

# Volunteer Bias in Sexuality Research Using College Student Participants

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*Volunteer bias in sexuality research employing college student samples has been documented in previous research. In the current study, such potential volunteer bias was further investigated, as was respondents' self-reported level of emotional discomfort during participation. College student men (n = 310) and women (n = 399) completed an anonymous questionnaire and were asked to indicate their willingness to volunteer for a similar questionnaire study, a study involving similar questions but administered in a face-to-face interview, and a study in which sexually explicit videos would be viewed. Nearly all of the men and women indicated willingness to participate in a similar questionnaire study, but more men than women were willing to participate in the other two studies. Of these two proposed studies, men were more interested in participating in the video study whereas women were more interested in participating in the interview study. Compared to nonvolunteers, volunteers for either study were generally more sexually experienced, held less traditional sexual attitudes, scored higher on measures of sexual esteem and sexual sensation seeking, and indicated greater tendencies toward interpersonal exploitation and self-monitoring of expressive behavior. A minority indicated some discomfort while completing the current questionnaire. However, discomfort was unrelated to gender or willingness to participate in future studies.*

Given the private and sensitive nature of sexual information, researchers typically must rely on self-report (Turner, Danella, & Rogers, 1995). Recruiting potential respondents ultimately results in a sample which is less than completely representative of the larger population, thus opening the door for potential volunteer bias (Brecher & Brecher, 1986). To the extent that nonvolunteers systematically differ from volunteers, the data generated are potentially biased (see Catania, Binson, Van der Straten, & Stone, 1995; Catania, Gibson, Chitwood, & Coates, 1990, for reviews of research on volunteer bias in sexuality research).

Others have long noted the apparent reliance on college student participants in psychological research (e.g., Jung, 1969; Smart, 1966), and a recent review indicated that one-half of reports of sexuality research published since 1971 have been based on such student participants (Wiederman, in press), probably because of convenience. What about volunteer bias and college student research participants? One can argue that college students are not representative of adults (Jung, 1969; Smart, 1966). To the extent that college student volunteers for sexuality research are not representative of even the college student population, the validity of such research may be even more suspect than researchers believe.

Nearly 25 years ago, Griffith and Walker (1976) demonstrated that, when given hypothetical experiments for which to volunteer, college students who chose a sexuality study were less inhibited and displayed less sex guilt compared to students who did not volunteer. Subsequently, Catania, McDermott, and Pollack (1986) had college students in introductory social science classes complete self-

administered questionnaires, after which they were asked to indicate their potential interest in volunteering for an upcoming study that might be conducted by a member of the research team. The upcoming study was said to involve face-to-face interviews concerning the respondent's sexual attitudes and experiences. Relative to nonvolunteers, those students who volunteered for the interviews were more comfortable with personal disclosure and had more varied sexual experience, although there were no differences between the groups with regard to age, lifetime number of sex partners, current frequency of sexual activity, or number of sexual problems.

Strassberg and Lowe (1995) asked a large sample of college students participating in a self-administered questionnaire study involving sexuality to indicate whether each would be willing to participate in any or all of three additional studies: one involved a face-to-face interview with a same-gender researcher, another involved viewing sexually explicit videos and reporting reactions to them, and the third involved being connected to physiological instruments to measure sexual arousal to sexually explicit videos. Differences between volunteers and nonvolunteers were consistent across each type of study: Compared to nonvolunteers, volunteers displayed less sex guilt and higher levels of sexual experience.

Instead of asking students to indicate hypothetical interest in a future study, two sets of researchers actually manipulated the nature of the study for which students were supposedly volunteering. Saunders, Fisher, Hewitt, and Clayton (1985) posted sign-up sheets describing either a study involving completion of personality questionnaires or a study involving responses to erotica. In both studies, however, students were asked to watch a brief, sexually explicit film and anonymously report their affective reactions. Interestingly, male volunteers for each type of study

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did not differ with regard to sexual attitudes (i.e., erotophilia) or affective reactions to the erotic film. Female volunteers for the personality study, however, were more erotophobic and indicated more negative affective reactions to the film relative to female volunteers for the erotica study.

