult lifetime estimates of male and female sexual

Table 2. Variables related to item non-response on the questions on number of male and female sex partners since age 18 (1989)

	% Answering both items	Prob.
A. Cooperation		
Interviewer ratings		
Rated as cooperative	85.9	.001
Rated as uncooperative	77.8	
DKs to attitude items		
No DKs	86.1	.000
1+ DKs	80.1	
B. Cognitive ability		
Education		
Less than high school	74.6	.000
High school	85.0	
Some college+	91.3	
Vocabulary score		
0-3 words correct	77.9	.001
4-7 words correct	82.4	
8-10 words correct	87.8	
Comprehension rating		
Good	86.9	.000
Fair	74.5	
Poor	63.6	
C. Sexual beliefs		
Approve of premarital sex		
Always wrong	84.0	.781
Almost always wrong	85.5	
Sometimes wrong	86.6	
Not wrong at all	88.3	
Approve homosexual sex		
Always wrong	83.2	.670
Not always wrong	87.9	
Approve extra-marital sex		
Always wrong	83.3	.047
Not always wrong	88.5	
D. Sexual behaviors		
Number of partners		
None	80.2	.000
1+	85.8	
Marital fidelity		
Unfaithful last year	89.7	.436
Faithful last year	85.1	
Sexual orientation		
Bisexual/homosexual	94.1	.991
Heterosexual	86.5	
E. Other demographics		
Gender		
Men	86.8	.000
Women	82.5	

Table 2. (continued)

	% Answering both items	Prob.
Age		
18-48	89.0	.000
49-69	79.0	
70+	70.8	
Marital status		
Married	84.7	.440
Not married	84.0	
Religious orientation		
Fundamentalist	81.1	.480
Moderate	85.0	
Liberal	87.6	
Community type		
Large central city	76.8	.412
Smaller central city	82.8	
Suburb of large central city	83.9	
Suburb of smaller central city	85.5	
Other urban	84.7	
Rural	78.8	
Race		
White	86.1	.000
Non-white	73.5	

partners. On the one hand, it does not appear that respondents avoided answering these questions in order to evade disclosing socially undesirable sexual histories (e.g., homosexual relations or promiscuity). On the other hand, non-response is related to current number of partners (as well as some other variables) and may well be related to number of partners over one's adult life.

In general, the non-response does not appear to be related to differences in sexual behavior. Supplement non-response differentials appear to be absent among those variables most closely related to sexual behavior. Non-response is instead related to general factors such as low political interest and general uncooperativeness that are not highly related to sexual behavior. As a result, supplement non-response bias appears to be negligible. This is also true of item non-response, except for the number of

partner questions since age 18, where selective response that is in part related to current sexual behavior occurs.

4. Introduction Experiment

Two introductions were used to the sexual behavior questions in 1988. The standard introduction made a simple promise of confidentiality, while the AIDS introduction mentioned the questions' connection to AIDS and urged "frank and honest responses (Appendix 1: Question Wording)." Each introduction appeared at the top of the self-completion card and was administered to a random half sample. It was hypothesized that by giving a strong rationale for the sexual behavior items the AIDS introduction would garner more truthful reports. It was also considered possible, however, that reminding respondents of the connection between sexual behavior and AIDS might lead those engaging in risky behavior to

Table 3. Reports of sexual behavior by experimental introduction (1988)

	Introduction		
	Standard	AIDS	Prob.
Completed supplement	93.2%	94.5%	.343
Bi/homosexual	2.0%	1.3%	.643
More than two partners	13.9%	14.5%	.244
Unfaithful (married only)	4.7%	4.8%	.660
Had sex partner who was casual date/pick up (of those who have other than only one regular partner)	35.4%	53.3%	.054
Mean number of partners	1.2	1.6	.083

deny such practices.⁷ As Table 3 indicates, however, there were no statistically significant effects of the introduction variation on reports of sexual behavior.

