RUNNING HEAD: Self-Perceived HIV/AIDS Risk

Self-Perceived HIV/AIDS Risk among Youth in Cape Town, South Africa

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Abstract

We use data from the Cape Area Panel Study (CAPS) to examine self-perceived HIV/AIDS risk among 4,108 black, coloured, and white South African youth living in Cape Town, South Africa. We find there are significant racial differences in HIV/AIDS risk perception, HIV/AIDS risk behavior, and familiarity with HIV/AIDS. Gender differences in these factors are generally absent. Overall, participation in risk behaviors generally fails to predict perceived HIV/AIDS risk in multivariate models. The only HIV risk behavior that is a consistent predictor of perceived HIV risk is having ever had sex. We find a frequent mismatch between behavior and perception; many youth who are not sexually active believe they are at risk of HIV infection, and many sexually active youth feel they are not at risk. This mismatch varies by race, with whites the most likely to exhibit to overestimate their HIV risk, and blacks the least.

Self-Perceived HIV Risk among Youth in Cape Town, South Africa

HIV prevalence among young people is a critical health concern in South Africa. Approximately 60% of HIV infections in South Africa happen before age 25 (Abt Associates, Inc., 2000). At present, about 9.0% of 15- to 24- year-old South Africans are HIV positive (Mandela Foundation/HSRC, 2002). Rates are even higher in the Western Cape, where approximately 11.2% of 15 to 24- year-olds are infected with HIV. In this study, we examine self-perceived HIV/AIDS risk among black (African), coloured (mixed race) and white youth in Cape Town, South Africa. Self-perceived HIV/AIDS risk has been of considerable interest because of its possible link to risk behaviors that may lead to HIV infection. Self-perceived risk figures in a number of behavioral models, including the health belief model (Janz & Becker, 1984), the theory of reasoned action (Ajzen & Fishbein, 1980), and social learning or social cognitive theory (Bandura, 1977).

Optimistic bias is an important theoretical consideration when studying HIV/AIDS risk perception among adolescents. Optimistic bias refers to the tendency of individuals to view negative events as less likely to happen to them than others and positive events as more likely to happen to them than others (e.g., Weinstein 1980). Adolescents may be particularly prone to optimistic bias because adolescence is a period characterized by a sense of invulnerability (e.g., Feldman & Elliott, 1990). Weinstein (1980) found more realistic perceptions of risk are associated with events that are: less undesirable, thought to have a high probability of occurrence in the general population, seen as controllable by an individual's behavior, have no clearly defined victim stereotype, and with which individuals have had some personal experience. Supporting the notion of optimistic bias, studies in Africa have found low self-perceptions of risk among individuals living in high prevalence areas (e.g., MacPhail & Campbell, 2001; Magnani

et al., 2001; Maswanya et al., 1999). (For a study that found high risk perceptions in a low prevalence area, see Miles et al., 2001.) Research that has considered the relationship between self-perceived HIV/AIDS risk and risk behaviors also show evidence of optimistic bias. For example, 29% of Moore and Rosenthal's (1991) sample of Australian college students had engaged in risky sexual behaviors but perceived themselves to be at low risk of contracting AIDS within five years. In the Macintyre, Rutenberg, Brown, and Karim (2004) study of youth in KwaZulu-Natal, South Africa, 20% of the respondents had engaged in risk behaviors but believed they were at no risk for contracting HIV within the next twelve months. In both studies, however, there were groups of respondents who had engaged in risk behavior and perceived themselves to be at risk of HIV (28% of respondents in the Moore and Rosenthal study and 14% of respondents in the Macintyre et al. study). While most of the respondents in Tillotson and Maharaj's (2001) study of black adolescent secondary school students in Durban, South Africa did not acknowledge their own possible risk of HIV infection, the respondents claimed HIV prevalence rates of 70 to 80% among young people in their province.

Relatively little attention has been paid to racial or ethnic differences in self-perceived risk in African countries, including South Africa. Macintyre et al.'s (2004) study of self-perceived HIV risk among adolescents living in two districts in the KwaZulu-Natal province of South Africa included blacks, whites, and Indians, but not coloureds, who make up approximately 8.9% of the overall population of South Africa, but whose presence is negligible in KwaZulu-Natal (2001 South African Census). Further, race was not a focus of the Macintyre et al. study. Racial differences are especially important to study in South Africa in light of the country's history of apartheid and subsequent on-going economic and social inequality.

Studies of Self-Perceived HIV/AIDS Risk in Africa

Studies of perceived risk have examined the possible effects of background characteristics, HIV/AIDS knowledge, actual or hypothetical contact with HIV infected individuals or individuals with other illnesses, and risk behaviors. With respect to demographic factors, Macintyre et al. (2004) found age had a positive relationship with perceived risk among girls who had engaged in risk behavior and those who had not. Barden-O'Fallon et al. (2004) found women and men (ages 15-44) in rural Malawi with no schooling had a lower perceived risk of HIV infection and men with secondary schooling or more had a higher perceived risk. Because there are racial differences in HIV prevalence in South Africa, with higher rates of HIV infection among blacks (Karim, 2000), we might expect racial differences in adolescents' self-perceived HIV/AIDS risk. Macintyre et al. (2004), however, found no statistically significant or marginally significant effects of race for they racial groups they examined (black, white, and Indian/other). In contrast, Sarker et al. (2005) found ethnic differences in perceptions of HIV risk among young living in rural Burkina Faso. Finally, research has found that the determinants of risk perception among adolescents and adults differ by gender (e.g., Barden-O'Fallon et al., 2004; Macintyre et al. 2004).