Bogaert (1996) took a similar approach in recruiting college student men by utilizing two different sign-up sheets. One was for a study involving "Personality and Film Pretesting" whereas the sign-up sheet used the following semester was for a study labeled "Hormones, Personality, Sexuality, and Sexual Films." In reality, volunteers for both studies completed the same questionnaire packet (none were exposed to erotica). Compared to the other group, men who explicitly volunteered for the sexuality study scored higher on measures of delinquency, hypermasculinity, sensation seeking, erotophilia, and attraction to sexual novelty, and reported a greater variety of sexual experiences with a greater number of partners. However, the two groups did not differ with regard to aggression, sexual aggression, altruism, dominance, current frequency of sexual intercourse, or age at first masturbation or first orgasm.

Although not consistent, recent studies examining volunteer bias in sexuality research conducted with college students generally support the notion that volunteers differ from nonvolunteers in some important ways, with volunteers being more sexually liberal and more sexually experienced when differences are found (Catania et al., 1995). Given this state of affairs, sexuality researchers should minimize the extent to which potential college student research participants have the opportunity to self-select. However, Institutional Review Boards (IRBs), who are responsible for approving research projects involving human participants, are often concerned about the perceived sensitive nature of sexuality research and frequently require researchers to provide a description of the study at the point of initial volunteering (Wiederman, in press). The IRB concerns seem to be that participation in a sexuality study may be uncomfortable for potential participants, and such participation may cause some emotional harm (Mosher, 1988; Wiederman, in press). What does research reveal about discomfort during participation in sexuality research?

Saunders et al. (1985) asked respondents to indicate agreement or disagreement with several statements subsequent to participating in the study. Regardless of the method of recruitment, more men (83%) than women (56%) indicated that they would participate in a similar study the following week. The responses to the remaining items indicated generally positive views by participants. For example, 95% of participants agreed that it was appropriate for college students to participate, and only 4% agreed that the study was too offensive to be conducted. Measures of affect immediately after participating in the study revealed the same level of positive emotion as had been measured immediately prior to participating.

I am aware of only one other study in which college student responses to participation in sexuality research was examined. Abramson (1977) conducted a study involving

40 men and 40 women from an introductory psychology subject pool. Participation was extensive and involved completing an anonymous questionnaire regarding sexual experiences and attitudes, reading an erotic story and rating one's subsequent sexual arousal, being secretly observed in a waiting room containing sexually explicit magazines, responding to double-entendre words, and being tested for retention of information presented on reproductive biology. Subsequent to participating in all phases of the study, participants were invited to attend a debriefing session. Afterwards, Abramson also had participants complete an anonymous questionnaire regarding their perceptions of having participated in the project. Based on the results, Abramson concluded that

... participation was viewed as an enjoyable learning experience which produced no negative aftereffects. In fact, the overwhelming agreement among subjects indicates that the measures employed to safeguard ethical requirements were sufficient to induce a very positive regard for the experimental procedures. It is also interesting to note that not a single subject felt that any part of this experiment was a serious invasion of privacy (p. 189).

These results are encouraging, but most sex researchers do not provide the extensive debriefing/educational session Abramson did (Perry & Abramson, 1980). Also, one cannot generalize to the student subject pool at large because Abramson's participants initially volunteered for a study advertised as having to do with sexual attitudes and behavior.