This might be optimistically interpreted to mean that respondents were willing to make truthful and accurate reports even without the AIDS-related appeal for frankness and honesty or pessimistically that despite that appeal respondents still did not fully report behaviors that they might deem as socially undesirable. Alternatively, it might be that the AIDS introduction encouraged truthfulness in some and denial in others with equal and off-setting effects.

For 1989 and 1990 the AIDS introduction was used for all cases.

5. Estimates of Sexual Abstinence

Since the levels of sexual abstinence reported to the partners question in 1988 were higher than anticipated and some earlier research (Commission 1971) suggested that a question on sexual frequency might produce lower estimates of sexual abstinence, an item was added in 1989 on frequency of sexual intercourse during the last year.

⁷ The only literature related to this issue is the finding that stronger pledges of confidentiality lead to lower item non-response on sexual behavior items (Bradburn et al. 1979).

Using the number of people mentioning no partners and the number reporting no sexual intercourse gives us two estimates of the proportion sexually inactive. These turn out to produce almost identical estimates with 21.9% inactive according to the frequency measure and 22.1% inactive on the partners question. (These estimates were also virtually the same as the 22.9% figure from the sexual partners question in 1988.)

In addition to being highly comparable in the aggregate, the two measures also produced consistent reports on the individual level. On both questions, 96.9% reported themselves as either sexually active or sexually inactive. We looked in detail at the inconsistent cases. The larger group of inconsistent (24) were people who reported no sex partners, but some sex during the last year. Beside simple measurement error (e.g., involving miscircling a response category or misreading a question), the inconsistency could have resulted from a different understanding of the terms "sex partners" and "have sex." For example, some people in conventional marriages may have thought "sex partners" referred to people other than their spouses. Also, some people may have counted masturbation as sexual activity.

The second group of inconsistent (18)

were people who reported no sexual activity, but a sexual partner. This group is primarily made up of married people over 70. They probably were not sexually active during the last year (as reported on the frequency question), but have a long-time spouse who is (or was) their sexual partner. In brief, inconsistencies are small and probably related to subtle differences in the understanding of terms.

Of course, the similar aggregate estimates and individual-level consistency might be largely a function of a forced consistency between the frequency and partners measures. Rather than representing two independent estimates, they might function as one independent estimate and a repetition. To check for this we conducted an order experiment involving the placement of the new frequency item. On a random half sample the frequency question appeared as the first item immediately before the item on number of sexual partners and on the other half sample the sexual frequency item appeared after all of the items that had appeared in 1988 (See Appendix 1: Question Wording).

If the sexual frequency item was forcing a consistency on people, we would expect the number of sex partners reported to vary by order. However, no such difference occurred either when looking at the full distribution of sex partners or when comparing estimates of the sexually active share of the population. For example, when sexual frequency came first, 21.7% reported no partners and when it came later, 22.4% reported no partners. Nor did the estimates of the sexual frequency question differ by order (22.2% inactive when it came later and 21.6% when it was first).

Order did, however, have an effect on the consistency between items. In the frequency/partners order reports of sexual activity agreed 98.1% of the time, while in the

partners/other items/frequency order agreement was significantly lower at 95.2% (prob. = .005). Proximity may have increased agreement by fostering a similar interpretation of meaning or by simply encouraging consistent reporting.

Overall, the comparison of aggregate and individual estimates from the sexual frequency and sex partners questions as well as the context experiment suggests that the original estimate of the level of sexual abstinence from the sex partners question in 1988 is robust and equivalent to that produced by the sexual frequency question.

6. Estimates of Sexual Frequency

On the 1990 GSS two measures of sexual frequency were tested on split-ballots. The one version, which we had first employed in 1989, asked people how often they had "sex" during the last 12 months and gave seven categories ranging from not at all to four or more times a week. The other version, which we adopted from a NORC study in the 1970s, asked people if they had "sexual intercourse" during the last month and, if they had, asked how many times they had intercourse (See Appendix 1). Converting these two measures into annual estimates of frequency of intercourse, yields similar distributions and virtually identical mean estimates (Table 4). This suggests that reports of sexual frequency are not highly sensitive to reporting format.

