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HIV Risk Behaviors and the Context of Sexual Coercion in Young Adults' Sexual Interactions: Results From a Diary Study in Rural South Africa

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Background: **Gender inequalities in relationship power may promote unprotected sexual intercourse.**

Goals: **The goal of this study was to gain insight into the specific gender dynamics in the intimate relationships of rural South African young adults that contribute to risk for HIV infection.**

Study: **Using diary methods, 25 female and 25 male secondary school students in rural South Africa provided daily reports (N = 1000) over a 3-week timeframe, including details regarding 466 sexual interactions.**

Results: **Inconsistent condom use was more likely in relationships in which the male partner had ever used threat or force to engage in sex during this period (unadjusted odds ratio, 13.4; 95% confidence interval, 1.57–114.26). Male sexual coercion was more likely in relationships in which alcohol was ever used in conjunction with sex and when a man's desire to engage in sex was perceived as greater than the woman's.**

Conclusion: **This study adds to the growing evidence that sexual relationships characterized by gender inequality and sexual coercion are contexts of sexual risk.**

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IN SOUTH AFRICA, THE major route of HIV infection is through heterosexual transmission, with the epidemic affecting adolescents and young adults disproportionately.[1,2] Of the 5 million South Africans estimated to be currently infected with HIV, more than 50% became infected before the age of 25.[3] Women between the ages of 15 to 24 years are particularly vulnerable relative to young men, with prevalence peaking approximately 5 years earlier and at a higher level, between 12% and 15%.[1,2]

The explosive global growth of heterosexually transmitted HIV, the high prevalence of infection among adolescents and young adults, and the extraordinary vulnerability of young women has prompted investigations of the ways that gender relations affect sexual risk in diverse cultural settings.[4–8] Gender inequalities influencing HIV risk are present at the structural level—in political and economic arrangements—and they are reflected as well in interpersonal interactions and sexual relationships.[9] In South Africa, as elsewhere, sexual risk behavior is situated in the context of differing degrees of power within relationships and gender-differentiated norms for sexual behavior.

Recent investigations in South Africa addressing gender, relationship dynamics, and behavioral risks for HIV describe a pattern in which male-dominated constructions of sexuality prevail.[10–15] In the views of both men and women, sexual intercourse is an integral component of romantic relationships, and men typically press for intercourse to occur early in the relationship as proof of the woman's love.[10–13] Young men endorse a right to unrestricted access to their partners' bodies.[11] There is little communication about sexual activity within relationships,[12] and the conditions and timing of intercourse are defined by men, who frequently use coercive tactics to maintain control.[12,13] Condom use is eschewed, because it is believed to imply infidelity and lack of trust in a relationship, constrain male prerogatives, and prevent desired pregnancies.[10–12] Whereas some young women may express a desire for their partners to use condoms, they view this behavior as lying within men's control, not as one that they could request or negotiate.[14] The ubiquity of sexual coercion within their own relationships and those of their peers appears to reinforce women's views that these practices reflect accepted norms.[15]

Strengthening these insights from qualitative studies, several recent investigations have demonstrated associations among relationship violence, low relationship power, or other markers of gender inequalities and sexual risk.[16–20] However, findings across studies have not been consistent. One recent study of condom use-preparatory behaviors (talking about HIV, requesting condom use) found that although women in poor relationships and those whose partner was more than 5 years older were less likely to discuss HIV, women who experienced recent financial abuse and domestic violence in the past were *more likely* to suggest condom use.[18] The authors of this study concluded that it is critical to investigate how inequalities in power between women and men are actually enacted within sexual relationships to develop a more

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nuanced understanding of the ways that power differentials may influence sexual risk.

To give additional insight into the gender dynamics within intimate relationships that contribute to young adults' risk for HIV infection, the current study used diary methods to capture detailed descriptions of young South African men's and women's heterosexual interactions on a daily basis. We investigated how HIV risk behavior is embedded in the scripting of sexual interactions. Scripting refers to culturally patterned behavioral sequences that are enacted in social encounters.[21,22] In particular, these methods were used to assess men's and women's reports of the initiation of sexual activity, control of the pace of sexual encounters, use and experience of pressure and coercion, and discrepancies in desire or interest in participating sexually as a means of exploring further the nature of men's and women's risk activities.

