A Methodological Analysis of HIV Risk Behavior from the 1988-2002 General Social Survey

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Introduction

Sexual behavior is a difficult subject to reliably measure. 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, 1994) or illegal (e.g. prostitution, rape, incest, and child molestation). Admitting to such behaviors opens respondents to moral disapproval (by an interviewer) and/or 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 may lead respondents to withhold information or to distort their responses in a socially desirable direction (Bradburn and Sudman, 1979; DeMaio, 1984; Clark and Tifft, 1966). Many respondents report that discussing sexual topics such as masturbation and intercourse on a survey would make most people very uneasy.[1] Likewise, sex surveys report unease on the part of interviewers (Commission, 1971; Johnson and Delamater, 1976).

Moreover the above inherent difficulties of studying sexual behavior were long exacerbated by the dearth of experience in collecting sexual behavior data. Despite the manifest importance and centrality of sexual behavior, until the 1980s there were few surveys designed to collect such data (Reinisch, et al., 1988; Smith, 1991a) and even less methodological work on developing optimal collection procedures (Catania, Gibson, Chitwood, and Coates, 1990; DeLamater, 1974; Delamater and MacCorquodale, 1975; Jasso, 1986; Johnson, 1970; Johnson and Delamater, 1976; Kahn, et al., 1988; Kahn and Udry, 1986). But the advent of the AIDS epidemic greatly stimulated both survey-based studies of sexual behavior (and also other AIDS risk factors such as injection, drug use) (Anderson, 1992; Aral, 1994; Billy, et al., 1993a and 1993b; Binson, et al., 1993 and 1995; Cantania, Binson, Dolcini, et al.,

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[1]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.

1995; Catania, Coates, et al., 1993 and 1994; Cantania, et al., 1992; CDC, 1998; Choi, et al., 1994; Dolcini, et al., 1993; Ehrhardt, 1992; Ehrhardt, et al., 1991; Feinleib and Michael, 1998; Grady, et al., 1993; Laumann, Gagnon, Michael, and Michaels, 1994; Leigh, et al., 1993 and 1994; Mosher and Pratt, 1993; Rogers and Turner, 1991; Seidman and Rieder, 1994; Smith, 1991a and 1998; Sonenstein, Pleck, et al., 1989, 1990, 1991; Spira et al., 1994) and methodological studies of measurement error associated with these studies (Acree et al., 1999; Ansuini, Fiddler-Woite, and Woite, 1996; Auster, n.d.; Bachrach, Evans, Ellison, and Stolley, 1992; Biggar and Melbye, 1992; Binson and Catania, 1998; Boekeloo et al., 1994; Boekeloo et al., 1998; Bogart et al., 2000; Brewer et al., 2000; Brewer and Garrett, 2001; Brody, 1995; Brown and Sinclair, 1996; Brown and Sinclair, 1999; Carballo-Dieguez et al., 1999; Carpenter, 2001; Catania, 1996; Catania, Binson, Canchola, Pollack, Hauck, and Coates, 1996; Catania, Canchola, and Pollock, 1996; Catania, Gibson, Chitwood, and Coates, 1990; Catania, McDermott, and Pollack, 1986; Catania, Turner, Pierce, Golden, Stocking, Binson, and Mast, 1993; Cecil and Zimet, 1998; Clark et al., 1997; Clayton, McGarvey, and Clavert, 1997; Couper and Stinson, 1999; Downey, Ryan, Roffman, and Kilich, 1995; Dunne, Martin, Bailyet, Heath, Bucholz, Madden, and Stalham, 1997; Edelman, 1998; Ellen et al., 1998; Ellen et al., 2002; Ellish, Weisman, Celentano, and Zenilman, 1996; Ericksen, 1998; Fenton, 2001; Fu et al., 1998; Giami, 1996; Gibson, Hudes, and Donovan, 1999; Gillmore et al., 2001; Hewitt, 2002; Hornsby and Wilcox, 1989; Huygens, Kajura, Seeley, and Barton, 1996; Jaccard, Dittus, and Gordon, 1998; James, 1998; Jasso, 1985 and 1986; Johnson and Delamater, 1976; Kahn, Kalsbeck, and Hofferth, 1988; Kanouse et al., 1991; Karabatsos, 1997; Kissinger et al., 1999; Kupek, 1998; Kupek, 1999; LaBrie and Earleywine, 2000; Latkin and Vlahox, 1998; Lauritsen and Swicegood, 1997; Leonard and Ross, 1997; Leyland et al., 1992; Maass and Volpato, 1989; Metzler et al., 1992; Miller, 1995 & 1996; Morris, 1993; Newcomber and Udry, n.d.; Orr, Fortenberry, and Blythe, 1997; Padian, Aral, Vranizan, and Bolan, 1995; Peterman, 1995; Pitts and Rahman, 2001; Plumb, 2001; Poppen and Reisen, 1997; Ramjee, Weber, and Morar, 1999; Remez, 2000; Rosenthal et al., 1996; Seal, 1997; Shew et al., 1997; Smith, 1992a; 1992b; 1999a; 1999b; Stone, Catania, and Binson, 1999; Sonenstein, 1997; Tourangeau, Rasinski, Jobe, Smith, and Pratt, 1997; Tourangeau and Smith, 1996; 1998; Tourangeau, Smith, and Rasinski, 1997; Trivedi and Sabini, 1998; Turner, 1999; Turner, Rogers, Lindberg, Pleck, and Sonenstein, 1998; Upchurch et al., 1991; Upchurch et al., 2002; Van Duynhoven, Negelkerte, and Van de Laar, 1999; Wadsworth, Johnson, Wellings, and Field, 1996; Weinhardt et al., 1998; Wiederman, 1997; 1999a; 1999b; Wight and West, 1999; Zenilman et al., 1995; and Zimmerman and Langer, 1995.

Data

The General Social Surveys (GSSs) have been conducted by the National Opinion Research Center at the University of Chicago.

James A. Davis, Tom W. Smith, and Peter V. Marsden are the principal investigators. The GSS are full-probability samples of adults living in households in the United States. Interviews are conducted in-person. Sample size across 1972-1998 totals 38,116 respondents (1972=1613, 1973=1504, 1974=1484, 1975=1490, 1976=1499, 1977=1530, 1978=1532, 1980=1468, 1982=1506, 1983=1599, 1984=1473, 1985=1534, 1986=1470, 1987=1466, 1988=1481, 1989=1537, 1990=1372, 1991=1517, 1993=1606, 1994=2992, 1996=2904, 1998=2832; 2000=2817; 2002=2765). Full technical details on the sample and other methodological matters are presented in Davis, Smith, and Marsden, 2003.

The items on sexual behavior were added in 1988 in response to the need for information on risk behavior related to the AIDS epidemic. Items on sexual behavior have since appeared in each GSS. The content has expanded over time (See Appendix 1: Question Wordings) and several experiments have also been conducted (these are discussed below).[2] The sexual behavior items are collected using a self-administered questionnaire (SAQ) at the end the in-person interview.

Nonresponse

There are three forms of nonresponse to the sexual behavior items on the 1988-2002 GSSs: 1) survey or unit nonresponse, 2) supplement or SAQ nonresponse, and 3) item nonresponse.

Unit Nonresponse

On the 1988-2002 GSSs overall nonresponse has ranged from 17.6% to 30.0% and averaged 24.1% (Table 1). The refusal rate averaged 19.7%, the non-contact/unavailable rate averaged 1.9%, and the other rate averaged 2.6% (Appendix: 2).[3] Thus, refusals account for 80% of all nonresponse.

Extensive studies of GSS nonresponse in the mid-1980s (Smith, 1983; 1984) and regular comparisons of GSS demographics to those of the Current Population Survey (Smith, Young, and Berktold, 1999; Smith and Kim, 2003) find little evidence of widespread non-response bias. One stable and persistent bias is the underrepresentation of men (Smith, 1979; Smith, Young, and Berktold, 1999; Smith and Kim, 2003). For example, in the 1998 GSS men made up 48.1% of the adult population and 44.9% of the GSS sample.

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[2]In 2000 and 2002 items on drug use were added, but since most of the analysis is of sexual behavior measures they are referred to as such.

[3]"Others" consist mainly of people physically and/or mentally unable to do the interview, plus miscellaneous problems such as lost questionnaires and invalid interviews.

Supplement Nonresponse

The sexual behavior questions appear in a SAQ at the end of the GSS interview immediately after the SAQ with the International Social Survey Program (ISSP) module. In 1988-1993 the ISSP and sexual behavior SAQs were separate forms. In 1994-2000 they were respectively parts 1 and 2 of the same form. In 2002 the SAQs were on laptop computers. Supplement nonresponse ranged from 5.9-17.2% and averaged 10.8% (Table 1). The level of nonresponse on the sexual behavior items closely tracks the ISSP nonresponse level since few people decline to do the ISSP SAQ and then agree to do the sexual behavior SAQ. The supplement nonresponse rates tend to covary with the overall response rate and the availability of resources for special efforts to boost SAQ returns (e.g. special follow-up mailouts and/or a special emphasis to interviewers to secure SAQ cooperation). Thus, the supplement nonresponse rate was low in years when unit nonresponse was low (e.g. 1993) and in years in which special efforts were made to increase the completion of SAQs (e.g. 1988, 1993, 1994). Years in which the overall nonresponse rate was high (e.g. 1990, 2002) and years in which there were no resources for follow-up to boost supplement completion (e.g. 1998) had higher nonresponse on the sexual behavior supplement. In addition, the switch to the one SAQ format helped to reduce nonresponse since the increase in nonresponse from the ISSP to the sexual behavior items averaged 3.3 percentage points when there were two SAQs and 1.5 percentage points when there was a single SAQ.

Based on previous analysis of the correlates of nonresponse in general and regarding nonresponse on sexual behaviors in particular (Smith, 1992b, Dunne, et al., 1997; Giami, 1996; Kupek, 1998; Peterman, 1995) a set of variables were chosen to use in the analysis of supplement nonresponse (and subsequently item nonresponse - see below). As indicated in Table 2, there are four groups of variables: A) standard background variables, B) interview and cooperation variables, C) behaviors, and D) attitudes. Under background variables nonresponse is examined by gender, age, race and ethnicity, education, household income, marital status, number of children ever born, region of the country, community type, and religion. The cooperation/interview variables are measures of interviewers' assessments of respondent cooperation and comprehension during the interview, a measure of item nonresponse and refusals on household income, and a scale of how many Don't Know replies were given to seven items unrelated to sexual behavior. Behaviors include another measure of religiosity - church attendance, two items on social connectedness - memberships in voluntary associations and socializing with others, and three indicators of risky activities - visiting bars, use of alcohol, and smoking. Attitudes consist of four measures of sexual permissiveness - tolerance of teenage sex, premarital sex, extramarital sex, and homosexual sex, three items about drugs - legalization of marijuana and supporting for government spending dealing with drug addiction and drug rehabilitation, a general

indicator of liberalism/conservativism, and three psychological measures - general happiness, an anomia scale, and a misanthropy scale.

Table 2 presents the supplement nonresponse levels for these variables for the cumulative 1988-2002 GSSs.[4] Nonresponse levels were also examined for all of these variables for each individual survey. Because the patterns were highly stable across years, those results are not presented. On the background variables supplement nonresponse is higher among men, older adults, non-Whites, Hispanics, the less educated, those in households earning less than $40,000, the widowed, those having had many children, residents of the South, and residents of the largest central cities. There were no differences by religion.

All of the cooperation/interview variables showed large and consistent differences, with supplement nonresponse greater among those judged to be uncooperative and with low comprehension, those who did not report their income, and those giving Don't Know responses to unrelated questions.[5]

On behaviors supplement nonresponse is greater among those not belonging to groups and those who do not drink alcohol. It has a complex relationship with church attendance and visiting bars. There is a weak relationship with church attendance with nonresponse being somewhat greater among those with moderate attendance and somewhat lower nonresponse among those with less and more frequent church attendance. There is a stronger curivinlear relationship with nonresponse highest among those visiting bars at least several times a week and those who never visit bars. Nonresponse is not related to smoking and has a weak and irregular association with socializing.