7. Attitude-Behavior Consistency

The GSS traditionally includes three items on sexual morality – whether homosexual, premarital, or extramarital relationships are wrong. Table 5 shows the relationship between these attitudes and sexual behavior. In general, there is some congruence between sexual morality and sexual behaviors.

Table 4. Comparison of reports of frequency of sexual intercourse, 1990 (Annual frequency)

	Versions		
	Annual average	Number last month × 12	
Times ¹			
0, 1.5, 12 (0-12)	37.3%	40.2%	
30 (24-36)	16.5	12.0	
52 (48-84)	19.9	21.3	
130 (96-180)	19.6	20.5	
260 (192+)	6.7	6.0	
Mean	59.5	59.8	Prob. = .95
	(552)	(550)	

¹The first number are the frequencies that the Annual Average question were converted to. The second set of figures (those in parentheses) are the ranges of responses to the Last Month item converted to annual rates.

The most substantial association is the increasing number of never married respondents who have had one or more sexual partners during the last year as moral op- position to premarital relations declines. In 1988 among those who felt that premarital relations were Always Wrong, 45.5% reported partners, while among those who

Table 5. Sexual behavior compared to sexual morality attitudes

Premarital relations (PREMARSEX) – Never married only				
	Mean # Partners		% 1+ Partners	
	1988	1989	1988	1989
Attitude towards				
Always wrong	1.63	0.24	45.5	24.0 (29/25)
Almost always wrong	2.41	1.30	68.7	80.0 (9/10)
Sometimes wrong	3.97	1.15	81.5	68.6 (49/51)
Not wrong at all	2.47	2.54	82.5	86.2 (113/94)
Extramarital relations (XMARSEX) – Currently married only				
	Mean # Partners		% Unfaithful	
	1988	1989	1988	1989
Attitudes towards				
Always wrong	0.96	0.94	3.7	2.0 (463/411)
Almost always wrong	2.19	1.49	3.7	1.5 (57/68)
Sometimes wrong/ Not wrong at all	1.14	1.14	9.1	2.8 (21/36)
Homosexual relations (HOMOSEX) – all respondents				
	% Homo/bisexual			
	1988	1989		
Attitudes towards				
Always wrong		1.0 (657)	0.2 (481)	
Almost always wrong		0.0 (36)	0.0 (29)	
Sometimes wrong		2.2 (47)	0.0 (46)	
Not wrong at all		2.3 (115)	8.7 (127)	

said such relations were Not Wrong at All, 82.5% reported sex partners. For both extramarital and homosexual relations, there are similar, but more modest associations.

On one hand the congruence between levels of support for various forms of sexual morality and reported sexual behaviors is reassuring. In fact, the level of congruence reported here seems to be comparable to that found on comparisons involving much less sensitive behaviors (Schuman and Johnson 1976; Schuman 1972). On the other hand, a number of people report behaviors that do not seem to correspond to their expressed attitude. For example, in 1988 among the never married who say that premarital sex is Always Wrong, 45.5% report having had sex partners during the last year. There are, of course, many ways in which such discrepancies can be resolved. For example, never married people who say that premarital sex is Always Wrong yet who report having had sex partners during the past year could either be engaging in behavior they still feel is wrong or they may even judge such behavior as wrong because of their actions over the last year.

8. Male/Female Discrepancies: Number of Partners

In both 1988 and 1989 male reports of numbers of sexual partners greatly exceed the number of partners reported by females. In 1988 among all male heterosexuals the mean number of partners during the last year reported was 1.87, while female heterosexuals reported only 0.97 partners during the last year. In 1989 the number of partners reported were 1.49 by males and 0.91 by females.⁸ Among heterosexuals, for each female partner that a man has, a woman has a male partner. Thus within a closed population

⁸ Neither the male nor the female means are statistically different across year.

the total number of heterosexual partners for women should be equaled by the total number of heterosexual partners for men. Instead of parity we find that the ratio of male-reported partners to female-reported partners is 1.92:1 in 1988 and 1.64:1 in 1989 (Table 6). When we adjust for the greater number of females than males over 18, then the ratio falls to 1.72:1 in 1988 and 1.46:1 in 1989, but still shows males reporting more partners than females.

