Sex, Gender and Discordant Reporting Among Adolescents in Urban India

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Introduction

Many adults find it difficult to acknowledge adolescents as sexual beings, and therefore adolescent sexuality is viewed as something that must be controlled and restrained [1 2]. Hence, it is difficult for young people to express their concerns related to sexual behavior [3]. At the same time, there are 1.2 billion young people who comprise the largest youth cohort in the history [4].They are at increased risk of acquiring HIV and account for nearly half of the new cases of HIV infection worldwide. These data underscore an urgent need for designing and identifying appropriate modes of data collection on sexual behaviors of young people [5]. India has 230 million adolescents [6 7] and trends suggest an increasing incidence of HIV infection particularly among the youth. In tandem with the need for accurate information on sexual behaviors of youth, there have been a growing number of methodological experiments to compare reporting of these behaviors by young people across different interview modes in diverse geographical settings. However, very few studies have examined why young people report discordantly across different interview modes [8].

In this paper, we use data on unmarried adolescents (ages 15-19) from a randomized crossover trial in disadvantaged neighborhoods in Delhi, India to determine discordance in reporting sexual behaviors on three different interview methodologies. Specifically, we examine the levels and potential explanatory factors for discordant reporting.

Background

Sexual behaviors are often underreported among adolescents; however, the influence of issues such as privacy, confidentiality, familiarity and comfort with an interview mode vary by the population under study [9-12]. Face-to-face interviews are the most frequently used methodology to obtain information on adolescent sexual behaviors. However, this

methodology may lead to underreporting due to concerns about privacy and confidentiality, fear of judgment from interviewers and social desirability bias [9 10 13].

Computerized interviewing is gaining in popularity among the survey researchers as it provides completely standardized measurement system – every respondent hears the exact same question that potentially limits interviewer bias. It can also incorporate complex skip patterning, branching, consistency, range checking and efficient multilingual administration of surveys and creates an automatic dataset for immediate use [14-18]. But, ACASI does not provide the opportunity to probe for responses or elicit responses that need empathy. Respondents could potentially answer questions without giving sufficient thought to their responses or skip them [9].

Results from several studies that have used ACASI (Audio Computer Assisted Self Interviews) for collecting information on sensitive behaviors in the US and other Western countries suggest that ACASI is likely to encourage reporting of stigmatizing or illegal behaviors [15 19 18 17 14 20].

ACASI has not been used extensively in low literacy settings in developing countries. Results from a recent study in Brazil using STI biomarkers to validate reporting of sexual behaviors on ACASI and face-to-face interviews among 818 women ages 18-40 showed that ACASI led to significantly higher reporting of sexual behaviors than face-to-face interviews [21]. However, it is noteworthy that all the study participants were literate. In a study to assess feasibility of ACASI in Zimbabwe, 86% of women preferred ACASI to interviewer administered interviews. Though women with primary school or less education (53%) reported problems with computer use compared to women in higher educational groups (10-12%) [22].

Few studies consider differences in reporting of sexual behavior among adolescents or young adults based on interview method. Results from a methodological experiment in Kenya [23] suggest that ACASI produced a more diverse picture of adolescent sexual activity than the face-to-face interviews. However, in one district, researchers found that adolescent girls were significantly more likely to report having had sex in face-to-face interviews as compared to ACASI and self-administered interviews [23 24]. A recently concluded randomized field trial in Pune, India compared alternate data collection approaches [25] (ACASI, face-to-face and self-administered interviews among college students and ACASI and face-to-face interviews in slum settings) for reporting risk behaviors among 1500 unmarried 18-22 years old males. Results demonstrated that risk behaviors were reported more often on ACASI among the educated, computer literate college students but in the slum settings, the results did not consistently favor ACASI over face-to-face interviews.

Despite an increasing number of studies that compare reports of sexual behaviors across interview methodologies, there is a gap in understanding the reasons for differential reporting by interview mode. In settings like India, where pre-marital sex is taboo [3] and girls face more stigma for being sexually active before marriage [26 27], gender is likely to be a key factor in differential reporting of sexual experiences. With evidence to suggest that substantial numbers of young people are sexually active before marriage in a context where HIV epidemic is taking hold [28 29], it is essential for program managers and policy leaders to have a good understanding of nature and levels of sexual activity among youth. In this study we focus on the following two research questions:

(1) What are the levels of within individual discordance in reporting sexual behaviors between face-to-face and the other interview methods (interactive[1] or ACASI)

(2) Do sociodemographic characteristics, including gender, explain discordance in reporting?