The current study was conducted to examine several issues, including further investigation of potential volunteer bias in sexuality research based on college student samples. Past studies have used a limited number of measures to explore potential differences between volunteers and nonvolunteers (typically sex guilt, erotophobia, and basic sexual experience), and have been limited in other ways. For example, in Strassberg and Lowe's (1995) study, initial respondents were probably self-selected due to their having volunteered for a "study involving questionnaires on sexual attitudes, sexual knowledge, personal sexual experiences, and personal (nonsexual) beliefs" (p. 372). In Bogaert's (1996) study only male college students were utilized. Also, the nonvolunteers in both Bogaert's and Saunders et al.'s (1985) studies had signed up to participate in a study on personality, which likely resulted in some degree of self-selection for more extraverted participants (Jackson, Procidano, & Cohen, 1989; Silverman & Margulis, 1973).

In the current study I investigated whether volunteer bias was related to gender, age, religiosity, sexual attitudes, sexual esteem, sexual sensation seeking, and basic sexual experience, as well as the more general personality traits of self-perceived ability to exploit others and propensity toward self-monitoring of expressive behavior. These latter two constructs were included because each is potentially related to self-presentation bias in that individuals who score relatively high on either may be more likely to distort their responses to researchers in an attempt to present themselves in a particular light or to achieve a particular end.

In addition to examining potential volunteer bias, I sought some indication of the extent of emotional discomfort the college student respondents experienced during participation. In that way, I sought to determine whether global discomfort in response to completing a sexuality questionnaire was related to willingness to participate in future sexuality studies (i.e., volunteering).

## METHOD

### Participants

Participants were 310 men and 399 women enrolled in introductory psychology courses at Ball State University, which has an annual enrollment of approximately 19,000 students. Each participant received partial credit toward completion of the introductory psychology course. Introductory Psychology is one option for students to fulfill a particular General Education requirement; thus, students from all majors take the course. Respondents ranged in age from 18 to 45 years ( $M = 19.20$ ,  $SD = 2.25$ ), with 88.2% of the respondents falling between 18 and 20 years of age. The large majority (88.9%) of respondents were White, 7.3% were Black, and the remaining 3.8% indicated Hispanic, Asian, or "Other." The age and ethnic profile of the sample closely matched those of the student body as a whole.

### Measures

*Demographics and Religiosity.* In addition to basic demographic items covering gender, age, and ethnicity, respondents were asked to indicate the number of religious services attended in a typical year. Respondents were also asked to indicate the importance of religion in their own life, using a 7-point scale (ranging from 1 = *Not at all Important* to 7 = *Extremely Important*), as well as the importance of religion in making decisions about their own life (using the same scale). Responses to each of these three items were converted into a Z score and the mean of the three Z scores served as a composite measure of religiosity. The internal consistency coefficient (Cronbach's alpha) for this composite measure was .81.

*Exploiteness and Self-Monitoring.* Respondents completed the Exploiteness subscale from Raskin and Terry's (1988) Narcissistic Personality Inventory. Respondents indicated their degree of agreement with each of five statements using a 5-point scale (ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*). An overall score is generated by summing across items, with higher scores indicating relatively greater self-perceived ability to manipulate others. A sample item is "I can make anyone believe anything I want them to." The internal consistency coefficient was .81.

Participants also completed the 18-item revised Self-Monitoring Scale (Snyder & Gangestad, 1986) by indicating whether each of the items was true or false as a self-description. The overall score consists of the number of items endorsed in the scored direction and high scores indicate a greater tendency to engage in self-monitoring of expressive behavior. Self-monitoring refers to the degree to

which the individual tends to regulate self-presentation for the sake of desired public appearances (Snyder, 1979, 1987). High self-monitoring individuals are said to exhibit relatively greater responsiveness to social and interpersonal cues of situationally appropriate performance, whereas the expressive behavior of low self-monitoring individuals is said to more closely reflect enduring and momentary inner states, including the individual's attitudes, traits, and feelings (Snyder & Gangestad, 1986). A sample item is "I'm not always the person I appear to be." The internal consistency coefficient for this measure was .69.