The discrepancy between the sexes on number of partners comes almost entirely from the unmarried. In both years the married respondents did not significantly differ in their reported number of sex partners (1988: men = 1.29, women = 1.10; 1989: men = 1.00, women = 0.91). Unmarried men on the other hand reported many more partners than unmarried women (respectively 2.67 vs. 0.86 in 1988 and 2.29 vs. 0.89 in 1989). Of course the marital status of partners is not known and could vary by gender and the proportion of adults married does differ by gender. Still the numbers indicate that the differences in reports are largely centered among the unmarried.

The discrepancies are even greater when the number of lifetime adult partners reported by heterosexual men and women in 1989 are examined.⁹ Because of greater error in recall, the greater likelihood of out of scope partners, and much higher item non-response, the adult lifetime comparisons of male and female partners are more problematic than the comparisons based on counts of numbers of partners during the last year. These complications would not necessarily have any systematic effect on gender differences in reports on number of partners

⁹ We have counted as heterosexual only those respondents who report no same sex partners since age 18.

¹⁰ The greater adult lifetime discrepancy between men and women suggests that the differential in last year reports was not the result of greater telescoping among men than among women.

Table 6. A comparison of male/female reports of number of partners for 1988 GSS

	Males	Females	M:F Ratio
Population 18+	83,159,000	90,835,000	
Proportion heterosexual	0.975	0.999	
Heterosexuals 18+	81,113,000	90,717,000	
Mean number of partners	1.87	0.97	1.92:1
Total partners	151,560,000	88,260,000	1.72:1

however and would seem to be insufficient to account for the large differences between genders in Table 7. Both with and without adjustments for item non-response and extreme values, males report a much higher number of partners than females do (Male/Female ratios of 3-4:1).¹⁰

There are three basic possible explanations for the difference in the number of sexual partners: (a) non-coverage, (b) non-response, and (c) misreports. Our analysis (Smith 1990) concludes that intentional misreports are most likely the main source for the discrepancies.

Most probably there is a combination of male overreporting and female underreporting. This pattern is supported by the known gender differences in sexual values. Women are less approving of sexual permissiveness than men and both men and women are less approving of sexual permissiveness among women than men. For example, in the 1970 NORC/Kinsey study of sexual attitudes and behaviors (Klassen, Williams, and Levitt 1989; Turner, Miller, and Moses 1989) 31%

of men thought it was always wrong for a teenage male to have sex with a girl he loved and 37% thought it was wrong for a teenage girl to do the same. Among women 44% objected to a teenage male having sex and 55% to a teenage female. Using the men's approval of the teenage male as the norm closest to that guiding their self-reports and the women's approval of teenage female, we see an approval gap of 24 percentage points (55%-31%). This suggests that women are under more pressure to minimize reports of sexual activity than are men.

Men on the other hand may exaggerate their number of sex partners in order to present an image of virility and as a successful lover.

9. Male/Female Discrepancies: Frequency of Intercourse

In 1989 males and females also disagree about the frequency of sexual intercourse. As Table 8 shows, among heterosexual

Table 7. Mean number of adult lifetime sex partners, 1989 (Heterosexuals only)

	Males	Females	Males:Females
Unadjusted	13.00	3.24	4.06:1***
Adjusted for non-response*	12.05	3.03	3.98:1***
And adjusted for extreme values**	9.36	3.02	3.10:1***

* = Values of 1.0 given to males and females with missing data

** = Values of 50 and greater recoded to 50

*** = male/female means different at 0.0001 level

Table 8. Mean frequency of sexual intercourse during last year (1989)

	Men	Women	Prob.
All adults	67.2 (576)	50.4 (768)	0.000
Married adults	70.5 (358)	64.6 (381)	0.203
Married adults, one partner	71.5 (310)	71.7 (333)	0.976

adults men report significantly more sexual activity than women. Among married men and women and among faithful, married men and women there are no statistically significant differences in mean number of acts of sexual intercourse during the last year.