A number of studies have found knowledge about HIV/AIDS to be high but incomplete. Sarker et al.'s (2005) study in Burkina Faso found few of the young women in their study had incorrect knowledge about AIDS but a sizable portion had gaps in their knowledge about HIV transmission. In South Africa, Simbayi et al.'s (2005) study of young women and men in a Black township in Cape Town found AIDS knowledge to be high, but with important gaps in knowledge (e.g., almost one-third or respondents believed that washing one's genitals after sex can help protect against AIDS and nearly 40% believed AIDS is caused by spiritual forces).

Tillotson and Maharaj's (2001) qualitative study of black male secondary school students in Durban found that gaps in AIDS knowledge may be filled with myths and misperceptions, such as the belief that traditional healers can cure HIV/AIDS. A positive association between measures of HIV/AIDS knowledge and perceived HIV risk has been found (e.g., Sarker et al., 2005). Barden-O'Fallon et al. (2004) found such an association for the women but not the men in their study.

Research conducted in South Africa has found that being willing to have a person living with AIDS as a friend was associated level of perceived risk among those engaged in risk behaviors, but the direction of the association varied by gender (Macintyre et al., 2004). Also, having a household member sick in the past 12 months was associated with higher risk perception among girls who had engaged in risk behavior and those who had not. Barden-O'Fallon et al. (2004) found no association between knowing someone with AIDS and self-perceived risk of HIV infection. Finally, positive relationships between measures of risk behavior and self-perceived risk of HIV have been found in multiple studies (e.g., Barden-O'Fallon et al., 2004; Sarker, 2005).

In this study, we examine self-perceived HIV/AIDS risk among youth living in Cape Town, South Africa. We are able to more fully examine the effect of race and the simultaneous effects of race and gender on risk perceptions than most previous studies conducted in Africa. We also consider the effects of background characteristics, contact with individuals afflicted with AIDS, HIV/AIDS knowledge, and risky sexual behaviors on HIV/AIDS risk perception.

Method

Data

To examine perceived HIV/AIDS infection risk among young South Africans, we used data from Wave I of the Cape Area Panel Study (CAPS), a longitudinal study of youth and their families. CAPS contains two major sources of data. The first is the household questionnaire, which collected demographic data on the entire household. The second is the youth questionnaire, which collected detailed data on schooling, employment, sexual behavior, and fertility of household members between the ages of 14 and 22.

The target population of the survey is metropolitan Cape Town, an urban area of roughly two and a half million people located in the Western Cape province. Roughly 26% of the residents of metro Cape Town are black (African), 50% are coloured (mixed race), 22% are white (European ancestry), and about 2% are Indian or other (Lam & Seekings, 2005). The Cape Area Panel Study used a two-stage probability sample of households. The first-stage sample of Census Enumeration Areas (EAs) was drawn using the 1996 Census as a sampling frame. Because EAs in South Africa are highly racially homogeneous, EAs were sampled at different rates by race to obtain the desired selection of households by race. (For further details about the design of CAPS, see Lam & Seekings [2005].)

The second stage sampled households within each selected EA. All households containing at least one resident between the ages of 14 and 22 were selected for inclusion in the sample. Additionally, a subset of households with no 14-22 year olds was included for comparison purposes. Upon recruitment into the survey, the household questionnaire was administered to the person most knowledgeable about the household. Full-length youth questionnaires were given separately to up to three young people (ages 14 – 22) in the

household. The 2002 baseline wave of CAPS includes 5,256 households containing 22,631 residents (42.3% black, 43.7% coloured, and 14.1% white). Detailed interviews were conducted with 4,752 young people (44.7% black, 39.5% coloured, and 15.7% white). Black and white households were oversampled to obtain roughly equal numbers of black, coloured, and white youth. Weights were used in the descriptive and multivariate analyses to correct for this oversampling as well as for differential non-response rates of households and youth. Non-response is of particular concern for whites, who have a growing reputation in South Africa for being reluctant to participate in research. Whites also are more difficult to interview because they are more likely to be in school, to be employed, or to otherwise be away from home when attempts to contact them are made, and were more likely to live in areas (such as private gated communities) that were inaccessible to fieldworkers. The response rate for white households with youth in CAPS was low, 48.2%, though not unusually so for survey research on whites in South Africa. The response rates were 88.8% and 82.3%, for black and coloured households with youth, respectively. When households did participate in the survey, youth in those households usually participated as well. The response rate for the youth questionnaire (conditional on household participation) was high for all racial groups, ranging from 93.0% for blacks to 86.0% for whites. Because of the low response rate for white youth, which largely resulted from the low response rate for white households, caution is warranted when drawing conclusions from the white youth sample. Additionally, results may not be generalizable beyond metropolitan Cape Town.