*Sexual Attitudes.* Respondents completed the 8-item Sex-Love-Marriage (SLM) Association Scale (Weis, Slosnerick, Cate, & Sollie, 1986) which purportedly measures the extent to which the respondent associates sex, love, and marriage as belonging together. Respondents indicated their degree of agreement with each of the statements using a 5-point scale (see above). An overall score is generated by summing across items, with higher scores indicating relatively greater sex-love-marriage association beliefs. The scale has been shown to be predictive of conservative attitudes toward sexual relationships (Weis et al., 1986). A sample item is "Sexual intercourse is better—more enjoyable, intense, and satisfying—when the partners are married to each other." The internal consistency coefficient for this measure was .72.

*Sexual esteem.* Sexual esteem, or the tendency to evaluate oneself positively as a sexual partner, was measured with the short form (Wiederman & Allgeier, 1993) of the sexual esteem scale from Snell and Papini (1989). Respondents indicated their degree of agreement with each of the five statements using a 5-point scale (see above). An overall score is generated by summing across items, with higher scores indicating relatively greater sexual esteem. A sample item is "I think of myself as a good sexual partner." The internal consistency coefficient for this measure was .87.

*Sexual Sensation Seeking.* Respondents completed the sexual sensation seeking subscale from Kalichman and Rompa (1995). Respondents indicated their degree of agreement with each of the seven statements using a 4-point scale (ranging from 1 = *Not at All Like Me* to 4 = *Very Much Like Me*). An overall score is generated by summing across items, with higher scores indicating relatively greater tendencies toward seeking out new and varied sexual experiences and taking sexual risks. A sample item is "I am interested in trying out new sexual experiences." The internal consistency coefficient was .82.

*Sexual Experience.* Respondents were presented with separate questions asking whether she or he had "ever experienced oral sex performed on you (another person's mouth stimulating your genitals)," "ever performed oral sex (your mouth stimulating someone's genitals)," and "ever experienced sexual intercourse (penis in vagina)." Respondents who had had sexual intercourse were asked their age at first experience.

*Emotional Discomfort During Participation.* After completing all measures, but before indicating interest in vol-

unteering for hypothetical studies in the future, respondents were asked to rate their "comfort level" while participating in the study using a 5-point scale (ranging from 1 = *Very Uncomfortable* to 3 = *Not Really Affected* to 5 = *Very Comfortable*).

*Hypothetical Volunteering.* Last, respondents were asked to indicate (*yes/no*) whether she or he "would participate in another sexuality study involving an anonymous questionnaire if given the opportunity to do so in the future," "would participate in a study similar to this one if you were interviewed one-to-one by a research assistant the same gender as yourself," and "would participate in a study that involved viewing sexually explicit videos (portraying nudity and sexual activity) and completing questionnaires on your reactions to them."

### Procedure

All respondents were recruited through the course subject pool during September-November, 1996. There are several hundred students involved in the subject pool each semester, and each is required to earn 4-1/2 hours of research credit. As is the case with all studies conducted using this pool, potential participants were unaware of the nature of the study at the time of initial sign-up. The sign-up sheet simply provided an experiment number, the location of the study, and the fact that participation was worth one hour of credit.

Upon arriving at the testing site students learned of the nature of the study through a script read to the participants by a female undergraduate research assistant. The script emphasized that students had the option of leaving with partial credit or pretending to complete the measures and earning credit despite turning them in blank. None of the students declined to participate. Respondents completed the anonymous questionnaires in mixed-gender groups of 5 to 20 participants in the presence of the research assistant, who monitored the sessions and instructed participants not to talk during participation. Upon completion of the questionnaire, which typically took 30-45 minutes, respondents placed the survey in a large box separated from the researcher by several feet, were thanked, and received a signature on their credit slip verifying participation.