Methods

Participant Recruitment

Data for these analyses were collected as part of a larger study addressing the role of gender relations in heterosexual risk interactions in rural South African young adults. The site for the study was a subdistrict of rural northern KwaZulu/Natal province, South Africa, an impoverished rural area with high HIV prevalence (14.1%) among 15 to 24 year olds.[1] In this phase of the study, 50 students (25 women and 25 men), aged 18 to 24 (typical ages in secondary schools range from 12–25 years[23]) were recruited from a secondary school between October 2003 and March 2004.

Study personnel recruited students in classrooms by means of flier distribution and announcements. Interested students were encouraged to approach the study staff, at which point students were screened for eligibility. To be eligible for the study, they needed to be between the ages of 18 and 24 years and in a heterosexually active relationship. Male and female participants were not known to be in relationships with each other. Students who met all eligibility requirements were scheduled to meet with a study staff member, who read participants a consent form (as they followed along on their own copy), which detailed the purpose of the study, confidentiality procedures, and their rights as research participants.

Measures

A self-administered background questionnaire ascertained sexual history and demographic information (see Table 1). Participants were provided with 3 weeks' worth of daily diary forms and envelopes to return their forms each day. To ensure that the diaries were completed on a daily basis rather than just before collection—a difficulty encountered in other studies that may reduce

TABLE 1. Characteristics of Men and Women Participating Students, Rural KwaZulu/Natal

	Women (N = 25)		Men (N = 25)	
	No. (%)	Mean (SD)	No. (%)	Mean (SD)
Background questionnaire (n = 50)				
Demographics				
Age		19.3 (1.3)		18.9 (1.4)
Income				
<R1000	4 (16%)		7 (28%)	
R1000–4999	18 (72)		16 (64)	
R5000+	3 (12)		2 (8)	
People in household		12.1 (7.5)		9.8 (4.6)
Currently employed	0‖		5 (25%)	
Any children	12 (54%)¶		1 (5%)	
Sexual history				
Lifetime number of partners		2.5 (1.2)¶		8.8 (10.0)
Ever anal sex*	0		0	
Ever oral sex†	18 (72%)		16 (64%)	
Current sexual behaviors (past 2 months)				
Number of partners		1.6 (0.7)¶		2.5 (1.0)
Total sexual encounters		10.4 (3.7)		12.0 (9.3)
Primary relationship	25 (100%)		25 (100%)	
Duration (years)		3.9 (1.5)¶		2.1 (1.0)
Sexual encounters		8.4 (2.9)‖		6.7 (2.8)
Secondary relationship (one or more)	12 (48%)§		21 (84%)	
Duration (years)		1.4 (0.6)¶		0.6 (0.4)
Sexual encounters		4.6 (2.1)		6.8 (8.1)
Diary records‡ (n = 1000)	Total N (%)	Mean (SD)	No. (%)	Mean (SD)
Diary records	497	19.9 (1.1)	503	20.1 (1.2)
Days with sexual encounters	230	9.2 (3.5)	233	9.3 (4.7)
Days with initiations, no sex	113	4.5 (3.3)	95	3.8 (3.5)
Days with no initiations	154	6.1 (5.3)	175	7.0 (5.3)

*Eleven participants did not respond.
†Only one participant reported fellatio and not cunnilingus; all others reported both.
‡Over a 3-week period.
§*P* value (*t* test or Fisher exact test) >0.05 ≤ 0.10.
¶*P* value (*t* test or Fisher exact test) >0.01≤ 0.05.
‖*P* value (*t* test or Fisher exact test) ≤0.01.
SD indicates standard deviation.

their validity and pose a threat to privacy[24]—arrangements were made for the daily forms to be deposited in a locked mailbox on the school grounds, where forms were collected each day by study staff.