Methods

Study design

One thousand and fifty eight unmarried adolescents (583 boys and 475 girls) from disadvantaged neighborhoods in Dakshin Puri, Delhi, India participated in the randomized trial with a planned crossover. The trial was conducted between August and November, 2004. All unmarried 15-19 year olds living in four slums of Dakshin Puri, Delhi were eligible to participate in the trial. In families with more than one eligible adolescent, all eligible adolescents were invited to participate in the trial. Parental consent was sought before enrolling adolescents and consent from adolescents was obtained just before enrolling them in the trial. The study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board and a local Institutional Review Board in India.

After obtaining signed consent, the research assistant gave each participant an envelope bearing an identification number with a slip that specified the sequence and interview modes. Every participant provided sociodemographic information followed by two interviews (a face-to-face interview and another interview, either interactive or ACASI) in a predetermined sequence. At the end, every participant reported on an exit interview in face-

[1] These were interviewer administered and included several culturally appropriate audio-visual aids. Detailed explanation later.

to-face setting[2] (Figure 1). The interviewers were matched by the sex of the participant and all the interviews were administered on the same day.

The random allocation sequence was determined by the principal investigator using Stata v7 [30]. On an average, every participant contributed 90-120 minutes. Data were manually checked and entered into Microsoft Access.

Interview Methodologies

Face-to-face interviews were developed in collaboration with Samudayik Shakti, Delhi, India and were interviewer administered. The three methodologies (face-to-face, interactive and ACASI) compared in the trial had the same questions and were pretested.

The interactive interviews were developed in collaboration with Vikalp Design, India. They were interviewer administered and were supported by several audio-visual aids. Interactive interviews included a five-segment audio drama that recreated realistic situations for young people to decrease embarrassment in reporting on issues related to sexuality. A confidential individual response sheet that was interviewer-guided but interviewer-blinded was used to ask questions on heterosexual behaviors. The response sheet had appropriate visuals to enable illiterate participants to mark their responses. The interviewer explained the questions on the master sheet while the participant followed on his/ her sheet. After marking their responses, participants folded the response sheet and dropped them into a box. The response sheet for girls is shown in Figure 2.

The ACASI software was developed by Geetika Software in India. Every question had a maximum of four responses (yes, no, do not know, and no response) that were

[2] The trial also assessed whether the order in which interviews were administered influenced participants' responses. Study participants were randomized to one of the four interview groups: (1) face-to face followed by interactive, (2) interactive followed by face-to face, (3) face-to-face followed by ACASI, and (4) ACASI followed by face-to-face. The order of administration of interview methodologies was not significantly related to the responses. Hence, for the analyses, data were collapsed by interview methodology.

represented by visual images. The participant heard the question and the responses on the headphones and had to use the mouse to click on the chosen response. The voiceover was matched by the sex of the participant. Participants could listen to a question again and modify their responses. Pretesting suggested that participants were able to use this methodology, despite minimal or no computer exposure.

Statistical and Analytic Techniques

Data were analyzed using Stata version 7.[3] We assessed whether randomization was successful by comparing sociodemographic characteristics between the two groups: 1) Interactive and face-to-face interviews and 2) ACASI and face-to-face interviews. We used matched case control analysis to assess differences in individual-level responses for the following sexual experiences:

1. Ever had sex with someone from the opposite sex
2. Ever been forcibly touched
3. Ever experienced attempted forced sex

We assessed within individual discordance in reporting on the two interview methods, face-to-face interview and the other interview mode (interactive or ACASI) on the above mentioned sexual experiences. We used McNemar's chi-square tests to compare the proportion of adolescents with discordant reports by interview methodology.

We used bivariate and multivariate logistic regression to assess whether sociodemographic characteristics help explain discordance in reporting on the three sexual experiences mentioned above. As we were particularly interested in gender differences, we ran both gender stratified and combined models.