### RESULTS

The rates of volunteering for each of the three hypothetical studies are presented in Table 1 by gender. Note that nearly all participants indicated that they would participate in a similar questionnaire study. The majority of men indicated willingness to participate in the other two types of sexuality studies compared to about only one-half of the women indicating such willingness. Also, more men indicated a willingness to participate in the sexually explicit video study than in the interview study ( $Z = 3.53, p < .001$ ), whereas more women indicated a willingness to participate in the interview study than in the sexually explicit video study ( $Z = 1.99, p < .02$ ). Overall, many more men than women indicated willingness to volunteer for all 3 studies ( $Z = 7.35, p < .001$ ).

**Table 1. Rates of Volunteering as a Function of Respondent Gender**

	Women ( <i>n</i> = 399)	Men ( <i>n</i> = 310)	$\chi^2$
Questionnaire Study	94.7%	97.4%	3.20
Interview Study	57.4%	70.3%	12.52*
Sexually Explicit Video Study	50.4%	81.3%	72.27*
Volunteered for:			
None of the studies	4.8%	1.9%	
1 study	24.1%	10.0%	
2 studies	35.1%	25.2%	
All 3 studies	36.1%	62.9%	

\*  $p < .001$ .

Of those men ( $n = 31$ ) and women ( $n = 96$ ) who indicated a willingness to volunteer for only one of the studies, nearly all of the men (93.5%) and women (97.9%) reported willingness to volunteer for the questionnaire study. Of those men ( $n = 78$ ) and women ( $n = 140$ ) who indicated a willingness to volunteer for two of the three studies, all of the men and women reported willingness to volunteer for the questionnaire study. A gender difference emerged, however, with regard to the other study for which these respondents would volunteer. The majority of such men (71.8%) chose the sexually explicit videos study, whereas the majority of women (60.0%) chose the interview study.  $\chi^2(1, N = 218) = 20.27, p < .001$ .

What about potential differences between volunteers and nonvolunteers? With regard to the questionnaire study, too few respondents indicated a lack of willingness to volunteer to permit comparison with volunteers. To test for differences between volunteers and nonvolunteers for the other two types of studies, a series of analyses of variance (ANOVAs) was performed using gender and volunteer status as independent variables. The only statistically significant interaction between gender and volunteer status occurred for the interview study with regard to respondent age,  $F(1,704) = 10.18, p < .001$ . Men volunteers were somewhat older than nonvolunteers (19.89 vs. 19.11 years), whereas women volunteers were somewhat younger than nonvolunteers (18.69 vs. 19.04 years). With regard to age and volunteering for the sexually explicit video study, there were no main effects,  $F(1,704) = 2.95, p < .09$ .

There were main effects for volunteer status for each of the remaining variables, with the exception of religiosity and volunteering for the interview study. To illustrate these main effects, means and standard deviations are presented in Table 2 as a function of volunteer status. Compared to nonvolunteers, those men and women who indicated a willingness to volunteer for either study scored higher on self-monitoring, exploitiveness, sexual esteem, and sexual sensation seeking, and scored lower on sex-love-marriage association beliefs.

Sexual experience is presented in Table 3 by gender and volunteer status. For both men and women, volunteers were more likely than nonvolunteers to have had sexual

**Table 2. Comparison of Volunteers and Nonvolunteers**

	Volunteers		Nonvolunteers		<i>F</i> (1,707)
	Mean	( <i>SD</i> )	Mean	( <i>SD</i> )	
Interview Study:					
Religiosity	-.03	(.87)	.05	(.82)	1.72
Self-Monitoring	10.06	(3.44)	9.12	(3.29)	12.84**
Exploiteness	16.80	(3.68)	15.75	(3.48)	13.95**
Sex-Love-Marriage					
Association	26.33	(5.42)	27.44	(4.82)	7.51*
Sexual Esteem	19.21	(3.49)	17.86	(3.29)	25.59**
Sexual Sensation					
Seeking	26.80	(6.47)	24.12	(6.15)	28.75**
Sexually Explicit Video Study:					
Religiosity	-.12	(.81)	.20	(.88)	23.50**
Self-Monitoring	10.11	(3.44)	9.01	(3.25)	17.52**
Exploiteness	16.98	(3.61)	15.40	(3.48)	31.99**
Sex-Love-Marriage					
Association	25.76	(5.29)	28.47	(4.65)	46.63**
Sexual Esteem	19.30	(3.38)	17.68	(3.41)	37.62**
Sexual Sensation					
Seeking	27.67	(6.13)	22.46	(5.70)	23.88**