Among the attitude items most relationships are weak or inconsistent. First, on the four measures of sexual permissiveness, supplement nonresponse is higher for those with permissive views on premarital and homosexual sex. On extra-marital sex the relationship is irregular, but somewhat reverses this pattern. Second, on attitudes towards drugs, nonresponse is higher among those opposing the legalization of marijuana and for less spending for drug rehabilitation. Support for spending regarding "dealing with drug addiction" is not related to nonresponse. Third, the general measure of liberalism/conservativism is unrelated to

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[4]The GSS mnemonic for each item is given in capitals and in parentheses. For full details on these variable see Davis, Smith, and Marsden, 2003 or www.icpsr.umich.edu/gss.

[5]However, the assessment of cooperation is not totally independent of the completion of the SAQ. In evaluating respondent cooperation interviewers assess all interaction between respondent and interviewer from agreeing to do the interview, lack of complaints during the interview, answering questions in a responsive manner, following directions, and, presumably, doing the SAQ.

nonresponse. Finally, on the measures of psychological well-being, nonresponse is weakly related to being happy and irregularly related to anomia and misanthropy.

Table 3 looks at these predictors of supplement nonresponse in logistic regression models. Several models are presented because different variables appear in different years and/or GSS samples and not all variables appear together. (For an explanation of GSS samples and the occurrence of variables by year see Davis, Marsden, and Smith, 2003.) The first model includes variables that appear in all years and samples and consist mostly of the background variables and cooperation/interview variables. The succeeding models introduce various variables, mostly attitudes and behavioral measures, that appear in some years and/or sub-samples. There is no comprehensive model that includes all variables because some variables do not appear on the same sample with other variables and even when overlap does occur it happens only on sub-samples with a great reduction in sample size. A few variables from Table 2 have been dropped since they showed little indication of explaining nonresponse and others have been transformed into dummy variables.

As Table 3 indicates, the strongest predictor of supplement nonresponse is general uncooperativeness. Those who interviewers judged to be difficult respondents, those who refused to report their household income, and those who gave many DK responses to non-sexual questions were less likely to do the supplement. This low cooperation factor may also explain the higher nonresponse among men, who are less likely to do surveys in general than women are (Smith, 1979). Next, nonresponse is greater among older adults. This age relationship apparently largely explains the higher nonresponse among the widowed in the bivariate analysis. Also, there tends to be more nonresponse among those with lower socio-economic status. In most models, nonresponse is slightly greater among non-Whites, those with low interviewer ratings of comprehension, and the less educated. Household income however is largely unrelated. Likewise, in all models the marital status and number of children are unrelated. Region of the country and community type are also essentially unrelated.

Among the behaviors and attitudes there are few noteworthy relationships. Sexual permissiveness shows only one significant correlation out of eight tests (with those saying premarital sex is wrong less likely to respond).[6] Attending church, drinking, and supporting the legalization of marijuana are unrelated to supplement nonresponse. However, nonresponders are somewhat more likely to be social isolates. They are less likely to go to bars, socialize, or join groups.

Item Nonresponse

Item nonresponse varies from 1.3% for number of sexual

[6]Earlier research also showed no association with having viewed x-rated movies and nonresponse (Smith, 1992a).

partners during the last year to 10.0% for number of female sexual partners since age 18 (Table 4).[7] In addition, for the four questions dealing with number of sexual partners, complete, consistent information was not available for a small number of cases, but an estimate was possible (0.4-0.6%). Several factors explain the difference in the item-nonresponse level. First, the initial items have lower, item nonresponse because some breakoffs occur within the supplement. As a result, some of the later missing values are not related to the specific items, but because people ceased to fill out the SAQ. Second, several questions have higher nonresponse because people skipped them as not applicable. For example, people with no sex partners during the last year tended to leave the item on frequency of intercourse during the last year blank, those sexually inactive over longer periods also tended to skip some questions rather than report no sexual behavior and zero partners, and heterosexual men and women tended to skip over the same gender item on number of sex partners since age 18. These patterns are discussed later (Smith, 1992a). Third, there may be some greater reluctance to report information on the details of ones most recent sexual encounter. Finally, non-response is low on the drug use item, presumably because the vast majority of respondents have not used the mentioned drugs (injection drugs and crack cocaine).

There is also variation over time in the level of item nonresponse. Of the 12 items asked more than twice, all showed statistically significant changes in nonresponse levels (Table 5). Individual items show distinctive patterns, but there was a general tendency for item nonresponse to increase from 1988 to 1993 or 1994 and then to decline in 1996 and 1998 and rise again in 2000 and 2002.

To look at the correlates of item nonresponse a scale was made that counted the number of missing values for number of sexual partners in last year, frequency of sex during the last year, number of male sexual partners since age 18 and number of female sexual partners since age 18.[8] On this additive scale 83.7% had no

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[7]Table 4 lists the missing cases for Q3 as 30.2%. This high number comes from the check-all-that-apply format that this item uses. If an item is not checked, it is usually not definitively known if this was because such a type of relationship did not exist (a no response) or because the item was not answered (a missing value). All such cases have been conservatively coded as missing even though research indicates that most actually represent "no" responses (Smith, 1992b). Because of the uncertainty, this item is ignored in subsequent analysis.

[8]The correlates of each individual item were examined. With one exception the correlates of item non-response were similar across items so a summary scale was used. The exception was that men had more item nonresponse on number of male sex partners since age 18 than women did (respectively 9.2% vs. 7.7%), while women had

missing data, 10.6% one missing value, and 5.7% 2+ missing value. The mean value was 0.24 missing items. The figures reported in Table 6 are the % with one or more missing values on these four items.

Among the demographics items nonresponse is greater among those over 65, non-Whites (and especially Blacks), Hispanics, the less educated, those with lower household incomes, the widowed, those having had a large number of children, residents of the South and large central cities, and those with a religious preference. Nonresponse is unrelated to gender.

For the cooperation/interview variables item nonresponse is greater among those rated low in cooperation and comprehension, those refusing to report income, and those with many DK responses to non-sexual items.

On behaviors item nonresponse was higher among those attending church more frequently, those infrequently socializing, those never visiting bars, and non-drinkers. There a tendency for nonresponse to be more among those belonging to fewer groups, but it is greatest for those with one membership rather than no memberships. Smoking is unrelated to nonresponse.

On attitudes item nonresponse is generally higher among those with less permissive sexual values. However, views on extra-marital sex are not related and on teenage sex there is a curvilinear relationship. On drug attitudes the patterns is also mixed. The drug addiction spending item is not related, but there is somewhat more nonresponse among those opposed to legalizing marijuana. Support for spending on drug rehabilitation has a curvilinear relationship. Regarding personal well-being, nonresponse is greater among those with more anomia and somewhat higher among those with greater or lesser degrees of personal happiness. The sawtooth pattern for misanthropy is largely a DK effect with 6s and 8s containing more people giving DK to one of more of the items. Political ideology has a curvilinear relationship with nonresponse highest at the two poles.

Table 7 shows the multivariate regression models for the item-nonresponse scale. Cooperation is a consistent predictor, but the interviewers' measure of cooperativeness and DK levels are less important than the item on refusing. Next, nonresponse is lower among the elderly. Likewise, it is lower among those with lower socio-economic status (those with low ratings of comprehension, less education, racial minorities, and, in one model, those with a lower household income). Also, nonresponse is higher among those from large central cities and those from the South. In most models it is somewhat greater among the widowed. Gender, being married, and number of children one ever had are essentially unrelated. Nor is there any relation to the sexual permissiveness, drinking, or

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more missing values on number of female sexual partners than men did (respectively 11.4% vs. 8.2%). A close analysis of these cases and numerous verbatim responses indicated that many heterosexuals skipped the same sex questions as if they were not applicable.

legalization of marijuana variables. There is a very mixed pattern on the participation variables. Item nonresponse is higher among those who never go to bars and attend church frequently, and is unrelated to joining groups and other socializing.

Supplement and Item Nonresponse Compared

A comparison of Tables 3 and 7 shows some similarities between the correlates of supplement and item nonresponse, but also some differences. First, the cooperation/interview variables are important in both cases, but interviewers' ratings of respondent cooperation play more of a role in supplement nonresponse than for item nonresponse. Second, older adults are less likely to respond in both cases, but the relationship is stronger on item nonresponse. Third, low SES is related to more nonresponse in both cases, but more consistently for item nonresponse. Fourth, geographic variables are unrelated to supplement nonresponse, but item nonresponse is generally somewhat higher in large central cities and in the South. Fifth, marital status and number of children have little influence in either case. Sixth, men are less likely than women to do the supplement, but among the people doing the supplement there is no gender difference on item nonresponse. Seventh, nonresponse differences do not occur for the items on sexual permissiveness, drinking, and drugs. Eighth, participation variables show a mixed pattern both across items, models, and types of nonresponse. Attending church is unrelated to supplement nonresponse, but item nonresponse tends to be somewhat higher among frequent attenders. Going to bars is somewhat associated with supplement nonresponse, but item nonresponse is higher among those not going to bars. Other socializing is weakly related to nonresponse of both kinds. Joining groups is associated with less supplement nonresponse, but is unrelated to item nonresponse.

Several of the main predictors of both supplement and item nonresponse such as general cooperativeness and SES are not strongly related to sexual behaviors (Smith, 2003). Conversely, the most closely related variables, attitudes towards sexual permissiveness, have little association with nonresponse. Many of the other variables have only mixed associations, not being consistently related to both types of nonresponse or in all models. The clearest indication that responders may differ from nonresponders in regards to their sexual behaviors comes from the low response both to the supplement and to individual items of older adults. Given that older adults generally report less sexual activity and more conventional behaviors than younger adults (Smith, 2003), this would lead one to believe that the GSS estimates of sexual behavior would be reduced in magnitude and more conventional than now reported.

Measurement Variability

A second major way of testing measurement error on sexual behavior data is to look for internal inconsistencies in the self-

reports. Three such examinations are carried out below: 1) the reported number of heterosexual, sex partners by men and women, 2) the indicated frequency of heterosexual intercourse by men and women, and 3) level of sexual activity as reported by items on partners and frequency of sex.

Number of Sexual Partners Reported by Men and Women

This section examines the reliability of one key type of sexual behavior by comparing reports of the number of opposite gender sex partners reported by men and women. Within a closed population, the number of female sexual partners reported by men must equal the number of male sexual partners reported by women. Thus, agreement between men and women validates the aggregate reports and suggests that the reports are reliable. Discrepancies on the other hand indicate either a deviation from the closed population assumption or some inaccuracy in the data for one or both genders (Gurman, 1989).

Data on number of sexual partners are available from six surveys in four countries. Basic details on these surveys are given in Table 8. Each are representative, probability samples of either all adults or of adults up to approximately age 60. Three different data collection modes are employed: four used self-completion forms during a personal interview, one was over the telephone, and one was a mail questionnaire.

Each of these surveys ask a series of questions that allow the determination of number of heterosexual partners over varying reference periods (Appendix 3). These questions differ in their wordings, response categories, and time frames.

We will 1) report the results from each survey, considering as we do possible adjustments, 2) examine the general pattern across all surveys, 3) consider explanations for the patterns that are observed, and 4) offer suggestions for testing and improving the measurement of number of sexual partners.

In both the 1988 and 1989 GSSs, the number of female sexual partners during the last 12 months reported by men greatly exceeded the number of male partners reported by women. In 1988, among all male heterosexuals the mean number of partners reported was 1.84, while female heterosexuals reported only 0.98 partners. In 1989 the number of partners reported were 1.48 by men and 0.90 by women.[9] Among heterosexuals for each female partner that a man had a woman has a male partner. Thus in a closed population the number of heterosexual partners for women should be equaled by the number of heterosexual partners for men. Instead of parity we find that the ratio of female partners to male partners is 1.88:1 in 1988 and 1.64:1 in 1989.