Measures

HIV/AIDS risk perception. The main outcome variable, perceived risk of HIV/AIDS infection, was measured by the question “Do you think you have no risk, a small risk, a moderate

risk or a great risk of getting the AIDS virus?" Of the 4,737 respondents who answered the question, 265 (5.59%) answered "don't know" and were removed from the sample. An additional six individuals (0.13%) volunteered that were already HIV positive and were also dropped from the sample. After additional respondents were dropped for missing data or answering "don't know" on key variables, the final sample for analysis was 4,108. With respect to self-reported perceived risk of HIV/AIDS infection, 2,651 (59.71%) reported that they felt they had no risk of getting infected with the AIDS virus, 1,180 (26.58%) reported having a small risk of infection, 348 (7.84%) reported moderate risk, and 261 (5.88%) reported great risk. Following Prohaska et al. (1990), Macintyre et al. (2004) and others, we collapsed this variable into a dichotomous measure of any risk of HIV/AIDS infection, with "no perceived risk" (59.71%) forming one group and small risk, moderate risk and great risk grouped into the category of "some perceived risk" (40.29%).

HIV/AIDS knowledge. Respondent's knowledge and familiarity with HIV/AIDS was measured with four variables. First, they were asked "Do you **personally** know anyone who has HIV/AIDS?" Second, they were asked "Do you **personally** know anyone who has died or you think has died of HIV/AIDS?" Third, they were asked "Can a person do anything to protect him/herself from getting HIV/AIDS?" All of these questions were coded as yes/no/don't know, with those who responded "don't know" dropped from the sample for analysis. The fourth variable of HIV/AIDS knowledge was measured by a question asking "How can people protect themselves from getting infected with HIV/AIDS?" A list of 9 options (plus "other") were listed, but interviewers were instructed "Do NOT read out response options. Multiple answers possible. Select all mentioned by respondent." Thus, individuals could name as many as 10 different ways to prevent HIV/AIDS infection. The list of possible answers were "Abstain from sex," "Non-

penetrative sex/thigh," "Always use condoms," "Limit number of sex partners," "Have only one sex partner," "Avoid sex workers," "Have sex with a virgin,"[1] "Use sterilised needles," "Require partner to take blood test," "Other," and "Don't know." If the respondent answered "Other," a short description was written down. The majority of the "other" responses dealt with avoiding contact with blood. The responses to this question were summed up to create a new variable measuring the number of ways to prevent HIV infection the responded reported, which ranged from zero to nine.[2]

HIV/AIDS risk behavior. Several variables were used to measure respondents' participation in HIV/AIDS risk behavior. First, all respondents were asked "Have you ever had sexual intercourse? (By sexual intercourse, we mean full penetration.)" This was recorded as a dichotomous yes/no outcome, with only 38 respondents refusing to answer the question and two responding "don't know."

An additional set of six questions was asked of respondents who indicated they were sexually experienced. Respondents were asked "At what age did you first have sexual intercourse?" and "Have you had sexual intercourse **more than once** in your life?" A measure of number of recent sexual partners was obtained by asking "With how many different people have you had sexual intercourse **in the last 12 months**?" Whether or not the respondent used protection at first sexual intercourse was measured with the question "The very **first** time you had sexual intercourse, did you or the other person use any methods to prevent pregnancy or

[1] The option "have sex with a virgin" is potentially ambiguous. On the one hand, as a method of preventing HIV infection, restricting sexual activity to sexually naïve partners will greatly reduce or eliminate the risk of infection. In South Africa, however, there is an alleged folk myth that having sex with a virgin will cure AIDS in an individual who already has AIDS (e.g., Simbayi et al., 2005). In this context, "have sex with a virgin" is clearly an incorrect response. However, because the question asks specifically about preventing infection rather than curing, this response is counted as correct HIV/AIDS knowledge for the current analysis.

[2] Respondents were not given credit for "other" answers that were clearly incorrect ways to prevent HIV/AIDS infection, such as "Not going near someone with the virus," "Put salt in your hand," and "Serve the Lord Jesus." These types of responses were the minority of "other" responses.

sexually transmitted disease?" Lastly, two questions measured the presence or absence of genital discharges or sores, which may increase the likelihood of HIV transmission and which may also be proxies for other STDs: "Have you had abnormal genital discharge during the past 12 months?" and "Have you had an ulcer or sore on your private parts during the past 12 months?"

Sociodemographic control variables. A number of variables are used to control for socioeconomic status and demographic background. First, all results are presented separately by gender (male or female). Some analyses are performed with all population groups together; others are performed separately for blacks, coloureds, and whites. (Only 27 respondents from the entire sample, less than 0.6%, indicated their population group was Indian or Other.) Additionally, we control for the respondents age (in years), whether or not the respondent is currently enrolled in school or taking classes of any kind, and the highest grade the respondent has completed. Household background variables include the household size, the highest completed level of education in the household (in completed grades), and a five-level ordinal variable indicating household income quintiles.