\*  $p < .01$ . \*\*  $p < .001$ .

intercourse and to have performed and received oral sex, with one exception. Women volunteers for the interview study did not differ from nonvolunteers with regard to likelihood of having received oral sex. Among those who had had coitus, volunteers for the interview study had started at an earlier age ( $M = 15.98$ ,  $SD = 1.84$ ) compared to nonvolunteers ( $M = 16.59$ ,  $SD = 1.53$ ),  $F(1,532) = 14.53$ ,  $p < .0002$ . There was no such age difference for the sexually explicit video study,  $F(1,530) = 1.02$ ,  $p < .32$ .

Last, I examined ratings of comfort or discomfort during completion of the questionnaire. The mean ratings for men ( $M = 3.59$ ,  $SD = 1.36$ ) and women ( $M = 3.40$ ,  $SD = 1.33$ ) were very similar and were slightly above the midpoint of the scale. However, only a minority of men (19.7%) and women (24.3%) indicated some discomfort (a 1 or 2 on the 5-point scale), and there was no gender difference in these proportions,  $\chi^2(1, N = 709) = 2.16$ ,  $p < .15$ .

Was feeling uncomfortable predictive of not volunteering? For men, incidence of discomfort did not differ between volunteers (17.9%) and nonvolunteers (23.9%) for the interview study [ $\chi^2(1, N = 310) = 1.48$ ,  $p < .23$ ], or between volunteers (19.4%) and nonvolunteers (20.7%) for the sexually explicit video study [ $\chi^2(1, N = 310) = .05$ ,  $p < .83$ ]. Similarly, incidence of discomfort did not differ between women volunteers (21.4%) and nonvolunteers (28.2%) for the interview study [ $\chi^2(1, N = 399) = 2.48$ ,  $p < .12$ ]. However, somewhat more women nonvolunteers (28.8%) than volunteers (19.9%) for the sexually explicit video study indicated discomfort while completing the questionnaire [ $\chi^2(1, N = 399) = 4.28$ ,  $p < .04$ ].

**Table 3. Sexual Experience as a Function of Volunteer Status**

	Volunteers		$\chi^2$
	Volunteers	Nonvolunteers	
Interview Study			
Ever had sexual intercourse:			
Men ( $n = 306$ )	85.1%	71.4%	7.80**
Women ( $n = 397$ )	76.4%	67.3%	4.08*
Ever performed oral sex:			
Men ( $n = 309$ )	81.6%	65.2%	9.66**
Women ( $n = 399$ )	80.3%	68.2%	7.68**
Ever received oral sex:			
Men ( $n = 309$ )	91.7%	69.6%	24.99***
Women ( $n = 399$ )	79.5%	74.7%	1.27
Sexually Explicit Video Study			
Ever had sexual intercourse:			
Men ( $n = 306$ )	85.1%	63.2%	14.59***
Women ( $n = 397$ )	79.5%	65.5%	9.79**
Ever performed oral sex:			
Men ( $n = 309$ )	82.9%	49.1%	29.74***
Women ( $n = 399$ )	81.1%	69.2%	7.57**
Ever received oral sex:			
Men ( $n = 309$ )	89.3%	66.7%	18.77***
Women ( $n = 399$ )	84.6%	70.2%	11.80***

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## DISCUSSION

College student participants in the current research volunteered for a study blind as to the content. The fact that none of the students declined to participate upon learning of the nature of participation indicates that the methodology may result in participation by some students who would actively avoid such participation if given the chance to self-select. Upon arriving at the testing site, some individuals may have decided to participate since they were already there and needed the credit.