Some of the male/female discrepancy is accounted for by the greater number of adult females than males and the possibly greater number of out-of-scope female partners than male partners. Taking these into consideration as in Table 6 reduces the male/female ratio from 1.33:1 to about 1.13:1.

As in the case of male/female differences on numbers of sex partners during the last year (see above), the gender differences are primarily concentrated among the unmarried. The agreement among the married and faithful married is in line with previous research on the aggregate-level consistency in reported frequency of sexual intercourse by married couples (Levinger 1966; Card 1978; Clark and Wallin 1964; Kinsey, Wardell, Marton, and Gebhard 1953) and agreement in general between spouses on mutually shared events (Smith 1985). Among the unmarried, men report notably more sexual intercourse than women (61.7 vs. 36.4 times per annum).

In brief, on number of adult lifetime sex partners, number of sex partners during the last year, and (to a lesser extent) frequency

of sexual intercourse during the last year, men report more sexual activity than women. This difference occurs primarily among the unmarried. While its cause is not certain, it probably reflects the effect of social norms that encourage some male over-reporting and female underreporting.

Why are reports of frequency of sex more consistent than reports of number of partners? Given the recall tasks involved, one would normally have hypothesized that frequency would be harder to accurately report than number of partners. For most people reporting frequency would involve more estimating, while numbers of partners would be a precise count. This in turn should more easily allow exaggeration or minimization to occur as part of the estimating process and not only as a conscious self-presentation effect. This greater opportunity for discrepancies in reports may be overcome by differences in sexual norms related to numbers of partners and frequency of intercourse. In our society mutually faithful, sexual unions are considered the norm, but this norm is applied more strictly to and by women than to and by men. For men multiple partners are accepted among the unmarried both as a temporary phase ("sowing wild oats") and as a sign of male prowess. This practice is less accepted for women.

For frequency of sexual intercourse the norm is less clear. While engaging in sexual

intercourse frequently is seen as evidence of male virility, it is less clear that there are social norms defining what is average and thus what is above average. For women, having multiple partners is seen as a sign of moral laxness, but having frequent intercourse within a faithful, sexual union carries no disapproval. Thus, in the case of frequency reports there appears to be less of a double standard and just what the normative standard is unclear. In addition, there is no evidence that the normative standard varies by the gender of the evaluator. This suggests that less self-presentation bias may be affecting the frequency reports than the number of partners reports.

10. Conclusion

The methodological analysis of the sexual behavior data on the 1988-1990 GSS reveals reasons for both confidence and concern. On the positive side, there is little evidence of non-response bias, some consistency between attitudes and behaviors, high agreement between two estimates of sexual inactivity and two estimates of frequency of intercourse, consistent reports between married males and females about number of sex partners and frequency of intercourse, and a high level of both interview validation and data processing reliability because of the extensive checks employed.

On the negative side, male/female reports on numbers of sex partners during the last year are incompatible (although more so in 1988 than in 1989), male/female reports of number of sex partners since age 18 are in disagreement in 1989, and in 1989 there are male/female discrepancies on the frequency of sexual intercourse.

These results call for caution in the use of the sexual behavioral data. In particular they suggest that even in a fully confidential, self-completion mode, strong social norms

affect the veracity of sexual reports on basic demographic matters such as number of heterosexual partners. Many respondents alter their sexual histories to present profiles that they deem are more socially acceptable or more in keeping with their current self-image.