The daily diaries consisted of a one-page structured form on which respondents detailed various aspects of their sexual interactions with their primary, secondary, or new partners. For each day, participants were asked to indicate whether they had engaged in sexual intercourse. If affirmative, they completed items assessing who initiated the sexual encounter (partner or self) and how it was initiated (what the person said or did—open-ended response); how much the respondent desired sexual activity and how much they thought their partner desired it (on a 4-point Likert scale ranging from "not at all" to "very much"); whether a condom was used (yes/no) and who initiated condom use (partner or self); whether alcohol was used soon before or during the sexual encounter (yes/no); and whether any pressure was exerted (or felt) to engage in sexual activity, including persuasion, verbal threat, physical threat, or force (yes/no for each). If there was no sexual intercourse that day, participants were asked if there was any attempt to initiate intercourse that day by either themselves or their partners (yes/no). The nature of the initiation (who initiated, what they said or did, whether pressure was involved), why sex did not happen at this time (open-ended response), and the consequences of not having sex (anger or violence—yes/no) were elicited for initiations that did not result in sexual intercourse.

Data Analysis

Means and proportions were used to describe and compare characteristics of women's and men's sexual interactions. To examine whether hypothesized indicators of gendered sexual scripts were associated with engaging in unprotected sexual intercourse, we used 2 approaches. In the first set of analyses, each participant was treated as the unit of analysis. Logistic regression analysis was used to identify correlates of inconsistent condom use over the 3-week period of data collection. Predictor variables were grouped into 2 broad domains: 1) characteristics of persons, including demographics and sexual and relationship history; and 2) summary characteristics of sexual interactions, e.g., percent of occasions in which the male partner initiated, whether the female ever initiated. As an example of how we obtained these gender-specific variables, we summed across reports of men's own behaviors and women's reports of their partners' behaviors. Unadjusted odds ratios were first estimated for each predictor. To determine if results were altered depending on whether a man or woman completed the diary, gender of the participant was included. A multivariate model included all predictors of inconsistent condom use for which the crude odds ratio was 3 or greater.

In the second set of analyses, each sexual occasion was the unit of analysis, and we sought to identify the occasion-specific predictors (e.g., partner type, who initiated, use of pressure, use of alcohol) of engaging in unprotected sex. The method of generalized estimating equations (GEEs), with a log-link function, was used to account for the correlation across sexual occasions within individuals (e.g., condom use vs. no condom use). These analyses were conducted separately for women and men and then together.

Results

Demographic characteristics of participants are shown in Table 1. Participants' households were large, with a median of 8 members (range, 3–38). Distribution of monthly household income was similar to many South African rural areas.[25] Most reported income in the range of R1000 to R4999 (US $125–625 at the time of the study); an additional 22% reported living in households with monthly income less than R1000. None of the women was employed compared with 5 (20%) of the men. Among women, 55% reported having a child, whereas only one man did.

Regarding sexual history, men reported more lifetime partners than did women (mean, 8.8 vs. 2.5, $P < 0.01$), more current partners (mean, 2.5 vs. 1.6, $P < 0.01$), but not more sexual encounters in the past 1 months (10.4 vs.12.0, $P > 0.10$) (Table 1). None of the participants reported ever having engaged in anal sex, but 64% of men and 72% of women ($P > 0.10$) reported having engaged in oral sex (cunnilingus and/or fellatio). Participants' current primary sexual relationships had a mean duration of 3.1 years, with women reporting on average a longer duration than men (mean, 3.9 vs. 2.1 year, $P < 0.01$). Most men and almost half of the women (84% vs. 48%, $P < 0.10$) reported having at least one current secondary relationship, which was of relatively shorter duration than that of primary sexual relationships (mean for men, 0.6 years, for women, 1.4 years, $P < 0.01$).

Diary records were completed for 1000 of 1050 person-days (95% response rate) (mean, 20 per participant; standard deviation [SD], 1.1; range, 16–21). There were no differences in completion rates according to gender (Table 1). Sexual activity occurred on 463 days (46%); sexual initiations without sexual activity occurred on 208 days (21%), and no initiations occurred on the remaining 329 days (33%). Only one participant, a man, reported no sexual activity during the 3-week period.