[3] In the analysis phase, we dropped information from 5 boys and 2 girls due to irreconcilable errors in their reports on exit interviews. Hence, the data analysis uses information from 578 boys and 473 girls.

Results

The randomization plan is illustrated in Figure 1 and Table 1 shows that randomization was successful. The overall response rate was 82% (81% for boys and 83% for girls). Missing data were less than 1% except that 3.9% girls who reported on ACASI (n=232) choose not to report on the question of 'ever had sex.' Table 2 shows the distribution of the sociodemographic characteristics by gender. We find that as compared to boys, girls were significantly younger, and more likely to be not working (54% vs. 73%). Girls reported a significantly lower family income, but this may be due to less knowledge of household finances.

Discordant Reporting by Interview Methodology

The relationship between reported levels of sexual experiences and within individual discordant reporting by interview mode is illustrated in Table 3. In addition we also assess gender differences in discordant reporting. In comparing responses on face-to-face vs. interactive interviews, boys reported more sexual outcomes on the interactive methodology. Girls reported ever having sex significantly more on interactive interviews vs. face-to-face (7.1% vs. 1.7%, $p<0.01$). In the last two columns of the top panel of Table 3 we show overall discordance by gender. Among the respondents who reported on face-to-face and interactive interviews, boys were significantly more discordant than girls for reports on ever had sex (16.6% vs. 7.1%, $p<0.01$) and experienced attempted forced sex (7.9% vs. 2.5%, $p<0.05$).

In the lower panel of Table 3 we present results from reporting on face-to-face interviews and ACASI. Boys reported ever having sex more often on ACASI (27.2% vs. 21.3%, $p<0.05$), while girls more often reported being touched against their wills in face-to-

face vs. ACASI (38.5% vs. 14.3%, p<0.01). The final two columns in Table 3 in the lower panel show that levels of discordance varied significantly by gender. Among those who received both ACASI and a face-to-face interview, boys reported significantly more discordantly on ever had sex (16.4% vs. 7.8%, p<0.01) and experienced attempted forced sex (10.5% vs. 3.0%, p<0.01), while girls reported more discordantly on being touched against their wills (32% vs. 20.2%, p<0.01).

Explaining Discordance

We present results from multivariate logistic regression to explain whether gender as well as other socio-demographic characteristics explain discordance in reporting sexual experiences across interview methodologies in Tables 4 and 5. Table 4 shows results from multivariate logistic regression for discordance in reporting between face-to-face and interactive interviews for boys and girls. We find that in the presence of other sociodemographic factors, only one of the two gender differences in discordant reports found in Table 3 between face-to-face vs. interactive remains. In comparison to girls, boys were more likely to be discordant in reporting whether they ever had sex between face-to-face and interactive interviews (Adjusted OR 2.4, p=0.005). In addition, we find that respondents with a higher monthly family income (more than Indian Rupees 3000.00 or US $70.00) were more likely to be discordant in reporting 'forced touch' between face-to-face and interactive interviews (Adjusted OR 1.7, p=0.05). Respondents who had ever been in the workforce were more likely to be discordant between face-to-face and interactive interviews on the experience of 'attempted forced sex' (Adjusted OR 5.4, p=0.03).

Table 5 shows results from multivariate logistic regression for discordance in reporting between face-to-face interviews and ACASI for boys and girls. Even after multivariate adjustment, the gender differences in discordant reporting seen in Table 3

remain. In comparison to girls, boys were more likely to be discordant in reporting whether they ever had sex (Adjusted OR 2.3, p=0.009) and whether they ever experienced attempted forced sex (Adjusted OR 3.9, p=0.003). However, boys were less likely to be discordant between face-to-face and ACASI in reporting forced touch (Adjusted OR 0.5, p=0.002). In these models none of the other sociodemographic factors are a significant explanatory factor in discordant reporting.

Discussion

Both boys and girls reported more sexual behaviors on interactive interviews in comparison to face-to-face interviews. It is likely that the audiovisuals in the interactive interviews enhanced the comprehension and comfort level of the respondents and the response sheets for reporting personal sex behaviors were perceived to be confidential. Among those who completed ACASI and face-to-face interviews, boys reported having sex more often on ACASI in comparison to face-to-face interviews. Perhaps, they perceived ACASI to be confidential. Girls reported being forcibly touched more often on face-to-face interviews in comparison to ACASI. It is likely that girls felt more comfortable in confiding the experience of being forcibly touched to an interviewer in face-to-face setting. There is evidence in the literature to suggest that interviewer driven methodologies may increase the ability to elicit responses that require empathy [9]. Additionally, it is also plausible that lack of exposure to computers led to some apprehension among the girls in reporting behaviors on ACASI or they did not perceive ACASI to be confidential.