Examination of responses to the hypothetical experiments revealed several apparent indications of volunteer bias. For both the interview and sexually explicit video studies, compared to nonvolunteers, volunteers were more likely to have had sexual intercourse, have performed oral sex, have greater tendencies toward self-monitoring and interpersonal exploitation, indicate greater sexual esteem and sexual sensations seeking, and report less traditional sexual attitudes. Interestingly, these differences between volunteers and nonvolunteers were generally consistent across gender: Male and female volunteers generally differed from nonvolunteers in the same ways.

Although the pattern of volunteer bias was generally consistent across gender and the two types of hypothetical studies, the few inconsistencies point to some potentially important differences in the types of participants who volunteer for studies involving face-to-face disclosure of personal, sexual information versus those who volunteer for studies involving exposure to sexually explicit stimuli. For example, volunteers and nonvolunteers for the interview study did *not* differ with regard to religiosity, but volun-

teers and nonvolunteers for the sexually explicit video study did differ with regard to religiosity. Apparently, in the first instance one could respond to questions regarding sexual attitudes and experiences without violating one's religious beliefs regarding appropriate conduct, but willingly viewing videos involving explicit sexual activity would be problematic for at least some of the religious college students in the current sample. Although the focus of both the interview and sexually explicit video studies is sexuality, the nature of the task and the stimuli involved result in differential effects of religiosity on willingness to volunteer for participation.

Similarly, among those students who had had sexual intercourse, volunteers for the interview study started at an earlier age relative to nonvolunteers. However, volunteers and nonvolunteers for the sexually explicit video study did not differ with regard to age at first intercourse. It appears that willingness to engage in a face-to-face interview regarding one's own sexual experience may be related to one's actual sexual experiences in ways that willingness to view sexually explicit videos for research purposes is not.

The nature of the research task is also relevant to consideration of the implications of volunteer bias in sex research. That is, the type of volunteer bias demonstrated in previous research as well as the current study has obvious implications for research aimed at assessment of the prevalence or frequency of particular sexual behaviors. Volunteers will generally report more sexual experience than the population as a whole. The implications of college student volunteer bias with regard to experimental research, or survey research in which relationships among variables are the focus, is more ambiguous. Brecher and Brecher (1986) argued that volunteer bias is less of an issue in these latter instances, as hypothesized relationships among variables should emerge even though the sample is not representative of the population.

The results of the current study, as well as previous research, throw doubt on this conclusion. For example, recall that Saunders et al. (1985) found that women (but not men) who had not volunteered for a sexually explicit study indicated greater negative affect in response to the sexually explicit film. Similarly, women (but not men) in the current study who would not volunteer for a sexually explicit video study indicated greater discomfort while completing the anonymous questionnaire. Researchers investigating responses to sexually explicit stimuli, and the relationship between such responses and other variables, may arrive at inaccurate conclusions, at least regarding women.

If volunteers for sexuality studies represent a skewed sample, many variables of potential interest, such as erotophilia and sexual experience, will demonstrate a relatively restricted range. Traditionally, restricted range is associated with a decreased likelihood of finding statistically significant relationships with other variables. However, it also may be the case that studying relatively

biased samples of college students results in inaccurate characterizations of the *nature* of relationships between relevant variables. For example, Hynie and Lydon (1996) found that, among women who scored relatively high on erotophilia, erotophilia scores were negatively related to consistency of contraceptive use. However, among women who scored relatively low on erotophilia, such scores were positively related to contraceptive consistency. So, there may be effects of unrepresentative samples in sexuality research that are just now starting to be appreciated.