First, we consider the possibility that these differences are the result of a few extreme values affecting the mean. Means of

[9]Neither the means for men nor women are statistically different across year.

course can be disproportionately affected by a small proportion of cases with extreme values. Such cases have been shown to distort findings on frequency of sexual intercourse (Jasso, 1985; Kahn and Udry, 1986; Jasso, 1986; Morris, 1993) and there has been speculation that similar distortion might be occurring in reports of number of sexual partners (Wadsworth, Johnson, Field, Wellings, Anderson, and Bradshaw, 1990). Since the GSS figures are based on grouped ranges (Appendix 1), they already reduce the impact of extreme values. We further minimized their impact by converting all reports in the top two categories (21-100 partners and more than 100 partners) to 30 partners. This reduced the number of female and male partners in 1988 to 1.51 and 0.94 and the ratio to 1.61:1. For 1989 the number of female and male partners decreased to 1.43 and 0.86, but the ratio marginally increased to 1.66:1. Thus, truncation does not eliminate the discrepancies in reported number of sex partners. In addition, since we have no empirical basis to question the extreme cases, we can not accept the truncated values as more accurate than the raw values.

Next, we consider the possibility that differences in the magnitude or pattern of item non-response might explain the discrepancies. Non-response is always a potential cause of bias and there is some evidence that non-response on sexual behavior items is correlated with having a less permissive sexual orientation in general and fewer sex partners in particular (Catania, McDermott, and Pollack, 1986). For non-response to account for the differences observed here, non-respondents among men would have to have fewer partners than responding men and/or nonrespondents among women would have to have more partners than responding women. Overall, there are similar levels on item-nonresponse (including not doing the whole self-completion supplement) for men and for women. An analysis of this non-response found that "non-response does not appear to be related to differences in sexual behavior. Non-response differentials appear to be absent among those variables most closely related to sexual behavior. Non-response instead is related to general factors such as low political interest and general uncooperativeness that are not highly related to sexual behavior (Smith, 1992b)." It therefore appears unlikely that non-response explains the discrepancies in number of heterosexual partners.

Finally, we consider whether differences in the gender distribution of the target population can explain the differences. Within a closed population the number of cross group dyads must have the same mean only if the two groups are equal in size. In a population of two men and eight women, if women reported a mean of one male partner, the men would have a mean of four female partners. Of course within the target population (US residents 18+ living in households), the two genders are in fairly close balance. There is however a surplus of women and when we compare the aggregate number of partners reported for the total populations of men and women, we find that the ratios are reduced. For example, in 1988 multiplying 1.84 female partners by an estimated 81,113,000 heterosexual men gives 149,248,000 female partners in total. For

women 0.98 times 90,717,000 gives 88,903,000 male partners. The ratio between the total number of female and male partners is 1.68:1. For 1989 the adjusted ratio is 1.47:1. Thus, the adjustments for the relative share of the two population does lessen the discrepancy, but does not explain it away.

In 1989 it was also possible to compare the number of lifetime adult partners reported by men and women. As with the annual rates reported above, among heterosexuals the number of partners reported by each gender should balance out once out-of-scope partners are accounted for.[10] Because of greater error in recall, the greater likelihood of out-of-scope partners, and higher item non-response, the adult lifetime comparisons of male and female partners are more problematic than the comparisons based on the last year counts of number of partners. These complications would not necessarily have any systematic effect on gender differences in reports on number of partners and would seem to be insufficient to account for the large differences between genders in Table 9. Both with and without adjustments for item non-response and extreme values, men report a much higher number of partners than women do (female-to-male ratios of 3-4:1).[11]

In brief, there is no evidence that non-response explains the discrepancies in number of sex partners; extreme values explain some of the difference in the annual rates (in 1988 if not for 1989) and the adult lifetime rates, but there is no evidence that the extreme values are errant; and differences in population distribution do potentially explain some, but by no means all, of the difference.

Before considering what factors might explain the discrepancies, we will review the results from other American, Canadian, British, and Norwegian surveys (Table 10).

The 1970 NORC survey conducted for the Kinsey Institute (Klassen, Williams, and Levitt, 1989; NORC, 1987) found that men had between 7.26-7.44 female partners before their first marriage, while women reported 0.87-0.88 premarital male partners for a ratio of 8.34-8.45:1.[12] Truncating extreme values to 50 reduced the number of female partners reported by men to 6.80-6.97 and lowered the ratio to 7.82-7.92:1. Item non-response was higher for men (11.5%) than for women (4.2%), but an extensive analysis of the correlates of non-response indicated that non-response was not particularly related to sexual behavior and the correlates were similar for men and for women. Since the reference period was

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

[11]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.

[12]The range of estimates are based on whether some uncertain codes are either excluded from the analysis or recoded to 0.

before marriage for cohorts over the entire century, no age-gender adjustments for the target population were conducted.

The 1988 Canadian survey (Ornstein, 1989) found that men reported 3.61 female partners over the last five years, while women reported 1.17 male partners for a female-to-male ratio of 3.09:1. We examined the impact of extreme values by truncating values above 50 to that maximum. That lowered the number of female partners reported by men to 3.32. Since no women reported more than 50 partners their mean remained 1.17 and the ratio fell to 2.84:1. Since item non-response was nearly equal for both genders (men=5.4%, women=5.8%), no adjustment was made for this factor. Since there are slightly more women 18+ than men 18+, the unadjusted ratio for the target population falls to 2.92:1 and the truncated ratio for the target population is 2.69:1.

The 1988-1989 British survey (Wadsworth, et al., 1990) asked about number of sexual partners over the last six months, year, two years, five years, and lifetime. The number of female partners reported for men was respectively 0.99, 1.22, 1.58, 2.59, and 9.15, and the number of male partners reported by women were respectively 0.85, 0.95, 1.12, 1.49, and 2.79. The female-to-male ratios were 1.16:1 for six months, 1.29:1 for one year, 1.42:1 for two years, 1.73:1 for five years, and 3.28:1 for ones lifetime.[13] Since these figures are calculated from reported means and grouped data, we cannot calculated truncated means, but the available information indicates that truncation would have reduced the ratio in a manner similar to that of other surveys (Wadsworth, Johnson, Field, Wellings, Anderson, and Bradshaw, 1990). Item non-response levels ranged from 7.0 to 14.7% across time periods for men and from 7.5 to 10.9% for women. No adjustment was made for this non-response. We applied adjustments based on the age-gender structure of the target population for the figures for six months to five years. (Lifetime figures were not adjusted since the age-gender structure at any single point in time is not applicable.) Since there are slightly more men than women the ratios widened: six months=1.18:1, one year=1.32:1, two years=1.44:1, and five years=1.76:1.

The 1987 Norwegian survey (Sundet, Kvalem, Magnus, and Bakketeig, 1988; Sundet, Magnus, Kvalem, Groennesby, and Bakketeig, 1989) indicated that men had 12.52 female partners over their lifetime, while women had 5.21 male partners for a ratio of 2.40:1. When extreme values were truncated to 115, the number of female partners dropped to 11.29 and the ratio to 2.17:1. Item non-response did not vary greatly by gender (men=9.7%, women=8.1%), so

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[13]The lifetime number of female and male partners was reported as 11.0 and 2.9 for a ratio of 3.79:1 (Maddox, 1989), but it was later stated that "the mean number of 'lifetime partners' was misreported in the article; our figures show a smaller disparity between means for men and women" (Johnson, Wadsworth, Field, Wellings, and Anderson, 1990). Our figures are calculated from data presented in Wadsworth, Johnson, Field, Wellings, Anderson, and Bradshaw, 1990.

no adjustments were made. Since there are slightly more Norwegian men 18-60 than women, the unadjusted ratio for the target population rose to 2.50:1 and the truncated ratio increased to 2.25:1.

Table 10 indicates that in all surveys men report more female partners than women report male partners.[14] The ratio of female-to-male partners ranges from a low of 1.16:1 among the British over the last six months to 8.45:1 among Americans before their first marriage. It is clear that the discrepancies increase as the reference period lengthens and there may also be cross-national differences in the magnitude of the ratio, but the discrepancies in all cases are in the same direction.

Item non-response levels are usually similar for men and women, although marginally higher for men (Table 11). At least in the American surveys there is no evidence that item non-response is linked to sexual behavior. In all but one case (1 year rates in the US in 1989), truncation reduces the discrepancies, but the decreases are small and are not necessarily more accurate than the untruncated ratios. Finally, adjusting for the gender distribution of the target population decreases the ratios when the entire adult population is covered (Canada and the USA) and increases the ratios when the elderly are excluded (Great Britain and Norway). As the survey-by-survey discussion above indicated, various adjustments of the data for item non-response, extreme values, and the age-gender structure of the various target population occasionally moderates the differences, but does not explain them.

There are three basic explanations for the discrepancies in the number of sexual partners: a) non-coverage, b) non-response, and c) misreports. With special attention to the 1988/1989 GSS data, we will examine each of these explanations to see which might be the most likely sources of the discrepant reports.

As noted above, a balance between the reports of men and women rests on the assumption that there is a closed population. That is, that the partners of the men and women in the target population are all members of the same target population. Or, in other words, that none of the partners are out-of-sample. This condition is never strictly true, but it will be closer to being true when the target population is broadly defined (e.g. all adults, rather than adults of restricted age ranges) and the time frame is narrowly defined (e.g. one year vs. a lifetime). There are numerous reasons why sexual partners may be out-of-sample. First, they may no longer be alive. Second, they may be institutionalized or live in group quarters. Third, they do not reside in the country in question.

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[14]This is also true in other studies. See May, Anderson, and Blower, 1989; Kinsey, et al., 1953; Brown, 1996; Morris, 1993; Smith, 1992a; Tourangeau and Smith, 1998; Tourangeau and Smith, 1996; Tourangeau, Smith, and Rasinski, 1997; Wadsworth, Johnson, Wellings, and Field, 1996; and Wiederman, 1997.

Finally, they may fall outside the age range. [15] For these factors to account for the discrepancies, there would have to be more female partners out-of-scope than male partners. That is the sum of female partners who were outside the age range, institutionalized, non-residents, and/or dead would have to be greater than the number of out-of-sample male partners.

In considering the possible impact of these out-of-sample factors we need to make a distinction between short time frames (say one year or less) and long time frames. The likelihood of the various out-of-sample reasons will differ between short and long time frames. We will first consider short-term reference periods and then long-term periods.

First, partners who have died are outside the target population (Klassen, 1990). Death however is not a likely explanation at least over the last year. The number of people dying in the last year is too small to notably affect the overall figures (about 2 million a year out of a population of 240-250 million). In addition, about 100,000 more men die annually than women, so factoring in the dead is likely to add more reports of female partners than male partners. If we take the most common scenario, we can see how this factor is unlikely to account for the difference. A 67 year old man dies leaving a 65 year old wife. Interviewed six months after her husband's death she reports having had one sexual partner in the last year (her late husband). Her husband of course can not be interviewed and therefore can not report her as a sexual partner. Thus the larger number of male deaths would tend to increase the ratio rather than reduce it. Only if women with many partners tended to die younger and/or men with few partners died younger would deaths tend to lower the ratio. There is no evidence of such opposite morality patterns for men and women and at least over the short-term unlikely that any such differential would make up for the surplus male deaths.

Second, non-household residence could account for the discrepancies either if partners left the household population over the last year or if members of the household population had members of the institutionalized/group quarters population as their partners. The changed status possibility is not likely to be a major factor since the number leaving the household population within a given year is relatively small. In addition, more men live outside of households than women and the non-household men (e.g. prisoners, servicemen) tend to be in sexually active ages, while

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[15]Or for the 1970 NORC-Kinsey study of premarital partners the out-of-scope partners could be married or post-married people. For this source to explain the discrepancies never married men would have to have had more married/post-married partners than never married women had. This in turn would mean that married and post-married women would be more likely to have never-married partners than married and post-married men had.

the women tend to be from among the less sexually active elderly.[16] Likewise, not being able to count partners who were already outside the household population is not a notable factor, since there are more men in this situation than women and for notable segments of the non-household population sexual relations with members of the household population is either not allowed (e.g. most prisons) and/or not common (e.g. old-age homes, long-term-care hospitals).