The frequency of sexual behavior reported in the daily diary records was similar for men and women (Table 2). Both reported approximately 9 sexual occasions over the 3-week period, of which 2 to 3 were unprotected and 72% were condom-protected. Differences in the proportion of sexual occasions by partner type were notable, however. More men than women reported any sexual activity with secondary or new partners (92% vs. 48%, $P < 0.01$) over the 3-week period (an indicator of proportion with concurrent partners), and men had a significantly lower percent of sex occasions with their primary partners compared with women (59% vs. 86%, $P < 0.01$).

Both men and women reported that sex was most frequently initiated by the male partner (62% of occasions), who also was more likely to control the pace (70% of occasions) (Table 2). Despite this pattern of male control, women initiated at least once during the 3-week period according to 92% of the participants, and 77% reported that women controlled the pace during at least one sexual encounter. Both men and women perceived that, on average, their partners' desire was slightly higher than their own; however, 76% of women as compared with 17% of men ($P < 0.01$) reported that the man's desire was greater at least once during the 3-week period.

Although a similar percentage of men and women (approximately 70%) reported experiencing any type of pressure to engage in sex at least once in this timeframe, women were more likely to report that they had experienced a physical threat. Men were more likely than women to report exerting pressure (84% vs. 48%, $P < 0.05$), a difference that was largely accounted for by men's higher reports of using persuasion (79% of men vs. 40% of women, $P < 0.01$). Combining the reports of women about their male partners and men about themselves, we created a variable that indicated any verbal or physical threat, or coercion (excluding persuasion) by the male partner. Male threat or coercion was reported by 40% of women and 13% of men.

Of initiations that did not result in sexual intercourse (mean, 4.2; SD, 3.4), men were more likely to report that they showed interest than were women that their male partners did (82% vs. 56%, $P < 0.01$) (Table 2). As was true for sexual intercourse occasions,

TABLE 2. Characteristics of Diary-Reported Sexual Encounters Among Men and Women Students, Rural KwaZulu/Natal

	Women (N = 25)	Men* (N = 24)
Total sexual encounters, mean (SD)	9.2 (3.5)	9.3 (4.7)
Condom use		
Percent condom protected sexual intercourse occasions, mean (SD)	76 (31)	68 (33)
Number unprotected occasions, mean (SD)	2.2 (3.0)	3.4 (3.7)
Any unprotected intercourse (%)	56	59
Partners		
Percent occasions with usual partner, mean (SD)	86 (17)¶	59 (23)
Percent occasions with other partner, mean (SD)	8 (10)	13 (10)
Percent occasions with new partner, mean (SD)	6 (12)	24 (18)
Any sexual occasion with new or other partner (%) sexual scripts	48¶	92
Percent occasions male partner initiated sex, mean (SD)	57 (26)	67 (24)
Percent occasions man controlled pace, mean (SD)	67 (26)	73 (25)
Woman ever initiated sex (%)	96	88
Woman ever controlled pace (%)	88	67
Woman ever initiated condom use (%)	88	67
Desire score—self,† mean (SD)	3.2 (0.55)	3.1 (0.37)
Desire score—partner,† mean (SD)	3.7 (0.29)	3.4 (0.54)
Desire discrepancy (partner's score minus self score), mean (SD)	44 (0.46)	0.25 (0.53)
If man's desire ever higher than woman's (%)	76¶	17
Alcohol use		
Percent occasions alcohol used, mean (SD)	19 (26)	10 (14)
Alcohol ever used (%)	60	42
Pressure		
Percent occasions experienced pressure, mean (SD)	27 (29)	27 (26)
Any pressure experienced (%)	68	70
Any persuasion (%)	52	63
Any verbal threat (%)	20	8
Any physical threat (%)	16	0§
Any force (%)	20	21
Percent occasions exerted pressure, mean (SD)	15 (25)§	28 (26)
Any pressure exerted (%)	48‖	84
Any persuasion (%)	40¶	79
Any verbal threat (%)	16	8
Any physical threat (%)	4	4
Any force (%)	4	8
Percent occasions man exerted threat or force,‡ mean (SD)	9 (14)§	3 (9)
Man ever exerted threat or force‡ (%)	40§	13
Initiations, no sex		
Number, mean (SD)	4.5 (3.3)	4.0 (3.4)
Percent of initiations with usual partner, mean (SD)	64 (39)‖	39 (37)
Percent initiated by the man, mean (SD)	56 (40)¶	83 (21)
Percent when man exerted threat or force,‡ mean (SD)	11 (22)	11 (28)