Results

Summary statistics for the variables used in the analysis are presented by race and gender in Table 1. Significance values from ANOVAs comparing males and females with each racial group are also presented, indicating whether there is a significant male/female difference. In general, gender differences are small and significant only for perceived risk of HIV/AIDS infection, which is higher among girls for blacks only. Girls have completed more schooling than boys for both blacks and coloureds. The only other socioeconomic variable that shows a marginal gender difference is household income, which is marginally greater for boys than girls among coloureds. Gender differences are not widespread with respect to HIV/AIDS knowledge

either. For both blacks and coloureds, girls are more likely than boys to report knowing somebody who died of AIDS. For whites, boys are more likely than girls to know that you can protect yourself from HIV infection. (This is the only significant gender difference observed for whites on any variable.) For coloureds, girls can name more ways to prevent HIV infection than boys.

HIV/AIDS risk factors and behaviors exhibit more gender variation, at least for blacks and coloureds. No gender difference is observed for being sexually experienced or having had sex more than once, but black and coloured girls report younger age at first sex, and fewer sex partners in the past 12 months. Among blacks, girls are more likely to have used protection at first sex, while among coloureds it is boys who are most likely to have used protection. Lastly, abnormal genital discharges in the last year are more common for girls than boys among blacks and coloureds, while no gender difference is observed for genital sores.

A few comments should be made on the differences between racial groups in some of the key variables, although racial averages and *p* value for race are not shown in table. Perceived HIV/AIDS risk is lowest among blacks (31.7%), moderate among coloureds (about 44.2%) and highest among whites (about 61.1%), differences that are significant at $p < 0.0001$. Blacks are the most likely to know somebody with AIDS and to know somebody who died of AIDS. For all three groups, nearly all youth (more than 95%) realize that you can protect yourself from HIV infection, and for each group more than 95% of youth can name one or more valid ways to prevent HIV infection. These results suggest that most of the respondents know the basic facts about HIV.

Despite knowing the facts about HIV, many of the respondents in the sample are engaging in HIV/AIDS risk behavior. The majority of blacks (61.1%), and a substantial minority

of coloureds (34.8%) and whites (29.5%), are sexually experienced. Of those who have had sex, nearly all (> 93%) have had sex more than once, with whites exhibiting the highest rate (97.6%, $p = 0.0485$). Respondents from each racial group report having had 1.5 sex partners in the past 12 months, with no significant difference across races ($p = 0.9628$). Blacks are the least likely to use protection at first sex (46.3%), with coloureds intermediate (58.1%) and whites the most likely (90.0%, $p < 0.0001$). Blacks are more likely than coloureds or whites to report abnormal genital discharges or genital sores over the past 12 months, though overall rates for both variables are fairly low for all groups (less than 10% for discharges and less than 5% for sores). Overall, the youth in the sample engage in fairly high levels of HIV/AIDS risk behavior, with substantial fractions of sexually active youth having sex with multiple partners and without protection at first sex.

[Table 1 about here]

Following Macintyre et al. (2004), we calculated contingency tables of perceived HIV/AIDS risk by risk behaviors. Table 2 displays crosstabulations of HIV/AIDS risk perception by ever had sex for groups defined by gender (Panel A) and groups defined by race and gender (Panel B). In these preliminary analyses, we use ever having had sex as our measure of risk behavior. In later analyses, we will also use other measures of risk behavior (e.g., a scale of number of risk behaviors). Looking first at Panel A, the majority of cases for males and females fall along the diagonal, with perceptions of risk corresponding to risk behavior (i.e., people who have not engaged in sex perceiving no risk of HIV/AIDS and people who have had sex perceiving some risk of HIV). However, approximately a quarter of both males and females do not think they are at risk of HIV/AIDS even though they have had sex. The remaining 20%

or so of males and females may be overestimating their risk of HIV. They have not had sex but think there are at some risk of HIV.

The results in Panel B of Table 2 show important variations by race in the relationship between ever had sex and perception of risk. The most striking difference perhaps is the much larger percentage of white males and females who have not had sex but perceive some risk of HIV/AIDS compared to the other groups. For example, 45.6% of whites males fall into this category compared to approximately 30% of coloured males and females and less than 10% of blacks males and females. Also striking is the difference across racial groups in the percentage of respondents who have had sex but perceive no risk of HIV. Roughly one-third of black males and females, 20% of coloured males and females and 10% of white males and females fall into this category. Finally, within racial groups, one sees that the distribution of cases is fairly similar by gender.

[Table 2 about here]

Table 3 presents multivariate logistic regression models of HIV/AIDS risk perception, by gender. Model 1 uses the full sample, and includes the HIV/AIDS knowledge variable and one risk behavior variable, a dummy for ever had sex. Personal education and highest education in household are associated with greater probability of perceived HIV/AIDS risk for boys, but only personal schooling level is significant for girls. Racial group is significant for both boys and girls, with coloureds and whites perceiving greater probability of HIV/AIDS infection than blacks. For boys, not one of the HIV/AIDS knowledge variables is significant. For girls, knowing you can protect yourself from HIV/AIDS is associated with lower perceived likelihood of HIV/AIDS infection risk. Lastly, for both boys and girls those who have had sex are more likely to perceive themselves at risk of HIV/AIDS infection.

Model 2 presents the baseline control variables with additional HIV/AIDS risk behavior variables that apply only to respondents who have had sex. For boys, none of the risk behavior variables are statistically significant predictors of HIV/AIDS risk perception. For girls, only one variable is significant; girls who have sex more than once are more likely to think themselves at risk of HIV/AIDS infection. Interestingly, while racial group remains significant for boys (with coloureds having greater risk perception than blacks, and whites being marginally greater than blacks), racial identity is not a significant predictor of HIV/AIDS risk perception for sexually active girls.