Third, there are at least four ways that geographic mobility and non-residence status could affect sex partner ratios (Johnson, et al. 1990; Kinsey, 1953; Klassen, 1990). First, US residents could have sexual partners in other countries. Second, foreign nationals could have sexual partners who were US residents. Third, people could immigrate into the US, bringing their sexual history, but not their sexual partners with them. Finally, people could emigrate from the US, taking their sexual reports but not their sexual partners with them. Travel and migration represent significant population flows and thus a noteworthy breech in the closed population assumption. We might examine the comparative number of migrants and travelers who were men and women to gauge the likely impact of this possible explanation, but if we look at the female:male ratios from our four countries, we see that this explanation is not going to work.[17] While one country might find its unaccounted for female partners in other countries, all countries can not find their extra-female partners in other countries. Across all nations there would have to be a balancing out of ratios, but, as we have seen, all four nations report an excess of female partners, so the non-resident explanation is not going to explain the cross-national pattern.

Finally, perhaps the most likely source of out-of-sample partners would be people outside the age range of the surveys. In all countries this would include person below the minimum age (16-21, depending on the survey) and in Britain and Norway it would also include those over 59/60. Those over 60 do not offer a likely explanation for the discrepancies since surveys that include this age segment (the Canadian and American) still show large discrepancies. We therefore turn to the underage as possible source of the discrepancies. Since (at least in the US) women tend to both date and marry men slightly older than they are, we would expect

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[16]In 1980 3,153,000 men and 2,586,000 women were in institutions or group quarters. 487,000 men were in correctional facilities, 613,000 in military quarters, and 422,000 in homes for the elderly. The figures for women were 38,000, 58,000, and 1,004,000.

[17]Strictly speaking it is possible that the discrepancies in these countries could be counterbalanced by reverse patterns in other countries. This seems unlikely in general and in particular because the interchange of populations between Canada and the United States is greater than between these countries and any other uncovered countries.

some of the unaccounted for female partners to be underage. However, this explanation runs into two difficulties. First, if we look at reports of sexual activity among teenagers, we find male teenagers reporting more than enough activity to account for all of that reported by female teenagers (Hofferth, Kahn, and Baldwin, 1987; Sonenstein, Pleck, and Ku, 1990). Second, even if we ignore the studies of teenage sexual activity and assume that there is a net surplus of teenage female partners with adult men, there are not enough out-of-sample female partners to significantly matter. If we supposed that the number of women under 18 with male sex partners over 18 minus the number of males under 18 with female sex partners over 18 was 1 million and assumed that these "extra" females had an average of 1.42 partners (the mean for women 18-24 in 1988), that would account for 1,423,000 of the partners reported by men on the GSS. In 1988 adding in these female partners would lower the age-gender adjusted female-to-male ratio from 1.68:1 to only 1.66:1.

All of the reasons for out-of-sample partners become more likely as one moves from short-term reference periods to longer-term time spans. On the other hand, since the discrepancies widen so much as the time period lengthens, many more out-of-scope partners would be needed to explain the long-term differences than the short-term discrepancies. Undoubtedly many of the partners being referred to by respondents are out-of-sample and therefore the strictures of a closed population do not apply. However, as the above examination of short-term effects makes clear, it is uncertain that the deviations from closure necessarily explain the discrepancies between the reports of men and women. For sample exclusion to explain the difference there would have to be more out-of-sample female partners than male partners and the edge would have to be sufficiently large to make up the large imbalances. Klassen (1990) offers one possible scenario to explain the large differences in premarital reports. Based on Kinsey data on use of prostitutes (Kinsey, et al., 1948), he conjectures that the prostitutes and other women with highly permissive sex lives have been differentially eliminated from the current household population either due to higher mortality from sexually transmitted diseases, illegal abortions, childbirth, and/or other causes or from institutionalization (penal and medical). While there is little evidence on the link between morality and sex behavior for either gender, Klassen's explanation has a certain plausibility to it. Whether it could be a major explanation for the discrepancies is impossible to say from available evidence.

A second possible explanation for discrepancies in reports is non-response (Ornstein, 1989; May, Anderson, and Blower, 1989; Klassen, 1990). Total non-response consists of survey non-response plus item non-response. We have already explored the issue of item non-response and found no evidence that non-response is related to sexual behavior. Survey non-response would be a factor if women with many sexual partners were excluded and/or men with few partners. There is no particular reason to believe that sexually inactive men would tend to be non-respondents, but one might well

argue that one well-known group of sexually active women, prostitutes, might tend to be non-respondents.[18] Adding just one women with 200 male partners would lower the 1988 female-to-male ratio to 1.34:1 and two such respondents would nearly close the gap (1.11:1). Likewise, in 1989 two prostitutes would decrease the ratio to 1.06:1.

If however we look at the number of female prostitutes reported by men on the 1988 GSS and remove these partners from the reports, we lower the mean for men only from 1.84 to 1.81 (using assumptions that maximized the estimated number of prostitutes). Using that mean reduces the female-to-male ratio to only 1.65:1. The situation in 1989 is similar. (See Table 12 for reported use of prostitutes by men.)

But adopting the two prostitute hypothesis in 1988 would mean that 31% of all partners of men would be prostitutes. This is hardly a believable figure. In addition since men actually reported only very slight use of prostitutes, we would either have to believe that men were reporting almost none of their traffic with prostitutes or that they were reporting sexual partners who were prostitutes, but misdescribing them as representing some other type of relationship (e.g. pick-up, friend, etc.). If they were not reporting partners who were prostitutes, then we would have to add these figures to the mean of men and the female-male differential would widen again. If men misreport the nature of their relationship to paid partners, then not only are the women means off because of the non-representation of prostitutes, but the sexual relationship data of men would be dramatically changed.

There are limited aggregate figures on either the number of women engaged in prostitution or the average number of partners per annum of prostitutes to use as a check on the two-prostitute hypothesis (Turner, Miller, and Moses, 1989; Miller, Turner, and Moses, 1990). While the illegality of prostitution is probably the main barrier to accurate counts, estimates are also complicated by the prevalence of many part timers, the continual occupational turnover, and the apparent geographic mobility of prostitutes. There are some recent and limited studies that have tried to overcome these serious problems and either to estimate the number of prostitutes or of certain types of prostitutes in given localities (Potterat, Woodhouse, Muth, and Muth, 1990; Kanouse, Berry, Duan, Lever, and Richards, 1991; and Leyland, Bernard, McKeganey, 1992) or to measure the proportion of women who have engaged in sex for pay (McQuillan and Ezzati-Rice, Siller, Visscher, and Hurley, 1994, Wyatt, Peters, and Guthrie, 1988; and Brunswick, et al., 1993). In addition, there are recent estimates of what proportion of men have engaged in paid sex.

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[18]We would expect prostitutes to be non-respondents because 1) they are engaged in an illegal occupation, 2) they also tend to be illegal drug users, 3) they work nights and weekends when most interviews are attempted, and 4) they may have employers (madames and pimps) who would object to interviews.

Although all three of the community, aggregate-estimate studies were carefully done and show a high degree of consistency, all estimates of the number of prostitutes are fraught with uncertainties since they deal with what one study aptly calls a "covert" population. In addition, the Los Angeles and Glasgow estimates are by definition incomplete because they cover only street prostitutes.

			# per 100,000 residents
Glasgow, Scotland	1990	Street Prostitutes	24
Los Angeles Co.	1990	Street Prostitutes	18-26
Colorado Springs	1985-88	All Prostitutes	26
		Fulltime Equivalents	19

Surveys of general populations of women are equally limited. The studies cover sub-groups in local areas, have very small to medium sample sizes (LA=120, Harlem Panel=187, Dallas=745), use different measures, and show different levels of involvement in paid sex.

Los Angeles	ca. 1985	Whites 18-36	Engaged in prostitution	8%
Central Harlem Panel	1989-90	Blacks 32-38	Received money or drugs for sex	10.1%
Dallas	1989	All 18-54	Received money or drugs for sex since 1978	2.2%

In additional, two recent samples provide the first national estimates of the proportion of women involved in paid sex. A 1991 survey of 1,669 women ages 20-37 found that 2.0.% had ever had "oral, anal, or vaginal sex in exchange for money or drugs" (Tanfer, 1994) and the 1991-98 GSS of 5,700 women 18+ indicated that 1.6% of women had "had sex with a person you paid or who paid you for sex" since age 18.

Given the differences in ages and measurements, the Dallas survey and the two national samples are in close agreement. They suggest a much higher rate of female participation than the aggregate counts (on the order of 15-20 times higher), but the two sets of estimates are not directly comparable. (Without information on duration, level of involvement, and related factors the survey estimates can not be converted into point estimates of women engaged in prostitution nor can they separate out occasional participants from full-time professionals.)

In brief, the available studies are extremely limited in number and most are unrepresentative of the United States as a whole (one study of course is not even from the United States). In

particular, extrapolations from these few local studies to national estimates could well be wrong, especially if prostitution is heavily concentrated in urban centers. This possibility is supported by the fact that on the 1988-2002 GSSs 0.5% of men living in rural areas reported having sex with a prostitute during the last year, while 2.1% of those living in the 12 largest central cities reported having sex with a prostitute during the last 12 months (Smith, 2003). In addition, the lifetime figures show a similar pattern.

Reports by men on paying for sex indicate that 0.6% of men had a prostitute for a sex partner during the last year (Table 12), 5.9% within the last five years (Wells and Sell, 1990), and 16.3% at some point during the past (Table 12, see also McQuillan, Ezzati-Rice, Siller, Visscher, and Hurley, 1994).[19] Unfortunately, these figures are not consistent. The five-year figures are more than twice what would be expected based on the annual figures.

In addition, comparing the annual rates to estimates of FTE prostitutes (assuming that the above urban rates can be applied nationally) comes to only 9.9 clients per prostitute. Other evidence suggests this is too low.[20] Thus, if the estimates of number of prostitutes are correct, this would suggest that men are underreporting their number of paid sex partners (either by not reporting partners who were prostitutes or reporting them as falling in another category such as casual dates or acquaintances). Alternatively, the number of FTE prostitutes may be overestimated.

The final source of explanation are respondent misreports. These misreports might be either unintentional or intentional. Unintentional misreports would include faulty recall (Johnson, et al., 1990). Errors of recall undoubtedly increase as the reference period lengths, but there is no reason to believe that there would be differential recall by men and women such that men either telescoped or overestimated more than women did. Another possibility is that men and women might define who is a sexual partner differently, with men possibly having a broader definition than women (Kinsey, et al., 1953). However, this seems unlikely as a basic explanation since the same pattern shows up over many notably different ways of defining and asking about sexual experience (Appendix 1) and since several of the wordings provide clear definitions of sexual partners either in the questions

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[19]In addition, for males 15-29 in 1995 0.7% said they had ever had sex with a prostitute on a paper self-completion form, but 2.5% report such behavior on an audio-computer-assisted, self-completion form (Turner, et al., 1998).

[20]Among legal Nevada brothel workers the median number of customers per month was 69 (presumably counting repeat customers more than once) (Albert, Warner, and Hatcher, 1998). This number is probably higher than averaged by illegal sex workers. On the frequency of repeat customers see Freund, Lee, and Leonard, 1991. See also, Cusick, 1998.

themselves or in introductory sections. In addition, cognitibe research (Smith, 1993) showed no appreciable gender differences in the understanding of sexual terms. However, the British survey does provide both the fullest, most precise definition of terms and reports the lowest discrepancies, so wording may be a contributing factor.

Of possible intentional misreports probably the most likely might be some combination of overreporting by men and underreporting by women (Kinsey et al., 1953; May, Anderson, and Blower, 1989; Ornstein, 1989; Klassen, 1990). 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 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.

This pattern holds up for teenagers not in love and for unmarried adults in love and not in love (Klassen, Williams, and Levitt, 1989). From the 1989 GSS we know that women are more opposed to both premarital sex and extramarital sex than men (respectively by 12.2 percentage points and 6.1 percentage points). The GSS questions did not ask about approval by gender of the sexual partners.

Past studies of sexual behavior present only mixed support for this explanation however. Studies of independent reports of frequency of marital intercourse by husbands and wives produce highly similar mean estimates (Kinsey, et al., 1953; Clark and Wallin, 1964; Levinger, 1966; Card, 1978; Rao and VandenHeuvel, 1995). Analysis of item non-response and the use of a candor scale on the 1970 Pornography Commission survey suggested that the reports of men were more candid and complete than those of women (Commission, 1971), while a small panel study of teens found girls more consistent in their reports of being sexually active (Newcomer and Udry, 1976). However, neither on NORC's 1970 survey on sexual behavior (NORC, 1987), nor in the GSS did interviewers' evaluation of either general frankness or cooperativeness relate to gender (Smith, 1992b). Thus, the assumption of boasting by men and modesty by women that might explain the differences is not clearly supported by the few studies that might be relevant.