A substantial proportion of boys and girls reported discordantly on the two interviews they received. Discordance in reporting varies by sex of the respondent and the sexual behavior being studied. Multivariate analyses illustrate that in comparison to girls; boys were

more discordant in reporting on the sexual experience of 'ever had sex' between face-to-face and interactive interviews as well as face-to-face and ACASI. Considering that social norms are discouraging of pre-marital sex in India, it is likely that boys changed their responses more often to provide socially desirable responses in face-to-face interviews.

In comparison to boys, girls were more likely to be discordant between face-to-face and ACASI in reporting the experience of 'forced touch.' As mentioned above, it is likely that girls felt more comfortable in confiding a negative sexual experience to an interviewer in face-to-face setting.

Except for the sex of the respondent, none of the other sociodemographic factors examined consistently explain discordance in reporting across the two interview modes. In some of the sub-groups, less education, higher family income and having been in the work force are associated with more discordant reporting. It is likely that those who are more educated or in school are more confident and do not change their responses by methodology. A study to assess feasibility of ACASI in Zimbabwe also found that among the 221 women who reported sociodemographic information on ACASI and interviewer-administered modes, higher education predicted more concordance [22]. In this setting, adolescents are more likely to work in unskilled, low wage positions in the unorganized sector where exploitation is common. Though not from India, evidence from community based youth sample (2328 respondents in the ages of 10-24) from Lusaka, Zambia suggests that those who work for pay are at a higher risk of negative reproductive health outcomes [31].

The study implementation is not likely to account for discordant reporting in the study. It is plausible that the relatively homogeneous study sample (all the respondents were from disadvantaged urban neighborhoods in Delhi, India) prevented detection of any clear

association between discordance in reporting sexual behaviors across different interview modes and the sociodemographic factors that we examined. Similar methodological experiments should consider drawing their study sample from socio-economically diverse groups to examine whether the contrast in socio-demographic variables impacts the discordance in reporting sexual behaviors by adolescents. Findings from this trial indicate that reporting of sexual behaviors by adolescents is likely to vary by interview methodology, sex of respondents and the behaviors and populations being studied. Results also suggest that unmarried adolescents in urban India are in need of interventions regarding their sexual health, as a substantial proportion of them are sexually active before marriage, and experiencing harassment in a context where the HIV epidemic is taking hold.