*One man had no sexual encounters.
†Desire scores: "how much did you want to engage in sexual activity at that time?," "how much do you think your partner wanted to engage in sexual activity at that time?" Responses ranged from 1 "not at all" to 4 "very much."
‡Verbal threat, physical threat, or force. Excludes persuasion.
§*P* value (*t* test or Fisher exact test) $>0.05 \leq 0.10$.
‖*P* value (*t* test or Fisher exact test) $>0.01 \leq 0.05$.
¶*P* value (*t* test or Fisher exact test) ≤ 0.01.
SD indicates standard deviation.

men reported fewer initiations with their usual partners than did women (39% vs. 64%, $P < 0.05$). Threat or force was exerted by the man in 11% of these initiations, as reported by both men and women.

In the univariate logistic regression models (Table 3), 5 variables were associated with engaging in one or more occasions of unprotected sexual intercourse (although not all associations achieved conventional levels of statistical significance). These variables were 1) living in a household with more than 10 members (odds ratio [OR], 3.7; 95% confidence interval [CI], 1.06–12.87); 2) having at least one sexual occasion with a new or casual partner (OR, 3.14; 95% CI, 0.89–11.04); 3) any alcohol use during sex (OR, 3.04; 95% CI, 0.93–9.95); 4) the percent of occasions when the man exerted threat or force (excluding persuasion) (OR, 1.2; 95% CI, 0.99–1.45); and 5) any occasion in which the man exerted threat or force (OR, 13.4; 95% CI, 1.57–114.26). Results

TABLE 3. Predictors of One or More Unprotected Sexual Intercourse Occasions, Men and Women Students, Rural KwaZulu/Natal

	Unadjusted Odds Ratio	95% Confidence Interval	Adjusted Odds Ratio†	95% Confidence Interval
Background data				
Gender (male)	1.3	0.42–4.11		
Age (years)	0.68	0.42–1.08		
Income (R <1000)	1.27	0.32–5.10		
10+ people in household	3.70	1.06–12.87	2.272	0.48–10.79
Duration of primary relationship (<2 y)	1.93	0.58–6.40		
4+ lifetime partners	2.36	0.67–8.39		
1+ current partners	2.15	0.65–7.13		
Diary data				
Sexual occasions with usual partner (% occasions)	0.98	0.95–1.00		
Any sexual occasion with other or new partner	3.14	0.89–11.04	3.840	0.82–17.89
Male partner initiated sex (% occasions)	0.99	0.96–1.01		
Man controlled pace (% occasions)	0.46	0.04–4.73		
Woman ever initiated sex	1.00	0.98–1.02		
Woman ever controlled pace	1.28	0.33–4.9		
Woman ever initiated condom use	0.46	0.10–2.02		
Discrepancy in desire score (if man higher)	1.58	0.37–6.7		
Alcohol used (% occasions)	1.03	1.00–1.07		
Alcohol ever used	3.04	0.93–9.95	1.26	0.26–0.19
Man threatened or forced female (% occasions)*	1.2	0.99–1.45		
Man ever threatened or forced female*	13.4	1.57–114.26	12.23	1.18–126.53

*Verbal threat, physical threat, or force. Excludes persuasion.
†Nagelkirk $R^2 = 0.37$ for the full model.

of models controlling for gender of the participant were essentially unchanged (data not shown). In a model that included the 4 variables for which the crude odds ratio was 3 or greater (>10 household members, any new or casual partner, any alcohol, and any male threat or force), 37% of the variance was explained. Any male threat or force remained an independent predictor, although the confidence interval was wide (OR, 12.23; 95% CI, 1.18–126.53).

To provide further insight into the findings regarding pressure and unprotected sexual intercourse, we examined, for men and women separately, the association between any occurrence of each type of pressure and unprotected sex. In the reports of both men and women, the experience of any type of pressure (persuasion, verbal threat, physical threat, or force) was marginally associated with unprotected sex, $P < 0.10$). However, only women's experience of verbal threat or force was significantly associated with unprotected sex. Persuasion alone, either experienced or exerted by the man or woman, was not associated with unprotected sex.