A second literature suggests that more candid reports are given

when the interviewer is the same gender as the respondent.[21] Since almost all NORC interviewers are women, that should have encouraged women to give more truthful reports.[22] On the other hand, the self-completion format of the sex behavior questions on the 1970 NORC-Kinsey survey and the 1988 and 1989 GSS may have negated any gender interaction effect.

However, there is one bit of evidence that both fits the hypothesis of exaggeration by men and underreports by women and also offers an explanation for the rising differentials over longer reference periods. Discrepancies may increase as the time period lengths because the longer the time frame the more reports of premarital sexual activity are covered. Over the last year reports of sexual partners among the currently married are almost within marriage rates (except for those married for less than a year), while for those currently unmarried almost all are reporting on pre or post-marital activity (except for those divorced or widowed within the last year). For lifetime rates people will be reporting over the total number of sexually active years - premarital, marital, and post-marital. If most sexual partners are accumulated during non-marital years (and data on both sexual activity by marital status and age and monogamy support this assumption - Greeley, Michael, and Smith, 1990; Michael, Laumann, Gagnon, and Smith) and if men feel compelled to exaggerate their number of sexual partners and/or women feel constrained to underreport their number of partners, then longer term reports, which cover more non-marital years, would be the most distorted. If premarital reports are the main source of misreports, then we would expect the discrepancies to be greatest for premarital reports. This appears to be the case since the premarital reports for the 1970 US survey show the largest discrepancy. In addition, in the GSS studies 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

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[21]This literature is far from consistent on finding more truthful report when gender are matched. In a number of instances no effect has been observed. See Commission, 1971; Johnson and Delamater, 1976; Reiss, 1967; Darrow,et al., 1974; Delamater, 1974; Benney, Riesman, and Star, 1956.

[22]We do not know the sex composition of the British and Canadian interviewers, but if typical for surveys in those countries, most interviewers would be women. As in the American surveys, the British survey used a self-completion form for the sexual behavior questions, so gender of interviewer may not be of major importance. Since the Norwegian survey was by mail, gender of interviewer is not at issue.

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.[23]

The discrepancies in the number of sexual partners reported by men and women may result from limited sample coverage, non-response, or misreports. While no definitive evidence exists, we feel that some underrepresentation of prostitutes coupled with some combination of female underreporting and male overreporting seems most plausible explanations. Furthermore, as a speculative hypothesis, we believe that underreporting by women may be more of a problem than overreporting by men. We reach this conclusion, largely because we believe that the social pressure for women to preserve their modesty is greater than the pressure on males to exaggerate their experience.[24]

Male/Female Discrepancies: Frequency of Intercourse

Males and females also disagree about the frequency of sexual intercourse. As Table 13 shows, among heterosexual adults men report significantly more sexual activity than women. However, 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; Clark and Wallin, 1964; Kinsey, et al., 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

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[23]This is also consistent with Kinsey data that show high agreement among the married on frequency of sexual intercourse, but considerable disagreement among the non-married (Kinsey, et al., 1953).

[24]Kinsey (1953) also believed underreporting by women was greater than overreporting by men in regards to frequency of sexual intercourse.

among the unmarried. While its cause is not certain, it probably reflects the impact of social norms that encourage some male overreporting 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 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.

Estimates of Level of Sexual Activity by Number of Partners and Frequency of Sex

Since the levels of sexual abstinence reported to the partners question in 1988 were higher than anticipated (Smith, 2003) 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. 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 very consistent reports on the individual level. 96.9% reported themselves as either sexually active or sexually inactive on both questions. We looked in detail

at the inconsistent cases. The larger group of inconsistents (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 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 spouse. Also, some people may have counted masturbation as sexual activity.

The second group of inconsistents (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.

If the sexual frequency item was forcing a consistency on people, we would expect the number of sex partners and/or the level of sexual frequency reported to vary by order. However, no such difference occurred. 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 impact 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.

Relationship to Sex Partners

In 1996 an item on whether respondents were in an "on-going relationship" with the person they most recently had sex with was

added. The level of people engaged in relational sex with their most recent partner was looked at by marital status, number of sexual partners in the last year, and whether one of their sex partners during the last year was "your husband or wife or regular sexual partner." Overall, the level of relational, most recent sex varied just as one would suppose, being higher those with fewer sexual partners and controlling for number of partners highest for the married and those who said one of their sexual partners was their spouse or regular partner. For example, among those never married, those with relational last sex fell from 93% for those with one partner to 26% with those with 11-20 sexual partners in the last year. Likewise, 89% of those who had a spouse or regular partner among their 2 partners last year reported that they were in a relationship with their last sex partner, while 63% of those with 2 partners in the last year, but no spouse or regular sex partner reported relational sex with their last partner.

These comparisons also revealed that of people with only one partner last year and for whom that partner was a spouse or regular partner only 97% reported relational last sex. We looked at the attributes of the 3% people not reporting relational sex to try and explain the differences. We found that 73% were married. Thus for most of this group there is every reason to expect that last sex was relational (i.e. they are married, had only one sexual partner in the last year, and that sexual partner was a spouse or regular sexual partner). This means that the "no" on being in an "on-going relationship" with the person they last had sex with is questionable. Some the difference may be due to simple measurement error from the miscircling or mispunching of the relational response. Some may be people not counting their spouse as someone they are in an "on-going relationship" with since they consider marriage as something different from a "relationship." Finally, the relational data could be correct and represent the disclosure of another sexual partner previously denied.

Measurement Experiments

The GSS has carried three experiments to determine in general how sensitive the measurement of sexual behaviors to the precise method of data collection and to test specific hypothesized impacts of particular approaches. The experiments dealt with 1) the introduction to the sexual behavior SAQ, 2) way of asking about number of sex partners, and 3) method of asking about frequency of sex.

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 of the 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 deny such practices.[25] As Table 14 indicates, however, there were no statistically significant impacts 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 1989-2002 the AIDS introduction was used for all cases.

Number of Partners Experiment

On the 1991 GSS two related experiments were conducted on how ones number of sexual partners were reported. On one random half people were asked the standard, closed-ended questions on number of sexual partners during the last year and last five years (See Appendix 1). On the other half they were asked open-ended versions (How many sex partners have you had during the last 12 months? ____ partners and Now think about the past five years-- the time since February/March 1986, and including the past 12 months, how many sex partners have you had in that five years? ____ partners). These two ways of counting number of sex partners produced estimates that were not statistically different from one another (mean number of partners - 1 Year: closed=1.24, open=1.04, prob.=.835 and 5 years: closed=3.10, open=2.43, prob.=.081).

Estimates of Sexual Frequency

On the 1990 GSS two measures of sexual frequency were tested on random half-samples. 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. Converting these two measures into annual estimates of frequency of intercourse, yields similar distributions and virtually identical mean estimates (Table 15). This suggests that reports of sexual frequency are not highly

[25]The only literature at all related to this issue is the finding that stronger pledges of confidentiality lead to lower item non-response on sexual behavior items (Bradburn, 1979).

sensitive to reporting format.

In brief, the three GSS experiments indicate that reports of sexual behavior are not easily affected by changes in measurement techniques.

Summary and Conclusion

The structure of measurement error on GSS sexual behavior items is complex. First, there a moderate amount of supplement and item nonresponse to these questions. As far as can be judged, this nonresponse does not appear to be strongly related to sexual behavior. In particular, nonresponse has little association with sexual permissiveness, liberalism in general, and non-sexual risk behaviors. Nonresponse is however greater among older adults which does suggest that the reported rates may be biased towards more activity and less conventional behaviors. The strongest predictors of nonresponse are level of general cooperativeness with no particular focus on sexual matters and SES.

Second, sexual measurement does not appear to be labile. Three wording/question format experiments showed no statistically significant variation.

Third, there is a tendency for respondents to inappropriately skip items. This seems to be mostly related to their incorrect judgment that some question do not apply to them (e.g. people without any sexual partners failing to report sexual frequency).[26]

Finally, there are substantial and inconsistent differences in the sexual reports of men and women. Men reported more heterosexual partners and somewhat greater sexual activity than women so. There are several possible explanations for these discrepancies, but growing evidence (Tourangeau and Smith, 1996 and 1998) indicates an important factor is differential, misreports by men and women.

Measurement is rarely a simple and straightforward task. As the total survey error perspective indicates, there are dozens of sources of both random and non-random error and these can interact in complex ways. Sensitive items are particularly prone to certain error such as differential refusals and social desirability effects. For this reason the error structure of sexual behavior data needs to be carefully assessed.

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[26]SAQ get more accurate reports of sensitive behavior, but the researcher has less control over a respondent's task behavior. For example, in SAQ's respondents are more likely to misfollow screening and filtering direction and also to intentionally skip questions that they deem irrelevant or not applicable. The researcher and interviewer can not observe such errors as they occur, but it may be possible to reduce them by both instructions prior to the start of the SAQ and more directions within the SAQ to make screens clearer and reenforce that everyone should answer other items.

Table 1

Response Rates on the 1985-2002 General Social Surveys

Year	Overall/ Unit	Self-Administered Modules	
		ISSP	Sexual Behavior
1985	.787	.894	---
1986	.756	.971	---
1987	.754	.876	---
1988	.773	.957	.941
1989	.776	.950	.916
1990	.739	.894	.859
1991	.778	.896	.854
1993	.824	.971	.935
1994	.778	.948	.934
1996	.761	.931	.917
1998	.756	.890	.874
2000	.700	.907	.858
2002	.701	.843	.828

Table 2

Supplement/SAQ Nonresponse, 1988-2002

A. Background Variables	% Nonresponse	Prob.
Gender (SEX)		.245
Men	11.3	
Women	10.8	
	(21824)	
Age (AGE)		.000
18-29	7.5	
30-49	9.9	
50-64	13.4	
65+	15.9	
	(21783)	
Race (RACE)		.000
White	10.1	
Black	15.6	
Other	13.9	
	(21822)	
Hispanic Ethnicity (ETHNIC)		.000
Hispanic	13.5	
Not	10.8	
	(21824)	
Education (DEGREE)		.000
Less than High School Degree	15.0	
High School Degree	10.2	
Junior College Degree	8.9	
College Degree	9.9	
Postgrad Degree	10.5	
	(21748)	
Household Income (INCOME86,91,98)[a]		.000 .
Less than $8000	11.2	
$8,000-19,999	12.2	
$20,000-39,999	11.2	
$40,000+	9.4	
	(21592)	
Marital Status (MARITAL)		.000
Married	11.0	
Widowed	16.5	
Divorced	11.4	
Separated	10.7	
Never Married	9.2	
	(21821)	

Table 2 (continued)

	% Nonresponse	Prob.
Number of Children, Ever Had (CHILDS)		.000
None	9.6	
1	11.7	
2	10.4	
3	11.5	
4	11.8	
5	12.0	
6	15.3	
7	13.7	
8+	21.2	
	(21757)	
Region of Country (REGION)		.002
New England	11.0	
Mid-Atlantic	12.3	
East North Central	9.9	
West North Central	8.3	
South Atlantic	12.5	
East South Central	11.3	
West South Central	12.7	
Mountain	8.8	
Pacific	9.9	
	(21824)	
Community Type (SRCBELT)		.000
12 Largest Central Cities	15.1	
13-100 Largest Central Cities	10.9	
Suburbs, 12 Largest	12.8	
Suburbs, 13-100	10.7	
Other Urban	9.6	
Rural	11.7	
	(21824)	
Religion (RELIG)		.304
Protestant	10.7	
Catholic	11.6	
Jewish	9.7	
None	10.2	
Other	11.2	
	(21730)	
B. Cooperation/Interview Variables		
Interviewer Evaluation of Cooperation (COOP)		.000
Friendly, Interested	8.0	
Cooperative	15.8	
Restless, Impatient	31.3	
Hostile	50.6	
	(21618)	