Figure 1: Randomization Plan

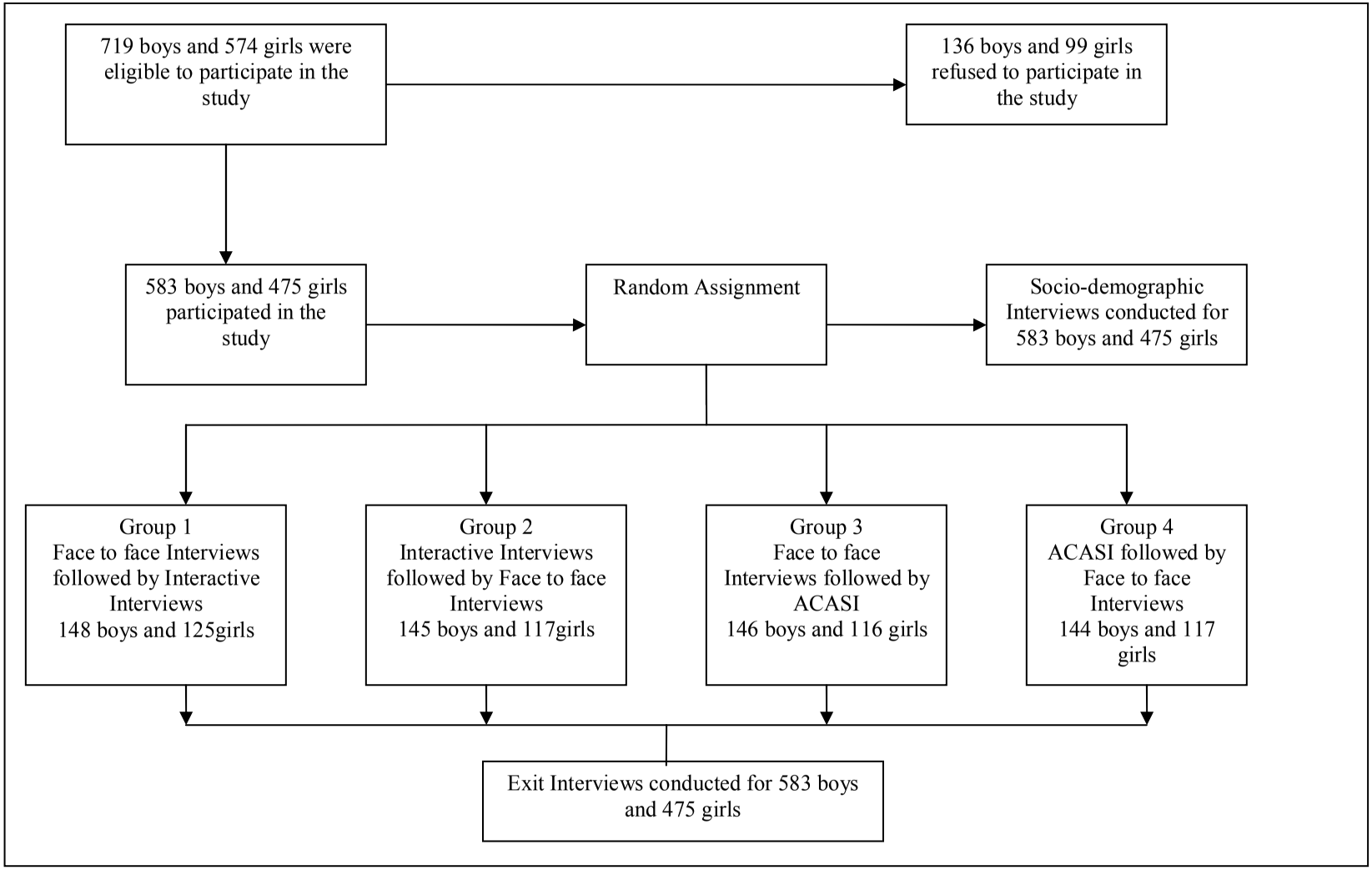
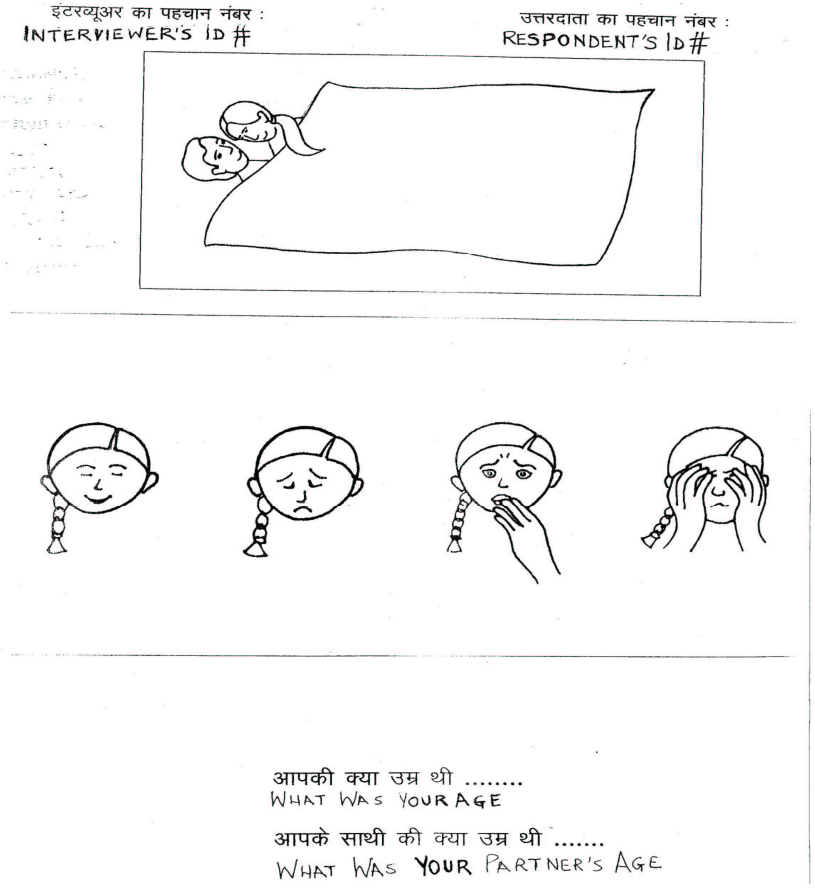