Although gender rarely qualified the differences between volunteers and nonvolunteers, gender was notably related to willingness to volunteer. Men were more likely than women to volunteer for the interview study and/or sexually explicit video study. Also, men found the sexually explicit video study the more attractive of the two options, whereas women indicated a greater willingness to be interviewed about their sexual attitudes and experiences than to watch sexually explicit videos and report their reactions. Others have noted the gender discrepancy with regard to willingness to expose oneself to sexually explicit media (e.g., Kenrick, Stringfield, Wagenhals, Dahl, & Ransdell, 1980; Saunders et al., 1985), and the same gender discrepancy found in the current study has important implications for researchers using college student participants and sexually explicit stimuli. To the extent that potential research participants are aware of the sexually explicit nature of the study at the point of initial recruitment, the resulting sample is liable to be extremely unrepresentative of the women in the larger population.

The current results, indicating that college student volunteers for sexuality research may be more sexually experienced and less traditional with regard to sexual attitudes, are consistent with previous research (Catania et al., 1995). The current study was the first, however, to document that such volunteers evaluate themselves more highly as sexual partners (i.e., have high sexual esteem) and indicate a greater ability to manipulate others and a tendency to self-monitor their behavior to match perceived social demands in comparison to their nonvolunteer peers. The implication for sexuality research is unclear, but it may be that these characteristics of volunteers make them less reliable informants of their own attitudes and experiences. That is, volunteers who perceive themselves as good sex partners and relatively more able to deceive and manipulate others (including researchers?) may be more likely to provide socially desirable responses.

Siegrist (1996) found that respondents who were more self-conscious completed attitude measures more consistently (had higher internal consistency coefficients) compared to their less self-conscious peers. As individuals who are high on self-monitoring have been shown to be more prone to alter their behavior, verbal and otherwise, in response to social environmental conditions (Snyder, 1979, 1987; Snyder & Gangestad, 1986), it may be that volunteers for sexuality research, who score relatively high

on self-monitoring, are thus more prone to social desirability response bias. Indeed, Mellema and Bassili (1995) found that respondents high in self-monitoring showed relatively less congruence between their values and attitudes.

Of course the current study has inherent limitations and methodological issues that need to be considered. For example, college students themselves are not a representative sample of adults, or even of adults their own age. Students who take Introductory Psychology are only a subset of college students enrolled at any particular university. Also, the current sample, as is true of Ball State University in general, was largely Caucasian, making generalization to other ethnic groups problematic. Like most college student samples, sampling introductory college students at Ball State University results in a rather select group of respondents.

Additionally, the respondents indicated willingness to participate in hypothetical studies. The extent to which expressed willingness translates into actual behavior is unknown. In this regard, it is interesting to note, however, that the percentages of men (81%) and women (50%) in the current study who indicated willingness to volunteer for the sexually explicit video study were remarkably similar to the percentages of men (83%) and women (56%) who *actually* volunteered for such a study (Saunders et al., 1985).

All participants completed the measures in the presence of a female research assistant. The extent to which the sex of the researcher may have influenced respondents' perceptions of the research and expressed willingness to participate in future studies is unknown. However, past research suggests that, if anything, a female researcher may have fostered greater comfort and cooperation from female participants than if the researcher had been male (Abramson & Handschumacher, 1978; Nederhof, 1981). A male research assistant may have resulted in even larger gender discrepancies in comfort and willingness to participate, although this is an empirical question left for further study.

Last, in the current study, respondents were presented with all three hypothetical choices for volunteering, and these were presented in a fixed order. The extent to which there were possible order effects, such that consideration of volunteering for one type of study affected volunteering for subsequently listed studies, remains unknown. In future research, investigators could circumvent this issue by balancing the order of presentation of the hypothetical studies, or present only one study per respondent (i.e., a true between-subjects design).

In summary, researchers should devote more attention to empirical investigation of the factors influencing peoples' decisions to participate in sexuality research, the cognitive and emotional reactions participants have to sexuality studies, and any possible effects (both positive and negative) of participating. Although volunteer bias per se has been fairly well documented, information on these more specific topics remains sparse. A fuller understanding of

volunteer bias and participant reactions in research is a prerequisite to valid, ongoing study in human sexuality.

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