Table 2 (continued)

	% Nonresponse	Prob.
Interviewer Evaluation of Comprehension (COMPREND)		.000
Good	9.4	
Fair	15.5	
Poor	29.3	
	(21586)	
Report/Didn't Report Household Income (INCOME86,91,98)		.000
Gave	9.2	
Didn't Give, DK/No Answer	14.1	
Explicit Refusals	30.5	
	(21374)	
Don't Know Responses[b]		.000
0	9.7	
1	13.0	
2	18.3	
3+	33.9	
	(20424)	
C. Behaviors		
Church Attendance (ATTEND)		.011
Never	10.9	
Less than Once a Year	11.0	
Once or Twice a Year	8.8	
Several Times a Year	10.5	
Once a Month	10.9	
2-3 Times a Month	12.3	
Nearly Every Week	12.2	
Every Week	11.3	
More than Once a Week	10.6	
	(21446)	
Group Memberships (MEMNUM)		.000
None	11.6	
1	10.5	
2	8.3	
3+	6.5	
	(5491)	
Socializing[c]		.014
Frequent (3-5)	9.9	
6-9	11.1	
10-15	9.9	
Infrequent (16-21)	12.1	
	(13517)	

Table 2 (continued)

	% Nonresponse	Prob.
Visiting Bars (SOCBAR)		.000
Almost Daily	14.0	
Several Times a Week	11.4	
Several Times a Month	9.6	
Once a Month	8.4	
Several Times a Year	7.7	
Once a Year	8.3	
Never	12.1	
	(13569)	
Drinking[d]		.000
Abstains	11.1	
Drinks, Never Too Much	9.5	
Drinks, Sometimes Too Much	6.5	
	(5462)	
Smoking (SMOKE)		.558
Yes	9.0	
No	9.5	
	(5495)	
D. Attitudes		
Sexual Permissiveness		
Teenage Sex (TEENSEX)		.003
Always Wrong	11.1	
Almost Always Wrong	8.7	
Wrong Only Sometimes	9.7	
Not Wrong at All	8.4	
	(13414)	
Premarital Sex (PREMARSX)		.000
Always Wrong	12.9	
Almost Always Wrong	11.0	
Wrong Only Sometimes	9.7	
Not Wrong at All	9.1	
	(13187)	
Extra-marital Sex (XMARSEX)		.010
Always Wrong	10.5	
Almost Always Wrong	8.9	
Wrong Only Sometimes	10.4	
Not Wrong at All	15.4	
	(13389)	
Homosexual Sex (HOMOSEX)		.037
Always Wrong	10.8	
Almost Always Wrong	9.5	
Wrong Only Sometimes	9.3	
Not Wrong at All	9.3	
	(12777)	

Table 2 (continued)

	% Nonresponse	Prob.
Drugs		
Legalizing Marijuana (GRASS)		.032
Yes	9.2	
No	10.5	
	(10288)	
Govt. Spending on Drug Addition (NATDRUG)		.113
Too Little	11.1	
About Right	9.7	
Too Much	11.2	
	(10361)	
Govt. Spending on Drug Rehabilitation (NATDRUGY)		.002
Too Little	10.8	
About Right	9.3	
Too Much	13.0	
	(10195)	
Political Ideology (POLIVIEWS)		.173
Extremely Liberal	9.7	
Liberal	9.6	
Slightly Liberal	9.2	
Moderate, Middle of the Road	10.1	
Slightly Conservative	9.5	
Conservative	10.4	
Extremely Conservative	12.7	
	(19480)	
Happiness (HAPPY)		.022
Very Happy	11.4	
Pretty Happy	10.1	
Not Too Happy	10.0	
	(20287)	
Anomia[e]		.032
3	6.7	
4	6.7	
5	4.5	
6	6.4	
	(5743)	
Misanthropy[f]		.000
3	9.1	
4	12.6	
5	8.7	
6	14.4	
7	10.4	
8	14.2	
9	10.6	
	(13310)	

[a]The available household income variable for each year was used. Missing values on income were imputed.
[b]A count variable of how many Don't Know response were given to

Table 2 (continued)

seven items on capital punishment (CAPPUN), government spending on social security and parks (NATSOC, NATPARKS), social class (CLASS), tougher courts (COURTS), financial changes (FINALTER), and financial satisfaction (SATFIN).

[c]An additive variable combining social visits with your neighbors (SOCOMMUN), friends outside the neighborhood (SOCFREND), and relatives (SOCREL). Scores ranged from 3 to 21 with low scores representing more frequent socializing.

[d]Combines together items of drinking (DRINK) and drinking too much (DRUNK).

[e]An additive variable on three measures of anomia: lot of the average man (ANOMIA5), unfair to bring child into world (ANOMIA6), and public officials not interested in average man (ANOMIA7). Scores ranged from 3 to 6 with a low score reflecting more anomia.

[f]An additive variable on the three measures of misanthropy (TRUST, HELPFUL, FAIR). Scores ranged from 3 to 9 with the low score meaning less (more judgments that people are trustworthy, helpful, and fair). DKs and depends coded to mid-positions on each item.

Table 3

Supplement/SAQ Nonresponse: Logistic Regression Models

Coefficient/Prob.

Variables (High)	Model1	Model2	Model3	Model4	Model5
Gender (Female)	.021/.007	.012/.080	.024/.012	.042/.008	/.213
Age	-.084/.000	-.082/.000	-.077/.000	-.064/.000	-.077/.000
White/Not (White)	.036/.000	.047/.000	.050/.000	/.711	.071/.000
Years of Schooling	/.097	.024/.011	/.308	/.197	.036/.009
Household Income	-.018/.014	-.023/.014	-.012/.073	/.346	-.020/.065
Widowed/Not (Widowed)	/.958	/.901	/.386	/.835	/.168
Married/Not (Married)	/.818	/.990	/.502	/.205	/.186
Number of Children Ever Born	/.225	.011/.089	/.515	/.221	/.158
South/Non (South)	-.013/.047	/.998	/.051	/.101	/.993
Community Type (Rural)	/.098	/.945	-.016/.051	/.781	/.996
Cooperation (Hostile)	-.151/.000	-.157/.000	-.147/.000	-.151/.000	-.149/.000
Comprehension (Poor)	-.035/.000	-.025/.009	-.037/.001	/.473	-.036/.010
Refused Income (Refused)	-.092/.000	-.085/.000	-.092/.000	-.111/.000	-.082/.000
Number of DKs	-.045/.000	-.022/.014	-.034/.000	-.076/.000	/.205
Attend Church (Every Week+)	/.501	/.392	/.533	/.304	/.543
Go to Bars (Never)	----	.026/.021	----	----	.018/.077
Socializing (Never)	----	/.166	----	----	.022/.050
Teenage Sex (Not Wrong)	----	/.156	----	----	/.475
Premarital Sex (Not Wrong)	----	.022/.016	----	----	/.184
Extra-marital Sex (Not Wrong)	----	----	/.645	----	/.835
Homosexual Sex (Not Wrong)	----	----	/.318	----	/.574
Number Group Memberships	----	----	----	.039/.011	----
Legalize Marijuana (No)	----	----	----	/.713	----
Drinking (Sometimes Too Much)	----	----	----	/.215	----
N	19,069	12,051	11,820	4,977	4,541

Table 4

Item Nonresponse Levels, All Years

	Missing	Imputed
Q1. Number of Sex Partners, Last 12 Months	1.3%	0.4%
Q2. Spouse/Regular Sexual Partner	2.8	---
Q3. Relationship to Sexual Partner(s)	30.2	---
Q4. Gender of Sex Partner(s), Last 12 Months	4.9	---
Q5. Frequency of Sex, Last 12 Months	7.8	---
Q6. Number of Sex Partners, Last Five Years	3.1	0.6
Q7. Gender of Sex Partner(s), Last Five Years	5.5	---
Q8. Number of Female Sex Partners, Since Age 18	10.0	0.4
Q9. Number of Male Sex Partners, Since Age 18	8.3	0.4
Q10. Ever Had Paid Sex, Since Age 18	3.3	---
Q11. Ever Had Extramarital Sex	2.5	---
Q12. Used Condom, Last Time Had Sex	6.5	---
Q13. In On-going Relationship, Last Time Had Sex	7.1	---
Q14. Ever Injected Drugs	2.2	---
Q16. Ever Used Crack Cocaine	2.3	---

Table 5

Item Nonresponse Across Years

Percent Missing Data/Probability

Items	1988	1989	1990	1991	1993	1994	1996	1998	2000	2002
Q1. Number of Sex Partners, Last 12 Mos	0.0	0.5	0.9	1.1	1.8	1.8	1.3	1.4	2.1	1.1
Prob.					0.000					
Q2. Spouse/Regular Sexual Partner	1.1	1.5	2.2	3.7	3.5	3.4	3.0	2.7	4.2	1.9
Prob.					0.000					
Q4. Gender of Sex Partner(s), Last 12 Mos	5.4	3.7	4.8	5.9	6.4	5.1	5.9	4.7	5.3	1.9
Prob.					0.000					
Q5. Frequency of Sex, Last 12 Mos	---	2.8	4.2	3.5	4.3	5.5	4.8	5.5	5.5	5.5
Prob.					0.000					
Q6. Number of Sex Partners, Last Five Years	---	---	---	2.1	2.6	3.9	2.9	3.2	3.9	2.5
Prob.					0.009					
Q7. Gender of Sex Partner(s), Last Five Years	---	---	---	3.7	4.3	5.5	4.9	5.7	9.7	3.8
Prob.					0.000					
Q8. Number of Female Sex Partners, Since Age 18	---	11.8	12.4	9.3	6.9	11.4	9.7	8.3	12.4	7.4
Prob.					0.000					

Table 5 (continued)

Items	1988	1989	1990	1991	1993	1994	1996	1998	2000	2002
Q9. Number of Male Sex Partners, Since Age 18	---	8.2	8.1	7.4	6.4	9.6	9.4	7.6	10.9	6.4
Prob.				0.000						
Q10. Ever Had Paid Sex, Since Age 18	---	---	---	1.9	2.7	4.0	3.2	3.8	4.0	2.1
Prob.				0.000						
Q11. Ever Had Extramarital Sex	---	---	---	1.3	3.9	2.3	1.9	2.4	3.1	2.4
Prob.				0.000						
Q12. Used Condom Last Sex	---	---	---	---	---	---	6.5	6.6	7.9	5.1
Prob.				0.001						
Q13. On-going Relationship Last Sex	---	---	---	---	---	---	7.2	6.6	8.4	5.7
Prob.				0.015						
Q14. Ever Inject Drugs	---	---	---	---	---	---	---	---	3.1	1.3
Prob.				0.000						
Q16. Ever Use Crack	---	---	---	---	---	---	---	---	3.8	0.8
Prob.				0.000						

Table 6

Item Nonresponse, 1988-2000

A. Background Variables	% 1+ Missing[a]	Prob.[b]
Gender (SEX)		.115
Men	15.8	
Women	16.7	
	(16854)	
Age (AGE)		.000
18-29	9.9	
30-49	14.3	
50-64	20.9	
65+	26.4	
	(16830)	
Race (RACE)		.000
White	15.0	
Black	24.0	
Other	18.4	
	(16853)	
Hispanic Ethnicity (ETHNIC)		.008
Hispanic	19.1	
Not	16.1	
	(16854)	
Education (DEGREE)		.000
Less than High School Degree	25.0	
High School Degree	16.1	
Junior College Degree	12.0	
College Degree	11.2	
Postgrad Degree	13.1	
	(16806)	
Household Income (INCOME86,91,98)[c]		.000
Less than $8000	19.1	
$8,000-19,999	20.1	
$20,000-39,999	17.0	
$40,000+	13.4	
	(16725)	
Marital Status (MARITAL)		.000
Married	16.5	
Widowed	23.9	
Divorced	16.0	
Separated	19.8	
Never Married	13.2	
	(16852)	

Table 6 (continued)