Figure 2: Confidential Response Sheet to Report Personal Sex Behaviors by Unmarried Girls in the Age Group 15-19 (Used in Interactive Interviews)



The questions asked were:

Have you ever had sex with a boy/man?

How did you feel afterwards?

What was your age when you first had sex?

What was your partner's age?

Table 1: Sociodemographic Characteristics of the Respondents According to the Randomized Group

Sociodemographic Characteristics	Boys (n=583)			Girls (n=475)		
	Interactive and Face-to-Face Interviews (n=290)	ACASI and Face-to-Face Interviews (n=293)	p-value	Interactive and Face-to-Face Interviews (n=242)	ACASI and Face-to-Face Interviews (n=233)	p-value
Age, mean years, (SD)	17.0 (1.5)	16.8 (1.4)	0.8	16.2 (1.4)	16.3 (1.4)	0.7
Currently in School (%)	31.7	32.4	0.1	35.1	30.0	0.7
Ever Worked (%)	75.1	71.0	0.3	57.4	50.2	0.1
Family Income (%) (In Indian Rupees)						
Upto 3000 (US $70.00)	36.5	65.2	0.7	56.6	55.4	0.8
More than 3000	63.5	34.8		43.4	44.6	
Religion (%)						
Hindus	73.7	72.1	0.6	74.4	74.7	0.9
Others	26.3	27.9		25.6	25.3	
Area of Residence (%)						
Sanjay Camp	41.3	40.7	0.5	33.1	41.6	0.3
Subhash Camp	46.4	43.8		55.8	47.2	
Mini Subhash Camp	5.8	5.5		4.6	4.7	
Shaheed Camp	6.5	10.0		6.6	6.4	

Note: p-values reported from Chi square test for categorical variables and Bartlett's test for equal variance for continuous variables

Table 2: Distribution of Socio-demographic Characteristics, By Gender

Characteristics	Boys (%) n=578	Girls (%) n=473	p-value
Age			
15-17 years old	61.3	79.1	0.0001
18-19 years old	38.8	20.9	
Currently in School			0.90
	32.8	32.3	
Ever Worked			0.0001
	73.0	53.9	
Monthly Family Income (in Rupees)			
Up to 3000	35.8	55.8	0.0001
More than 3000	64.2	44.2	
Residence			
Sanjay Camp	40.8	37.2	0.20
Subhash Camp	45.0	51.6	
Mini Subhash Camp	5.9	4.7	
Shaheed Camp	8.3	6.6	
Religion			
Hindu	72.7	74.6	0.5
Other	27.3	25.4	

Note: p-values based on chi-square tests
Though 583 boys and 475 girls were recruited in the trial, we dropped information from 5 boys and 2 girls due to irreconcilable errors in their reports on exit interviews. Hence, the data analysis uses information from 578 boys and 473 girls

Table 3: Sexual Experiences and Within Individual Discordant Reports, by Interview Mode and Gender

	Face to Face vs. Interactive							
Sexual Experiences	Boys			Girls			Boys	Girls
	n	Face to Face[a] (%)	Interactive (%)	n	Face to Face[a] (%)	Interactive (%)	Discordant Reports[b] (%)	
Ever Had Sex	290	19.3***	28.3	238	1.7**	7.1	16.6**	7.1
Ever Been Forcibly Touched	291	22.0*	26.8	241	33.6	35.7	13.8	14.5
Ever Experienced Attempted Forced Sex	291	8.6*	12.4	241	1.7	1.7	7.9**	2.5
	Face to Face vs. ACASI							
	n	Face to Face[a] (%)	ACASI (%)	n	Face to Face[a] (%)	ACASI (%)	Discordant Reports[b] (%)	
Ever Had Sex[c]	287	21.3*	27.2	232	1.3	3.5	16.4**	7.8
Ever Been Forcibly Touched	287	21.6	26.5	231	38.5***	14.3	20.2**	32.0
Ever Experienced Attempted Forced Sex	287	8.0	11.5	232	1.3	2.6	10.5**	3.0