In contrast to the logistic regression results, analyses using GEE methods did not identify any occasion-specific predictors of unprotected sex. The difference in results using GEE methods as compared with standard logistic regression indicates that the correlates of unprotected sex such as sexual coercion and alcohol use did not necessarily occur on the same sex occasion that was unprotected.

Because at least one occasion of male threat or use of force emerged as an important predictor of inconsistent condom use, the correlates of this behavior were examined. In the GEE models, greater male versus female desire was a significant predictor of male threat or use of force (OR, 4.85; 95% CI, 1.79–13.33). In the logistic regression models, 2 predictors were identified: at least one occasion of alcohol use around the time of sex (OR, 6.58; 95% CI, 1.33–32.44) and at least one occasion in which the man's desire for sex was greater than the woman's (OR, 9.54; 95% CI, 1.65–55.05), with 38% of variance explained in a joint model.

Discussion

To deal effectively with HIV issues related to gender, understanding the interpersonal dynamics of sexual relations, particularly with regard to the use of power and the communication and negotiation of sexual activity and safer sex, is a critical first step. Recent investigations in South Africa have documented associations between both low relationship power and sexual coercion and unprotected sex[19] and between sexual coercion and HIV seropositivity.[20] The current study extends work in this area by using prospectively obtained diaries to chronicle the details of young adults' sexual interactions on a daily basis. Using these detailed event analyses, we found that inconsistent condom use was more frequent in relationships in which the man used threat or force to engage in sex on one or more occasions during a 3-week period. Notably, these findings included reports by men of their own behavior as well as those of women about their partners' behaviors. The association between coercion and unprotected sex was not present at the level of the sexual encounter (i.e., it was not necessarily the coerced sexual encounter in which condoms were not used). These results suggest, therefore, that a pattern of male dominance within the relationship, rather than behavior at any specific sexual occasion, explains the link between sexual coercion and inconsistent condom use in this sample.

We also were able to identify behavioral correlates of male threat or sexual coercion. Our finding that use of alcohol with sex at any time during the 3-week period was the factor most strongly associated with threat or coercion suggests that, overall, men who use alcohol have a greater propensity to rely on threats or force to engage in sex. The other correlate of threat or coercion was at least one occasion in which the male partner's desire was greater than the woman's. Although it is not possible to determine whether male desire was rated higher after the fact, that is, because coercion occurred, the association we found is in line with prevalent beliefs about male desire and men's entitlement to women's bodies.[10,12,15,26]

Contrary to expectations, we did not find that indicators of women's greater equality or empowerment within relationships increased the likelihood of protected sex, as has been reported elsewhere.[27–29] Relationships in which the woman ever initiated sexual activity, ever controlled the pace, or ever suggested condom use during the 3-week recording period were common, but partners in these relationships were not less likely to report unprotected sex. During in-depth interviews conducted immediately after participants completed the diary phase of this study, there also were indications that women's "empowerment" during sex may be nascent, but such indices are still rather limited.[30] Despite a discourse among both women and men about mutuality in relationships, young men emphasized their dominance in sexual matters with references to expected subservience in women. Although gender relations appear to be changing, women still have limited agency relative to men in sexual matters.

A considerable strength of this study is the use of daily diaries for collecting data on the interpersonal dynamics of sexual behaviors. Diaries may be especially advantageous for capturing the details of each sexual encounter, including who initiated, how much each partner desired sexual activity, and whether any persuasion or coercion occurred. Compared with other self-report methods, daily diaries may be less subject to inaccuracies as a result of poor recall and possibly social desirability.[24,31,32] One limitation of diary methods is that they may engender greater "reactivity," that is, participants may alter their behavior as a consequence of reporting on it daily.[24] This may explain the relatively high levels of reported condom use, but it is unlikely to explain the association we found between male threat or force and unprotected sex. However, caution is warranted in drawing firm conclusions from this study because of the small sample size and the resulting wide confidence intervals of the estimates.