	% 1+ Missing[a]	Prob.[b]
Number of Children, Ever Had (CHILDS)		.000
None	12.6	
1	15.9	
2	16.9	
3	18.0	
4	19.3	
5	22.4	
6	22.5	
7	22.0	
8+	23.0	
	(16806)	
Region of Country (REGION)		.002
New England	16.9	
Mid-Atlantic	18.1	
East North Central	14.9	
West North Central	12.3	
South Atlantic	18.5	
East South Central	20.8	
West South Central	17.0	
Mountain	13.2	
Pacific	13.9	
	(16854)	
Community Type (SRCBELT)		.000
12 Largest Central Cities	19.4	
13-100 Largest Central Cities	16.9	
Suburbs, 12 Largest	16.8	
Suburbs, 13-100	14.1	
Other Urban	15.6	
Rural	18.3	
	(16854)	
Religion (RELIG)		.031
Protestant	16.6	
Catholic	16.6	
Jewish	17.2	
None	13.7	
Other	16.0	
	(16797)	
B. Cooperation/Interview Variables		
Interviewer Evaluation of Cooperation (COOP)		.000
Friendly, Interested	14.8	
Cooperative	20.6	
Restless, Impatient	24.7	
Hostile	20.4	
	(16728)	

Table 6 (continued)

	% 1+ Missing[a]	Prob.[b]
Interviewer Evaluation of Comprehension (COMPREND)		.000
Good	14.6	
Fair	25.2	
Poor	31.8	
	(16712)	
Report/Didn't Report Household Income (INCOME86,91,98)		.000
Gave	15.0	
Didn't Give, DK/No Answer	25.1	
Explicit Refusals	32.6	
	(16504)	
Don't Know Responses[d]		.000
0	16.0	
1	18.7	
2	22.8	
3+	28.1	
	(15690)	
C. Behaviors		
Church Attendance (ATTEND)		.000
Never	15.3	
Less than Once a Year	15.9	
Once or Twice a Year	13.2	
Several Times a Year	14.5	
Once a Month	14.7	
2-3 Times a Month	16.9	
Nearly Every Week	17.9	
Every Week	18.1	
More than Once a Week	21.0	
	(16582)	
Group Memberships (MEMNUM)		.006
None	14.2	
1	19.6	
2	12.7	
3+	12.2	
	(3164)	
Socializing[e]		.008
Frequent (3-5)	13.3	
6-9	17.3	
10-15	15.9	
Infrequent (16-21)	19.0	
	(10375)	

Table 6 (continued)

	% 1+ Missing[a]	Prob.[b]
Visiting Bars (SOCBAR)		.000
Almost Daily	13.1	
Several Times a Week	12.4	
Several Times a Month	12.0	
Once a Month	13.6	
Several Times a Year	11.8	
Once a Year	14.2	
Never	20.5	
	(10413)	
Drinking[f]		.000
Abstains	19.5	
Drinks, Never Too Much	13.3	
Drinks, Sometimes Too Much	11.1	
	(3155)	
Smoking (SMOKE)		.399
Yes	16.3	
No	14.0	
	(3168)	
D. Attitudes		
Sexual Permissiveness		
Teenage Sex (TEENSEX)		.000
Always Wrong	18.1	
Almost Always Wrong	12.2	
Wrong Only Sometimes	14.0	
Not Wrong at All	15.4	
	(10309)	
Premarital Sex (PREMARSX)		.000
Always Wrong	20.2	
Almost Always Wrong	17.9	
Wrong Only Sometimes	14.7	
Not Wrong at All	14.8	
	(10135)	
Extra-marital Sex (XMARSEX)		.073
Always Wrong	16.5	
Almost Always Wrong	13.7	
Wrong Only Sometimes	16.2	
Not Wrong at All	17.4	
	(10326)	
Homosexual Sex (HOMOSEX)		.000
Always Wrong	17.9	
Almost Always Wrong	14.5	
Wrong Only Sometimes	11.6	
Not Wrong at All	12.4	
	(7478)	

Table 6 (continued)

	% 1+ Missing[a]	Prob.
Drugs		
Legalizing Marijuana (GRASS)		.000
Yes	13.3	
No	17.7	
	(9950)	
Govt. Spending on Drug Addition (NATDRUG)		.200
Too Little	16.7	
About Right	15.2	
Too Much	15.4	
	(8040)	
Govt. Spending on Drug Rehabilitation (NATDRUGY)		.006
Too Little	16.9	
About Right	14.0	
Too Much	16.6	
	(7870)	
Political Ideology (POLIVIEWS)		.001
Extremely Liberal	18.4	
Liberal	14.6	
Slightly Liberal	14.9	
Moderate, Middle of the Road	16.9	
Slightly Conservative	14.4	
Conservative	17.0	
Extremely Conservative	20.1	
	(15066)	
Happiness (HAPPY)		.005
Very Happy	17.2	
Pretty Happy	15.8	
Not Too Happy	18.6	
	(15600)	
Anomia[g]		.002
3	18.4	
4	16.4	
5	12.7	
6	12.3	
	(3635)	
Misanthropy[h]		.001
3	15.0	
4	14.2	
5	15.7	
6	21.7	
7	17.9	
8	20.8	
9	16.7	
	(10271)	

[a]A scale was made that counted the number of missing values for number of sexual partners in last year, frequency of sex during the

Table 6 (continued)

last year, number of male sexual partners since age 18 and number of female sexual partners since age 18. The figure reported in this table is the % with one or more missing values on these four items.
[b]Probabilities are based on the uncollapsed scale going from 0 to 4.
[c]The available household income variable for each year was used. Missing values on income were imputed.
[d]A count variable of how many Don't Know response were given to seven items on capital punishment (CAPPUN), government spending on social security and parks (NATSOC, NATPARKS), social class (CLASS), tougher courts (COURTS), financial changes (FINALTER), and financial satisfaction (SATFIN).
[e]An additive variable combining social visits with your neighbors (SOCOMMUN), friends outside the neighborhood (SOCFREND), and relatives (SOCREL). Scores ranged from 3 to 21 with low scores representing more frequent socializing.
[f]Combines together items of drinking (DRINK) and drinking too much (DRUNK).
[g]An additive variable on three measures of anomia: lot of the average man (ANOMIA5), unfair to bring child into world (ANOMIA6), and public officials not interested in average man (ANOMIA7). Scores ranged from 3 to 6 with a low score reflecting more anomia.
[h]An additive variable on the three measures of misanthropy (TRUST, HELPFUL, FAIR). Scores ranged from 3 to 9 with the low score meaning less (more judgments that people are trustworthy, helpful, and fair). DKs and depends coded to mid-positions on each item.

Table 7

Missing Values: Regression Models

Coefficient/Prob.

Variables (High)	Model1	Model2	Model3	Model4	Model5
Gender (Female)	-.000/.977	-.013/.214	.004/.722	.013/.484	-.017/.284
Age	.153/.000	.139/.000	.154/.000	.148/.000	.133/.000
White/Not (White)	-.052/.000	-.047/.000	-.058/.000	-.011/.584	-.047/.004
Years of Schooling	-.045/.000	-.037/.002	-.053/.000	-.066/.004	-.051/.004
Household Income	-.019/.138	-.014/.235	-.033/.006	-.014/.522	-.028/.109
Widowed/Not (Widowed)	-.030/.019	-.031/.010	-.027/.026	-.018/.432	-.028/.116
Married/Not (Married)	-.001/.972	-.009/.477	.006/.627	.025/.278	.007/.729
Number of Children Ever Born	-.022/.018	-.009/.433	-.023/.059	-.031/.156	-.011/.555
South/Non (South)	.031/.000	.031/.003	.024/.020	.040/.035	.021/.159
Community Type (Rural)	-.009/.272	-.017/.109	-.027/.008	-.040/.039	-.042/.008
Cooperation (Hostile)	.037/.000	.032/.003	.019/.079	.041/.041	-.001/.969
Comprehension (Poor)	.064/.000	.062/.000	.051/.000	.052/.015	.054/.001
Refused Income (Refused)	.086/.000	.083/.000	.075/.000	.074/.000	.067/.000
Number of DKs	.026/.000	.040/.000	.014/.159	.038/.041	.029/.053
Attend Church (Every Week+)	.029/.001	.039/.001	.022/.044	.004/.857	.043/.014
Go to Bars (Never)	----	.033/.004	----	----	.027/.027
Socializing (Never)	----	-.019/.082	----	----	-.016/.296
Teenage Sex (Not Wrong)	----	-.011/.352	----	----	-.027/.111
Premarital Sex (Not Wrong)	----	.014/.259	----	----	.019/.319
Extra-marital Sex (Not Wrong)	----	----	-.015/.175	----	.006/.746
Homosexual Sex (Not Wrong)	----	----	-.003/.790	----	-.008/.641
Number Group Memberships	----	----	----	.015/.464	----
Legalize Marijuana (No)	----	----	----	-.003/.883	----
Drinking (Sometimes Too Much)	----	----	----	-.014/.489	----
N	14,771	9,360	9,222	2,994	4,420
R^2	.053	.050	.050	.047	.041

Table 8

Survey Descriptions

Country	Organization	Dates	Mode	Ages	N	Response Rate
Canada	ISR-York Un.	9-12/1988	T	18+	1289	64%
Grt Brit	SCPR	11/88-1/89	P-SC	16-59	977	65.2
Norway	NIPH	11/87-1/88	M	18-60	6155	62.7
USA	NORC(Kinsey)	10-11/1970	P-SC	21+	3018	---[1]
USA	NORC-GSS	2-4/1988	P-SC	18+	1390	72.6
USA	NORC-GSS	2-4/1989	P-SC	18+	1401	70.8

ISR=Institute for Social Research
SCPR=Social and Community Planning Research (London)
NIPH=National Institute for Public Health (Oslo)
NORC=National Opinion Research Center, University of Chicago
GSS=General Social Survey

T=Telephone
M=Mail
P-SC=Personal with self completion form

[1]Since probability sampling with quotas was employed, no response rate can be calculated.

Table 9

Mean Number of Adult Lifetime Sex Partners, 1989 GSS

(Heterosexuals only)

	Men	Women	Females:Males
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 men and women with missing data

**=Values of 50 and greater recoded to 50

***=male/female means different at .0001 level

Table 10

Summary of Unadjusted Ratios of Number of Sex Partners Reported by Men and Women

(Female Partners: Male Partners)

Period	Countries			
	Canada	Great Britain	Norway	United States
6 months	--	1.16:1	--	--
1 year	--	1.29:1	--	1.88:1 (1988) 1.64:1 (1989)
2 years	--	1.42:1	--	--
5 years	3.09:1	1.72:1	--	--
Since Age 18	--	--	--	4.06:1
Lifetime	--	3.28:1	2.40:1	--
Before First Marriage	--	--	--	8.34-8.45:1

Table 11

Item Non-Response by Gender

(% No Response: Men, Women)

Period	Countries			
	Canada	Great Britain	Norway	United States
6 months	--	13.7, 10.7	--	--
1 year	--	14.4, 10.9	--	1988: 6.6, 5.9 1989: 10.4, 9.1
2 years	--	14.7, 10.7	--	--
5 years	5.4, 5.8	--	--	--
Since Age 18	--	--	--	8.0, 10.5
Lifetime	--	7.0, 7.5	9.7, 8.1	--
Before First Marriage	--	--	--	11.5-13.7,4.2-5.5

Table 12

Paid Sexual Partners
(Men)

	% Ever Paid for Sex	% Paid for Sex in Last Year
1988	---	0.5
1989	---	0.3
1990	---	0.4
1991	17.8	1.2
1993	17.0	0.5
1994	16.3	0.5
1996	16.9	0.5
1998	14.2	0.7
2000	15.3	0.3
2002	13.5	1.0
Prob.	.130	.343

Table 13

Mean Frequency of Sexual Intercourse During Last Year (1989)

	Men	Women	Prop.
All Adults	67.2 (576)	50.4 (768)	.000
Married Adults	70.5 (358)	64.6 (381)	.203
Married Adults, one partner	71.5 (310)	71.7 (333)	.976

Table 14

Reports of Sexual Behavior
by Experimental Introduction

(1988)

	Introduction		
	Standard	AIDS	Prob.
Did supplement	93.2%	94.5%	.343
Bi/Homosexual	2.0%	1.3%	.643
2+ 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 # partners	1.2	1.6	.083

Table 15

Comparison of Reports of Frequency of Sexual Intercourse, 1990

(Annual Frequency)

	Versions		
Times[a]	Annual Average	Number Last Month x 12	
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)	

[a]The 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.