[Table 3 about here]

Table 4 presents the same models shown in Table 3, done separately for each race and gender group. For blacks (panel A, Model 1), knowing somebody with HIV/AIDS is a significant predictor of HIV/AIDS risk perception for boys; none of the other HIV/AIDS knowledge variables are significant for either gender. Having ever had sex is associated with greater perceived HIV/AIDS risk for both boys and girls. For blacks who are sexually experience (panel A, Model 2), the only HIV/AIDS risk behavior that is a significant predictor for boys is the number of sex partners in the previous 12 months, which is associated with greater risk perception. However, this result must be discounted because the overall model is not significant for black males (model $p = 0.219$). For black girls, several of the HIV/AIDS risk behaviors are predictors of HIV/AIDS risk perception; having had sex more than once and having had an abnormal genital discharge in the past year are both significantly positive predictors, while having used protection at first sex is a marginally significant negative predictor.

For coloureds (panel B), the only HIV/AIDS knowledge variable that achieves statistical significance is the number of ways reported to prevent HIV infection, which is positively associated with HIV risk perception for males only. Being sexually experienced is a positive predictor for males only as well. Among sexually experienced coloured youth (Model 2), none of the additional HIV/AIDS risk behavior variables are significant for males (and the overall model is only marginally significant, with $p = 0.080$). (Note: the genital sores variable was collinear for coloured males and was dropped from the model.) For girls, several of the risk behavior variables are significant. Having had sex more than once increases HIV/AIDS risk perception, while increased number of partners in the last 12 months decreases HIV/AIDS risk perception (a result that is counterintuitive). Additionally, genital sores in the previous year are a marginally significant positive predictor of risk perception.

None of the models run for whites (panel C) achieved statistical significance for either males or females (all $p > 0.13$). It appears that HIV/AIDS risk perception is not strongly related to either sociodemographic background, HIV/AIDS knowledge, or HIV/AIDS risk behavior for white youth in Cape Town.

[Table 4 about here]

Discussion and Conclusions

Our study shows important variation by race and gender groups in self-perceived HIV/AIDS risk. White males and females were most likely to perceive themselves at risk of HIV and black males and females were the least likely. Among blacks, females were significantly more likely to perceive themselves at risk than males. Gender differences in perceived risk not significant for the other racial groups. For each race and gender group, we found evidence of optimistic bias, that is, individuals who had engaged in a risk behavior

(defined as ever had sex in these preliminary analyses) but did not believe they were at risk for AIDS. Rates of optimistic bias range from 38.5% of black males to 8.9% of white females in our study. A noteworthy percentage of our respondents fell into the group that Macintyre et al. (2004) refer to as the "worried well," that is, individuals who had not engaged in a potential risk behavior (i.e., had not had sex) but nonetheless believe they are at some risk of AIDS. The percentage of respondents who were worried well ranged from 45.6% of white males to 5.5% of black males. Taken together, the results indicate a mismatch between behavior and perceptions for over 40% of black and coloured males and females and for over 50% of white males and females.

Our multivariate models showed some effects of background characteristics on perceived risk although the particular measures varied across models. Contact with someone who had AIDS was significant only for black males and knowing someone who had died of AIDS had no effect on risk perception. The effects of AIDS knowledge on risk perception were similarly limited. Having ever had sex had a significant relationship with risk perceptions for males and females in the full sample and for black males, black females, and coloured males in the analysis by race and gender groups. Among those who have had sex, having had sex more than once was the risk behavior most often associated with self-perceived HIV/AIDS risk. Other measures of risk behavior among the sexually active typically were not significant.

Our multivariate results also showed important effects of race and gender. With the exception of sexually active females, analyses based on the pooled sample of respondents (Table 3) showed that coloureds and whites had higher self-perceived HIV/AIDS risk than blacks. Our models for groups defined by both race and gender (Table 4) were particularly poor predictors of risk perception for the full (i.e., those who had had sex and those who had not) samples of

coloured females and whites females and for sexually active black males, coloured males, white males and females. Our lack of significant findings for sexually active white males and females may be related to small sample sizes for these groups. It seems unlikely though that sample size can account for the lack of significant findings for other race and gender groups.

In a number of ways, our findings are similar to those of previous studies on HIV/AIDS risk perception among young people in Africa. We found limited effects of age and some effects of education. Like other studies, we found that our respondents have some knowledge about HIV/AIDS. Virtually all respondents knew that they could protect themselves from AIDS and, on average, respondents could name at least one way to prevent AIDS. However, our study could not adequately determine the gaps that may exist in adolescents' knowledge about HIV/AIDS. Similar to the Barden-O'Fallon et al. (2004) study, we found limited associations between HIV/AIDS knowledge and self-perceived risk and virtually no association between knowing someone with AIDS and self-perceived risk. (The relationship between knowing someone with AIDS and risk was significant for the full sample of black males only.) Like some previous studies in Africa, we also found evidence of a positive relationship between risk behaviors and self-perceived risk of HIV. But in contrast to previous research (e.g., Macintyre et al. 2004), we find stronger effects of race on risk perception. It should be noted though that measures of HIV/AIDS risk perception vary across studies and this could explain possible differences in findings. For example, the Macintyre et al. study only asked respondents about the likelihood of becoming infected within the next twelve months. Our study was open-ended in the sense that it did not give respondents a specific time frame to consider. In addition, cultural differences by geographic region may influence risk perception.