Note: a) p-values reported from exact McNemar's significance probabilities to compare face to face interviews with the other interview (Interactive or ACASI)
b) p-values reported from Fisher's exact test to compare discordant reports between boys and girls
c) The 'did not respond' reports (0.0% boys and 1-1.9% girls in the sample) were combined with those who reported 'no'
*p≤0.05, ** p≤0.01, ***p≤0.001

Table 4: Multivariate Logistic Regression of Sociodemographic Characteristics on Discordance in Reporting Sexual Experiences between Face-to-Face and Interactive Interviews

Sexual Experience	Ever Had Sex (n=528)		Ever Been Forcibly Touched (n=532)		Ever Experienced Attempted Forced Sex (n=532)	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Age						
15-17 years old	1.0	0.68	1.0	0.54	1.0	0.26
18-19 years old	0.9 (0.5-1.6)		0.8 (0.5-1.5)		1.6 (0.7-3.5)	
Sex of the Respondent						
Girls	1.0	0.005	1.0	0.33	1.0	0.12
Boys	2.4 (1.3-4.5)		0.8 (0.4-1.3)		2.2 (0.8-5.7)	
Currently In School						
No	1.0	0.07	1.0	0.11	1.0	0.62
Yes	0.5 (0.3-1.1)		0.6 (0.3-1.1)		1.3 (0.5-3.3)	
Ever Worked						
No	1.0	0.90	1.0	0.12	1.0	0.03
Yes	1.0 (0.5-1.9)		1.6 (0.9-3.1)		5.4 (1.2-24.9)	
Monthly Family Income (in Rupees)						
Up to 3000	1.0	0.21	1.0	0.05	1.0	0.10
More than 3000	1.4 (0.8-2.5)		1.7 (1.0-2.9)		2.1 (0.9-5.2)	
Religion						
Hindu (reference)	1.0	0.24	1.0	0.45	1.0	0.19
Other	1.4 (0.8-2.6)		1.2 (0.7-2.2)		1.7 (0.8-3.9)	

Note: These models are adjusted for area of residence

Table 5: Multivariate Logistic Regression of Sociodemographic Characteristics on Discordance in Reporting Sexual Experiences between Face-to-Face and ACASI

Sexual Experience	Ever Had Sex (n=519)		Ever Been Forcibly Touched (n=518)		Ever Experienced Attempted Forced Sex (n=519)	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Age						
15-17 years old	1.0	0.67	1.0	0.10	1.0	0.63
18-19 years old	1.1 (0.6-2.0)		1.0 (0.6-1.6)		0.8 (0.4-1.8)	
Sex of the Respondent						
Girls	1.0	0.009	1.0	0.002	1.0	0.003
Boys	2.3 (1.2-4.1)		0.5 (0.3-0.8)		3.9 (1.6-9.8)	
Currently In School						
No	1.0	0.55	1.0	0.19	1.0	0.02
Yes	0.8 (0.4-1.6)		0.7 (0.4-1.2)		0.3 (0.1-0.8)	
Ever Worked						
No	1.0	0.98	1.0	0.24	1.0	0.70
Yes	1.0 (0.5-2.0)		1.3 (0.8-2.2)		0.8 (0.3-2.2)	
Monthly Family Income (in Rupees)						
Up to 3000	1.0	0.78	1.0	0.93	1.0	0.26
More than 3000	1.1 (0.6-1.9)		1.0 (0.6-1.5)		1.5 (0.7-3.3)	
Religion						
Hindu (reference)	1.0	0.75	1.0	0.98	1.0	0.26
Other	0.9 (0.5-1.7)		1.0 (0.6-1.6)		1.5 (0.7-3.2)	

Note: The multivariate analyses are adjusted for area of residence

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