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Appendix 1: Question Wordings

Item:	Years Asked:
Q1. Number of Sex Partners, Last 12 Months	1988-2002
Q2. Spouse/Regular Sexual Partner	1988-2002
Q3. Relationship to Sexual Partner(s)	1988-2002
Q4. Gender of Sex Partner(s), Last 12 Months	1988-2002
Q5. Frequency of Sex, Last 12 Months	1989-2002
Q6. Number of Sex Partners, Last Five Years	1991-2002
Q7. Gender of Sex Partner(s), Last Five Years	1991-2002
Q8. Number of Female Sex Partners, Since Age 18	1989-2002
Q9. Number of Male Sex Partners, Since Age 18	1989-2002
Q10. Ever Had Paid Sex, Since Age 18	1991-2002
Q11. Ever Had Extramarital Sex	1991-2002
Q12. Used Condom, Last Time Had Sex	1996-2002
Q13. In In-going Relationship, Last Time Had Sex	1996-2002
Q14-15. Use of Injection Drugs	2000-2002
Q16-17. Use of Crack Cocaine	2000-2002

GSS Questionnaire (2000)

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.

The Past 12 Months

1. How many sex partners have you had in the last 12 months?

PLEASE CIRCLE ONE ANSWER

No partners...(Skip to Question 5)..0
1 partner 1
2 partners 2
3 partners 3
4 partners 4
5 - 10 partners 5
11 - 20 partners 6
21 - 100 partners 7
More than 100 partners 8

---

2. Was one of the partners your husband or wife or regular sexual partner?

Yes 1
No 2

---

3. If you had NO other partners beside your husband or wife or regular sexual partner, PLEASE GO TO QUESTION 4.

If you had other partners, please indicate all categories that apply to them.

CIRCLE ALL THE ANSWERS THAT APPLY.

Close personal friend 1
Neighbor, co-worker, or long-term acquaintance 2
Casual date or pick-up 3
Person you paid or paid you for sex 4
Other (PLEASE SPECIFY): _____ 5

---

4. Have your sex partners in the last 12 months been . . .

PLEASE CIRCLE ONE ANSWER.

Exclusively male 1
Both male and female 2
Exclusively female 3

5. About how often did you have sex during the past 12 months?

Not at all	0
Once or twice	1
About once a month	2
Two or three times a month	3
About once a week	4
Two or three times a week	5
Four or more times a week	6

The Past 5 Years

6. Now thinking about the past five years--the time since February/March 1993, and including the past 12 months. How many sex partners have you had in that five year period?

No partners...(Skip to Question 8)	0
1 partner	1
2 partners	2
3 partners	3
4 partners	4
5 - 10 partners	5
11 - 20 partners	6
21 - 100 partners	7
More than 100 partners	8

7. Have your sex partners in the last five years been . . .

PLEASE CIRCLE ONE ANSWER.

Exclusively male	1
Both male and female	2
Exclusively female	3

Since Your 18th Birthday

8. Now thinking about the time since your 18th birthday, (again, including the recent past that you have already told us about) how many **female** partners have you ever had sex with?

_____ Female Partners.

9. Again, thinking about the time since your 18th birthday, (including the recent past that you have already told us about) how many **male** partners have you ever had sex with?

_____ Male Partners.

10. Thinking about the time since your 18th birthday, have you ever had sex with a person you paid or who paid you for sex?

Yes	1
No	2

While Married

11. Have you ever had sex with someone other than your husband or wife while you were married?

Yes 1
No 2
Never Married 3

Most Recent Sexual Experience

12. The last time you had sex, was a condom used? By "sex" we mean vaginal, oral, or anal sex.

Yes, the last time I had sex, a condom was used 1
No, the last time I had sex, a condom was not used 2

---

13. The last time you had sex, was it with someone you were in an on-going relationship with, or was it with someone else? Remember that by "sex" we mean only vaginal, oral, or anal sex.

Yes, the last time I had sex, it was with someone I was in an on-going relationship with . . 1

No, the last time I had sex, it was not with someone I was in an on-going relationship with . . 2

14. Have you ever, even once, taken any drugs by injection with a neddle (like heroin, cocaine, amphetamines, or steroids)...DO NOT include anything you took under a doctor's orders.

Yes . . . . . 1 (GO TO Q. 15)

No . . . . . 2 (GO TO Q. 16)

15. How long has it been since you last used a needle to inject drugs?

Within the past 30 days 1

More than 30 days ago but within the past 12 months . . 2

More than 12 months ago but within the past 3 years . . . 3

More than 3 years ago 4

Don't know 8

16. Have you ever, even once used 'crack' cocaine in chunk or rock form?

Yes . . . . . 1 (GO to Q.17)

No . . . . . 2 (DONE)

17. How Long has it been since you last used 'crack' cocaine in chunk or rock form?

Within the past 30 days 1

More than 30 days ago but within the past 12 months . . 2

More than 12 months ago but within the past 3 years . . . 3

More than 3 years ago 4

Don't know 8

THANK YOU FOR YOUR COOPERATION. PLEASE PLACE FORM IN ENVELOPE, SEAL IT, AND GIVE IT TO THE INTERVIEWER. IF NO INTERVIEWER IS PRESENT, PLEASE DROP SEALED ENVELOPE IN A MAILBOX.

Appendix 2: Detailed Response Rates on General Social Survey

NON-RESPONSE RATES ON THE 1975-1998 GENERAL SOCIAL SURVEYS
(Full Probability Samples Only)

Disposition of Cases	Surveys											
	1975	1976	1977	1978	1980	1982	1982B	1983	1984	1985	1986	1987
A. Original Sample	1102	1113	2317	2344	2210	2221	2900	2222	2157	2201	2192	2250
B. -Out of Sample	11	16	0	20	1	0	2258[a]	3	0	0	0	0
C. -Not a Dwelling Unit	116-	43	126	93	130	117	219	84	77	45	73	77
D. -Vacant		74	217	190	197	245		172	197	227	176	206
E. -Language Problem	27	33	54	59	46	46	6	31	52	28	49	43
F. +New Dwelling Unit	24	44	79	102	97	129	77	82	42	47	50	21
G. Net Sample	972	991	1999	2084	1933	1942	494	2014	1873	1948	1944	1945
H. Completed Cases	735	744	1530	1532	1468	1506	354	1599	1473	1534	1470	1466
I. Refusals	162	-206	339	-417	309	297	66	320	320	344	365	358-
J. Break-offs	2		7									
K. No one Home to Complete Screener	22		54	48	30	41	-56	17	-49	23	22	46
L. R Unavailable Entire Field Period	13	- 41	26	22	38	23		18		8	13	20
M. Ill	12		43-	21	37	75	18	60	31	39	74	55
N. Other	26			44	51							
G. Net Sample	972	991	1999	2084	1933	1942	494	2014	1873	1948	1944	1945
Response Rate (H/G)[b]	.756	.751	.765	.735	.759	.775	.717	.794	.786	.787	.756	.754
Refusal[c] Rate (I+J/G)	.169	.208	.173	.200	.160	.153	.134	.159	.171	.177	.188	.184
Unavailable Rate (K+L/G)	.036	--	.040	.034	.035	.033	.113	.017	.026	.016	.018	.034
Other Rate (M+N/G)	.039	--	.022	.031	.046	.039	.036	.030	.017	.020	.038	.028

[a] Includes screened households with no Blacks.
[b] This corresponds to RR5 (response rate 5) in the American Association for Public Opinion Research's Standard Definitions of the Final Dispositions of Case Codes and Outcome Rates for RDD Telephone Surveys and In-Person Household Surveys (1998).
[c] Refusal rate 3 in AAPOR's Standards.

Appendix 2 (continued)

NON-RESPONSE RATES ON THE 1975-2002 GENERAL SOCIAL SURVEYS
(Full Probability Samples Only)

Disposition of Cases	Surveys										
	1987B	1988	1989	1990	1991	1993	1994	1996	1998	2000	2002
A. Original Sample	4750	2250	2250	2165	2312	2296	4559	4559	4567	4883	4890
B. -Out of Sample	3916a	0	2	0	0	0	0	1	0	0	0
C. -Not a Dwelling Unit	106	78	57	70	85	65	103	158	158	242	152
D. -Vacant	328	261	212	232	256	246	524	493	573	531	622
E. -Language Problem	0	52	72	47	67	66	143	136	146	178	209
F. +New Dwelling Unit	42	57	74	41	46	31	57	43	55	94	36
G. Net Sample	442	1916	1981	1857	1950	1950	3846	3814	3745	4026	3943
H. Completed Cases	353	1481	1537	1372	1517	1606	2992	2904	2832	2817	2765
I. Refusals	57-	359-	346-	355-	323-	285-	708-	757-	755-	1044-	1031-
J. Break-offs											
K. No one Home to Complete Screener	5	19	26	61	54-	18-	18-	60-	66-	97-	59-
L. R Unavailable Entire Field Period	3	7	8	15							
M. Ill	24	50	59	54	56	41	128	93	92	68	88
N. Other											
G. Net Sample	442	1916	1981	1857	1950	1950	3846	3814	3745	4026	3943
Response Rate (H/G)	.799	.773	.776	.739	.778	.824	.778	.761	.756	.700	.701
Refusal Rate (I+J/G)	.129	.187	.175	.191	.166	.146	.184	.198	.202	.259	.261
Unavailable Rate (K+L/G)	.018	.014	.017	.041	.028	.009	.005	.016	.018	.024	.015
Other Rate (M+N/G)	.054	.026	.030	.029	.029	.021	.033	.024	.025	.017	.022

[a]Includes screened households with no Blacks.

Appendix 3

Questions on Number of Sexual Partners

A. Canada

How many sexual partners have you had in the past five years?
During the last five years have you had sex with men only, with men and women, or with women only?
In the last five years, with how many men have you had sex?
In the last five years, with how many women have you had sex?

B. Great Britain

These question are about the number of people you have had sex with at different times in your life. Please include everyone you have had sex with, whether it was just once, a few times, a regular partner, or your husband/wife.
Be as accurate as you can: enter '0' if none; give your best estimate if you can't remember exactly.

Altogether in your life, so far, with how many men/women have you had sexual intercourse (vaginal, oral, or anal)?
WRITE IN THE NUMBER_____

IF ANY
Please tick whether the number above is...

the exact number [ ]
or, your best guess [ ]

And with how many men/women have you had sexual intercourse...

in the last 5 years? _____
in the last 2 years? _____
in the last year? _____
in the last 6 months? _____
in the last 3 months? _____

C. Norway
Har du hatt noen form for seksuelt samvaer med personer av samme kjonn som deg selv?
[Have you had some form of sex together with person of same gender as yourself?]
Har du noen gang hatt samleie?
[Have you at no time had intercourse?]
Omtrent hvor mange seksualpartnere har du tilsammen hatt inntil ha? (medregnet eventuelle ektefeller/samboere)
Oppgi antall |___|___|___|
[About how many sexual partners have you altogether had so far? (including eventual spouses/partners)
Give number |__|__|__|]

D. United States

NORC, 1970
How old were you the first time you had sexual activity with someone of the opposite sex, when either you or your partner came to sexual climax? (If the first time was when you got married, please give your age at that time.) This includes other sexual activity, as well as intercourse, if one of you had a climax (orgasm).
If ever heterosexual sex:
Did you ever have this experience before you were married?
If "Yes":
With how many persons altogether did you have this sexual experience before you were married? (If it happened with your husband or wife before you were first married, this counts as one person, too.)

NORC-GSS, 1988+
How many sex partners have you had in the last 12 months?
0/1/2/3/4/5-10/11-20/21-100/more than 100
Have your sex partners in the last 12 months been exclusively male, both male and female, [or] exclusively female?

NORC-GSS, 1989+
As in NORC-GSS, 1988 for last 12 months.
Now thinking about the time since your 18th birthday (including the past 12 months) how many female partners have you ever had sex with?
Now thinking about the time since your 18th birthday (including the past 12 months) how many male partners have you ever had sex with?