The percent of occasions reported to be condom-protected in this diary study (72%), although high, is consistent with interview data from a large sample of young adults recruited from the same schools for another component of this study (O'Sullivan LF, unpublished data). In that sample, 70% of women and 82% of men reported using a condom on their last sexual occasion with their usual partner. However, these estimates are higher than those from recent national probability surveys[1,2] and from a household survey of young adults in this district.[33] Our target sample was young adult secondary school students, whose sexual behavior may differ in fundamental ways from that of younger students and the general population of young adults. Socially desirable reporting may also have been present, but it is unlikely to have been a result of the diary method per se, because data from interviews resulted in similar estimates of the level of condom use.

Our estimates of the prevalence of threat or force to engage in sex are somewhat higher than those obtained in a nationwide sample,[1] in which 10% and 2% of women and men, respectively, who had ever had intercourse, reported ever having experienced forced sex. Higher levels of forced sex in the past year, approximately 15% for 19-year-old school girls and 12% for boys of the same age, were reported in a national school-based survey.[34] Although these estimates are not directly comparable to ours, because we included verbal and physical threats in our summary measure of threat or force, the detailed recordkeeping (removed from the scrutiny of an interviewer) that is involved in maintaining daily diaries may have prompted greater reporting of threats or force. In contrast to condom use, it seems unlikely that social desirability would increase reports of coerced sex.

Both the current study and analyses using data from a nationwide youth survey[19] link sexual coercion within intimate relationships to increased likelihood of engaging in unprotected sex. Risk of pregnancy among adolescent women was found to be greater among those who had experienced sexual coercion,[16] and a study among adults found an association between intimate partner violence and HIV seropositivity.[20] Taken together, these studies are strong indicators that relationships characterized by gender inequalities and sexual coercion are especially potent contexts of sexual risk. To address the HIV epidemic among young South Africans, there is an imperative to develop interventions that alter norms supporting various forms of gender inequalities, including sexual coercion, in intimate relationships. These interventions need to target young men and young women, both in well-established and new or more casual relationships, before patterns of coercion become entrenched. The experience of various types of pressure to engage in sex should be an outcome that is examined in all interventions addressing youth sexual risk behavior.

References

1. Pettifor AE, Rees HV, Steffenson A, et al. HIV and Sexual Behaviour Among Young South Africans: A National Survey of 15–24 Year Olds. Johannesburg, South Africa: Reproductive Health Research Unit, University of Witwatersrand, 2004.
2. Shisana O. Nelson Mandela/HSRC Study of HIV/AIDS: South African National HIV Prevalence, Behavioural Risks and Mass Media. Household Survey 2002. Cape Town, South Africa: Human Sciences Research Council, 2002.
3. Abt Associates. The Impending Catastrophe: A Resource Book on the Emerging HIV/AIDS Epidemic in South Africa. Parklands, South Africa: loveLife, 2000.
4. Amaro H, Raj A, Reed E. Women's sexual health: The need for feminist analyses in public health in the decade of behavior. Psychol Women Q 2001; 25:324–334.
5. Gupta GR. Gender, sexuality and HIV/AIDS: The what, the why and the how. SIECUS Report 2001; 29:6–12.
6. Heise L, Elias C. Transforming AIDS prevention to meet women's needs: A focus on developing countries. Soc Sci Med 1995; 40:931–943.
7. Logan TK, Cole J, Leukefeld C. Women, sex, and HIV: Social and contextual factors, meta-analysis of published interventions, and implications for practice and research. Psychol Bull 2002; 128:851–885.
8. UNAIDS. Sex and Youth: Contextual Factors Affecting Risk for HIV/AIDS. A Comparative Analysis of Multi-site Studies in Developing Countries. Geneva, Switzerland: UNAIDS; 2000.
9. Wingood GM, DiClemente RJ. Application of the theory of gender and power to examine HIV-related exposures, risk factors, and effective interventions for women. Health Educ Behav 2000; 27:539–565.
10. Harrison A. The social dynamics of adolescent risk for HIV: Using research findings to design a school-based intervention. Agenda 2002; 53:43–52.
11. MacPhail C, Campbell C. 'I think condoms are good but, aai, I hate those things': Condom use among adolescents and young people in a Southern African township. Soc Sci Med 2001; 52:1613–1627.
12. Varga C. Sexual decision-making and negotiation in the midst of AIDS: Youth in KwaZulu/Natal, South Africa. Health Transit Rev 1997; 7(suppl 3):45–67.
13. Wood K, Maforah F, Jewkes R. 'He forced me to love him': Putting violence on adolescent sexual health agendas. Soc Sci Med 1998; 47:233–242.
14. Harrison A, Xaba N, Kunene P. Understanding safe sex: Gender narratives of HIV and pregnancy prevention by rural South African school-going youth. Reprod Health Matters 2001; 9:63–71.
15. Wood K, Jewkes R. Violence, rape, and sexual coercion: Everyday love in a South African township. Gender and Development 1997; 5:41–46.
16. Jewkes RK, Vundule C, Maforah F, et al. Relationship dynamics and teenage pregnancy in South Africa. Soc Sci Med 2001; 52:733–744.
17. Vundule C, Maforah F, Jewkes R, et al. Risk factors for teenage pregnancy among sexually active black adolescents in Cape Town: A case control study. S Afr Med J 2001; 91:73–80.
18. Jewkes RK, Levin JB, Penn-Kekana LA. Gender inequalities, intimate partner violence and HIV preventive practices: Findings of a South African cross-sectional study. Soc Sci Med 2003; 56:125–134.