Sexual behavior data must be subject to close scrutiny and tested for signs of measurement error. Analysts should carefully consider the likelihood of substantial misreporting in general. In regards to reports of number of sexual partners and frequency of intercourse, it would be prudent to analyze the data under the assumptions that either the male or female reports are accurate.

Sexual behavior data must also be the focus of rigorous methodological research to better pinpoint the extent and source of measurement error. In-depth interviewing, experiments, and, where possible, validation studies should be conducted to better understand the cognitive and social basis of errant data. This should lead to improved measurement strategies that will yield more reliable and valid reports.¹¹

APPENDIX 1: QUESTION WORDINGS

1988 GSS

Introduction X: Now we would like you to answer some additional questions. Your answers are confidential and will be used only for statistical reports.

Introduction Y: There is a great deal of concern today about the AIDS epidemic and how

¹¹ With the support of the National Science Foundation the author and Roger Tourangeau are engaged in a series of studies of the discrepancies between men and women in their reported number of sexual partners. NORC is also conducting studies on reporting sexual behavior, having had an abortion, and illegal drug use for the National Center for Health Statistics.

to deal with it. Because of the grave nature of this problem, we are going to ask you some personal questions and we need your frank and honest responses. Your answers are confidential and will be used only for statistical reports.

1. How many sex partners have you had in the last 12 months?
2. Was one of the partners your husband or wife or regular sexual partner?
3. If you had NO other partners besides your husband or wife or regular sexual partner, PLEASE GO TO Q.4. If you had other partners, please indicate all categories that apply to them. CIRCLE ALL THE ANSWERS THAT APPLY.

Close personal friend
 Neighbor, co-worker, or long-term acquaintance
 Casual date or pick-up
 Person you paid or paid you for sex
 Other (PLEASE SPECIFY)

4. Have your sex partners in the last 12 months been . . .
 PLEASE CIRCLE ONE ANSWER.
 Exclusively male
 Both male and female
 Exclusively female
5. THANK YOU FOR YOUR COOPERATION. PLEASE PLACE FORM IN ENVELOPE, SEAL IT, AND GIVE IT TO THE INTERVIEWER.

1989 GSS

Introduction: There is a great deal of concern today about the AIDS epidemic and how to deal with it. Because of the grave

nature of this problem, we are going to ask you some personal questions and we need your frank and honest responses. Your answers are confidential and will be used only for statistical reports.

1. How many sex partners have you had in the last 12 months?
2. Was one of the partners your husband or wife or regular sexual partner?
3. If you had NO other partners besides your husband or wife or regular sexual partner, PLEASE GO TO Q.4. If you had other partners, please indicate all categories that apply to them. CIRCLE ALL THE ANSWERS THAT APPLY.

Close personal friend
 Neighbor, co-worker, or long-term acquaintance
 Casual date or pick-up
 Person you paid or paid you for sex
 Other (PLEASE SPECIFY)

4. Have your sex partners in the last 12 months been . . .
 PLEASE CIRCLE ONE ANSWER.
 Exclusively male
 Both male and female
 Exclusively female
5. About how often did you have sex during the past 12 months?
 Not at all
 Once or twice
 About once a month
 Two or three times a month
 About once a week
 Two or three times a week
 Four or more times a week
6. Now thinking about the time since your 18th birthday, (including the past 12 months) how many female partners have

you ever had sex with?

7. Now thinking about the time since your 18th birthday, (including the past 12 months) how many male partners have you ever had sex with?
8. THANK YOU FOR YOUR COOPERATION. PLEASE PLACE FORM IN ENVELOPE, SEAL IT, AND GIVE IT TO THE INTERVIEWER.

NOTE: On another half sample, question 5 (sexual frequency) appeared before question 1.

1990 GSS

Half of the sample got questions exactly as in 1989 as listed above. The other half had the following question in place of Q.5:

5. In the past month, have you engaged in sexual intercourse?

If YES to 5:

About how many times did you engage in intercourse during the last month?

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