Our findings have a number implications. If racial group can be considered a proxy for social and cultural factors, our findings indicate the importance of such factors to the formation of risk perceptions. Both level of perceived risk and predictors of risk perception varied by race. The lack of attention to social and cultural factors in models used to explain perceptions and behavior related to HIV/AIDS has been noted elsewhere (Tillotson & Maharaj, 2001). Our findings also indicate the importance of examining race and gender simultaneously. Within racial groups, gender differences in level of perceived risk were not large, but there were gender differences in the predictors of perceived risk. Thus, our findings suggest that different aspects of social location jointly influence risk perception. Programs aimed at educating individuals about HIV/AIDS and reducing risk behaviors need to take into account the social locations that individuals occupy and the impact social location may have on knowledge, perceptions, and behaviors related to HIV/AIDS.

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Table 1. Summary statistics, by race and gender

	Black			**Coloured**			**White**			
	Male	*Female*	*p*	*Male*	*Female*	*p*	*Male*	*Female*	*p*	
Any perceived risk of HIV/AIDS	0.293	0.336	***0.046***	0.456	0.419	*0.139*	0.584	0.646	*0.178*	
Age	18.089	18.048	*0.704*	17.773	17.811	*0.753*	17.773	18.070	*0.224*	
In school	0.681	0.667	*0.537*	0.543	0.573	*0.203*	0.853	0.837	*0.626*	
Highest grade completed	8.595	9.130	***0.000***	9.204	9.607	***0.000***	10.463	10.776	*0.116*	
Household size	5.490	5.633	*0.303*	5.603	5.719	*0.266*	3.884	4.007	*0.283*	
Highest education in household	11.001	11.004	*0.984*	11.400	11.284	*0.207*	13.724	13.731	*0.960*	
Household income quintile	2.272	2.184	*0.162*	3.546	3.438	***0.071***	4.827	4.856	*0.663*	
Know somebody with AIDS	0.196	0.215	*0.318*	0.099	0.114	*0.429*	0.072	0.114	*0.099*	
Know somebody who died of AIDS	0.310	0.359	***0.042***	0.107	0.166	***0.003***	0.065	0.076	*0.636*	
Can protect self from AIDS	0.967	0.964	*0.723*	0.952	0.960	*0.476*	0.999	0.979	***0.019***	
Number of reported ways to prevent HIV/AIDS	1.476	1.507	*0.389*	1.736	1.892	***0.002***	2.429	2.415	*0.920*	
Ever had sex	0.611	0.601	*0.690*	0.369	0.321	*0.081*	0.286	0.325	*0.391*	
Age first sex	15.465	16.369	***0.000***	16.081	16.988	***0.000***	17.374	17.468	*0.782*	a
Had sex more than once	0.936	0.937	*0.921*	0.923	0.955	*0.126*	0.958	1.000	*0.110*	a
Number of sex partners in last 12 months	1.991	1.149	***0.000***	2.048	0.935	***0.000***	1.519	1.474	*0.889*	a
Used protection at first sex	0.386	0.529	***0.000***	0.676	0.482	***0.000***	0.865	0.913	*0.412*	a
Genital discharge last 12 months	0.041	0.130	***0.000***	0.028	0.112	***0.000***	0.007	0.025	*0.388*	a
Genital sore last 12 months	0.040	0.058	*0.183*	0.010	0.022	*0.216*	0.000	0.016	*0.321*	a
N	886	1122		859	1001		271	301		
a. Conditional upon ever had sex:	535	675		301	317		68	98		

Table 2. Percentage distributions of ever had sex by risk perception

A. By gender

Male (N=1,871)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	20.0	26.4
Ever had sex: no	19.3	34.3

Female (N=2,237)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	21.0	24.9
Ever had sex: no	19.9	34.2

B. By race and gender

Black male (N=855)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	22.8	38.5
Ever had sex: no	5.5	33.2

Black female (N=1,060)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	26.8	34.2
Ever had sex: no	6.6	32.5

Coloured male (N=788)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	18.4	17.9
Ever had sex: no	26.6	37.1

Coloured female (N=929)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	13.9	18.5
Ever had sex: no	28.5	39.1

White male (N=228)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	15.4	10.5
Ever had sex: no	45.6	28.5

White female (N=248)

	Perception of risk	
Behavior	Some risk	No risk
Ever had sex: yes	23.0	8.9
Ever had sex: no	44.4	23.8

Table 3. Multivariate logistic regression models of HIV/AIDS risk perception, by gender