19. Pettifor AE, Measham DM, Rees HV, et al. Sexual power and HIV risk, South Africa. In: Emerging Infectious Diseases [serial on the Internet]: Available at: http://www.cdc.gov/ncidod/EID/vol10no11/04-0252.htm; 2004.
20. Dunkle KL, Jewkes RK, Brown HC, et al. Gender-based violence, relationship power, and risk of HIV infection in women attending antenatal clinics in South Africa. Lancet 2004; 363:1415–1421.
21. Abelson PR. Psychological status of the script concept. Am Psychol 1981; 36:715–729.
22. Simon W, Gagnon JH. Sexual scripts. Society 1984; 22:52–60.
23. Stewart H, Harrison A. Who Goes to School? An Analysis of Secondary School Records for the Planning and Implementation of a School-Based Risk Reduction Intervention. Project Report. Mtubatuba, South Africa: Africa Centre for Population Studies and Reproductive Health, 2000.
24. Ramjee G, Weber AE, Morar NS. Recording sexual behavior: Comparison of recall questionnaires with a coital diary. Sex Transm Dis 1999; 26:374–380.
25. Statistics South Africa. Income and Expenditure of Households, 2000, KwaZulu Natal. Available at: www.statssa.gov.za/publications/P01115/P011152000.pdf; 2002.
26. Varga C. How gender roles influence sexual and reproductive health among South African adolescents. Stud Fam Plann 2003; 34:160–172.
27. Pulerwitz J, Gortmaker S, DeJong W. Measuring sexual relationship power in HIV/STD research. Sex Roles 2000; 42:637–660.
28. Pulerwitz J, Amaro H, DeJong W, et al. Relationship power, condom use and HIV risk among women in the USA. AIDS Care 2002; 14:789–800.
29. Greig FE, Koopman C. Multilevel analysis of women's empowerment and HIV prevention: Quantitative survey results from a preliminary study in Botswana. AIDS Behav 2003; 7:195–208.
30. O'Sullivan LF, Harrison A, Morrell R, et al. Shifting sexualities: Gender dynamics in the primary sexual relationships of young rural South African women and men. In press.
31. Leigh BC, Gillmore MR, Morrison DM. Comparison of diary and retrospective measures for recording alcohol consumption and sexual activity. J Clin Epidemiol 1998; 51:119–127.
32. Catania JA, Gibson DR, Chitwood DD, et al. Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. Psychol Bull 1990; 108:339–362.
33. Harrison AD. Adolescents Through the Lifecourse: Social Determinants of Young People's Sexual Risk in Rural KwaZulu/Natal, South Africa [Doctoral Dissertation]. London: University of London, 2003.
34. Andersson N, Ho-Foster A, Mattis J, et al. National cross sectional study of views on sexual violence and risk of HIV infection and AIDS among South African school pupils. BMJ published online 2004;doi:10.1136/bmj.38226.617454.7C (October 14, 2004).