	Model 1 (full sample)						**Model 2 (sexually active)**					
	Male	*std err*	*p*	*Female*	*std err*	*p*	*Male*	*std err*	*p*	*Female*	*std err*	*p*
Intercept	-2.654	0.792	0.001	-1.563	0.686	0.023	-2.381	1.216	0.051	-1.932	0.987	0.051
Age	-0.022	0.041	0.589	-0.035	0.035	0.326	0.079	0.060	0.186	-0.080	0.047	0.091
In school	0.044	0.153	0.776	0.026	0.133	0.847	-0.037	0.204	0.855	-0.368	0.172	0.034
Highest grade completed	0.085	0.042	0.042	0.111	0.039	0.005	0.055	0.061	0.370	0.186	0.053	0.001
Household size	-0.014	0.029	0.631	0.026	0.024	0.264	-0.033	0.034	0.330	0.060	0.027	0.031
Highest education in household	0.078	0.038	0.041	0.051	0.041	0.219	0.105	0.055	0.057	0.027	0.055	0.622
HH income quintiles	-0.010	0.060	0.868	-0.010	0.056	0.860	-0.147	0.083	0.077	0.091	0.071	0.198
Black (baseline)	—	—	—	—	—	—	—	—	—	—	—	—
Coloured	0.820	0.161	0.000	0.443	0.150	0.003	0.643	0.223	0.004	-0.263	0.193	0.174
White	0.967	0.237	0.000	1.176	0.249	0.000	0.675	0.378	0.075	0.566	0.399	0.158
Know somebody with AIDS	-0.094	0.186	0.613	0.037	0.169	0.828	—	—	—	—	—	—
Know somebody who died of AIDS	0.205	0.159	0.197	-0.029	0.135	0.830	—	—	—	—	—	—
Can protect self from AIDS	0.168	0.322	0.602	-0.636	0.247	0.010	—	—	—	—	—	—
Number of ways to prevent HIV/AIDS	0.073	0.070	0.295	0.068	0.058	0.246	—	—	—	—	—	—
Ever had sex	0.488	0.141	0.001	0.471	0.128	0.000	—	—	—	—	—	—
Age first sex	—	—	—	—	—	—	-0.047	0.055	0.394	-0.023	0.056	0.681
Had sex more than once	—	—	—	—	—	—	-0.206	0.382	0.590	1.307	0.320	0.000
Number of sex partners in last 12 months		—	—	—	—	—	0.044	0.039	0.252	-0.010	0.064	0.883
Used protection at first sex	—	—	—	—	—	—	0.257	0.171	0.133	-0.136	0.152	0.373
Genital discharge last 12 months	—	—	—	—	—	—	0.102	0.458	0.825	0.009	0.273	0.973
Genital sore last 12 months	—	—	—	—	—	—	-0.434	0.651	0.506	0.498	0.408	0.223
N	1,871			2,237			811			994		
F	7.06			6.19			1.91			4.33		
p	0.000			0.000			0.025			0.000		

Table 4. Multivariate logistic regression models of HIV/AIDS risk perception, by race and gender

	Model 1 (full sample)						**Model 2 (sexually active)**					
A. Black	*Male*	*std err*	*p*	*Female*	*std err*	*p*	*Male*	*std err*	*p*	*Female*	*std err*	*p*
Intercept	-2.965	0.968	0.003	-2.689	0.912	0.004	-3.122	1.385	0.026	-3.048	1.152	0.009
Age	0.079	0.052	0.127	0.018	0.047	0.697	0.110	0.072	0.128	-0.024	0.058	0.680
In school	0.010	0.213	0.961	-0.270	0.153	0.080	0.127	0.228	0.578	-0.244	0.174	0.164
Highest grade completed	-0.013	0.058	0.824	-0.002	0.053	0.967	-0.070	0.068	0.309	-0.003	0.062	0.961
Household size	-0.068	0.036	0.064	-0.013	0.027	0.644	-0.054	0.041	0.185	-0.003	0.031	0.914
Highest education in household	0.060	0.049	0.219	0.135	0.055	0.015	0.054	0.058	0.355	0.124	0.066	0.061
HH income quintiles	-0.046	0.085	0.592	-0.032	0.071	0.651	-0.159	0.102	0.121	-0.040	0.084	0.633
Know somebody with AIDS	0.546	0.212	0.011	0.025	0.214	0.906	—	—	—	—	—	—
Know somebody who died of AIDS	-0.122	0.213	0.568	-0.064	0.155	0.682	—	—	—	—	—	—
Can protect self from AIDS	0.130	0.550	0.814	-0.419	0.418	0.318	—	—	—	—	—	—
Number of ways to prevent HIV/AIDS	-0.184	0.147	0.215	0.098	0.118	0.411	—	—	—	—	—	—
Ever had sex	0.910	0.234	0.000	1.190	0.206	0.000	—	—	—	—	—	—
Age first sex	—	—	—	—	—	—	0.086	0.065	0.189	0.080	0.063	0.206
Had sex more than once	—	—	—	—	—	—	-0.466	0.447	0.300	0.861	0.336	0.012
Number of sex partners in last 12 months		—	—	—	—	—	0.125	0.055	0.026	0.111	0.113	0.328
Used protection at first sex	—	—	—	—	—	—	0.047	0.206	0.818	-0.303	0.166	0.071
Genital discharge last 12 months	—	—	—	—	—	—	-0.745	0.677	0.274	0.587	0.284	0.041
Genital sore last 12 months	—	—	—	—	—	—	0.542	0.635	0.395	0.049	0.450	0.914
N	855			1,060			486			633		
F	4.04			7.74			1.32			2.29		
p	0.000			0.000			0.219			0.012		

Table 4. (continued)

	Model 1 (full sample)						Model 2 (sexually active)					
B. Coloured	*Male*	*std err*	*p*	*Female*	*std err*	*p*	*Male*	*std err*	*p*	*Female*	*std err*	*p*
Intercept	-2.693	1.126	0.018	-1.601	1.022	0.119	-1.862	1.950	0.342	-2.278	1.896	0.232
Age	-0.042	0.060	0.483	-0.045	0.049	0.358	0.036	0.091	0.694	-0.128	0.090	0.156
In school	0.125	0.209	0.551	0.152	0.190	0.425	-0.104	0.367	0.777	-0.798	0.431	0.067
Highest grade completed	0.083	0.058	0.153	0.167	0.053	0.002	0.114	0.093	0.221	0.518	0.107	0.000
Household size	-0.013	0.043	0.764	0.058	0.039	0.147	-0.052	0.056	0.360	0.164	0.064	0.012
Highest education in household	0.203	0.059	0.001	0.039	0.063	0.534	0.236	0.083	0.005	-0.191	0.118	0.108
HH income quintiles	-0.143	0.079	0.073	-0.006	0.081	0.938	-0.252	0.129	0.053	0.197	0.123	0.112
Know somebody with AIDS	-0.351	0.306	0.254	0.035	0.295	0.905	—	—	—	—	—	—
Know somebody who died of AIDS	0.314	0.241	0.193	0.148	0.230	0.519	—	—	—	—	—	—
Can protect self from AIDS	0.057	0.429	0.895	-0.522	0.334	0.120	—	—	—	—	—	—
Number of ways to prevent HIV/AIDS	0.270	0.104	0.010	0.040	0.079	0.611	—	—	—	—	—	—
Ever had sex	0.550	0.198	0.006	0.192	0.180	0.286	—	—	—	—	—	—
Age first sex	—	—	—	—	—	—	-0.088	0.089	0.329	-0.121	0.107	0.264
Had sex more than once	—	—	—	—	—	—	-0.106	0.578	0.855	2.546	1.108	0.024
Number of sex partners in last 12 months		—	—	—	—	—	0.021	0.054	0.701	-0.559	0.237	0.020
Used protection at first sex	—	—	—	—	—	—	0.286	0.268	0.289	0.295	0.303	0.332
Genital discharge last 12 months	—	—	—	—	—	—	0.568	0.874	0.517	-0.357	0.502	0.479
Genital sore last 12 months	—	—	—	—	—	—	—	—	—	1.473	0.829	0.079
N	788			929			268			285		
F	4.00			1.87			1.72			3.86		
p	0.000			0.047			0.080			0.000		

Table 4. (continued)

	Model 1 (full sample)						Model 2 (sexually active)					
C. White	*Male*	*std err*	*p*	*Female*	*std err*	*p*	*Male*	*std err*	*p*	*Female*	*std err*	*p*
Intercept	-1.662	2.440	0.497	1.480	2.773	0.594	5.275	7.437	0.482	11.336	7.756	0.151
Age	-0.142	0.160	0.376	0.010	0.144	0.943	0.404	0.265	0.135	-0.397	0.370	0.288
In school	0.068	0.592	0.909	0.564	0.544	0.302	0.818	0.681	0.237	-0.652	0.895	0.470
Highest grade completed	0.334	0.179	0.064	-0.004	0.163	0.980	0.582	0.387	0.141	0.123	0.289	0.671
Household size	0.239	0.120	0.049	0.097	0.146	0.508	0.688	0.299	0.027	-0.499	0.334	0.142
Highest education in household	-0.149	0.111	0.182	0.000	0.114	0.997	-0.364	0.290	0.216	0.285	0.253	0.267
HH income quintiles	0.470	0.274	0.089	-0.175	0.319	0.585	-2.007	1.402	0.160	0.600	0.613	0.333
Know somebody with AIDS	-0.377	0.604	0.535	0.334	0.462	0.471	—	—	—	—	—	—
Know somebody who died of AIDS	0.713	0.754	0.347	-0.846	0.552	0.128	—	—	—	—	—	—
Can protect self from AIDS	—	—	—	-1.459	1.156	0.210	—	—	—	—	—	—
Number of ways to prevent HIV/AIDS	-0.091	0.108	0.402	0.126	0.127	0.325	—	—	—	—	—	—
Ever had sex	-0.019	0.483	0.968	0.504	0.454	0.269	—	—	—	—	—	—
Age first sex	—	—	—	—	—	—	-0.512	0.247	0.044	-0.447	0.250	0.081
Had sex more than once	—	—	—	—	—	—	—	—	—	—	—	—
Number of sex partners in last 12 months		—	—	—	—	—	0.187	0.184	0.316	0.511	0.534	0.344
Used protection at first sex	—	—	—	—	—	—	1.029	1.234	0.409	-1.303	1.082	0.234
Genital discharge last 12 months	—	—	—	—	—	—	—	—	—	—	—	—
Genital sore last 12 months	—	—	—	—	—	—	—	—	—	—	—	—
N	228			248			57			76		
F	1.08			0.60			1.69			0.88		
p	0.386			0.828			0.132			0.549		