Change over Time in the HIV/AIDS Risk Perceptions of South African Youth

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HIV/AIDS remains a major source of mortality in sub-Saharan Africa, with youth particularly vulnerable to infection. A number of health behavior models posit that knowledge and risk perceptions are related to engagement in high risk behaviors (e.g., Ajzen and Fishbein 1980; Bandura 1994; Janz and Becker 1984). Young people in sub-Saharan Africa are often knowledgeable about the risk factors associated with HIV infection, and yet they often underestimate their own risk of infection, despite engagement in risk behaviors (e.g., Anderson et al. 2007; Barden-O'Fallon et al. 2004). Factors shown to be associated with perceived HIV risk vary across studies. Some studies find that engagement in risk behaviors increases perceived risk (Anderson et al. 2007; Shobo 2007), while others find no relationship (Adetunji and Meekers 2001). Gender, age, and race/ethnicity may also influence perceived risk, while knowing somebody with HIV/AIDS has been inconsistently associated with HIV/AIDS risk perceptions (Anderson et al. 2007, Camlin and Chimbwete 2003). Furthermore, virtually no work has examined change in HIV/AIDS perceptions over time, although one longitudinal study of 15-49 year-olds in rural Malawi found declines in HIV risk perceptions associated with declines in engagement in risk behaviors and in the risk perceptions of one's social networks (Smith and Watkins 2005). We know little about whether youth adjust their perceived HIV/AIDS infection risk over time, and if so, what factors influence that change.

This paper examines change in perceived HIV/AIDS infection risk among youth in Cape Town, South Africa. Data come from the Cape Area Panel Study (CAPS), a longitudinal representative sample of youth in Cape Town. We test two predictions:

1) Youth who are sexually experienced will have greater perceived HIV/AIDS risk
2) Youth who know someone with HIV/AIDS will have greater perceived HIV/AIDS risk

Methods and data. The data come from waves 1, 3 and 4 of CAPS. CAPS is a joint project of the University of Michigan, the University of Cape Town, and (for wave 4) Princeton University; principal investigators on various waves include David Lam, Jeremy Seekings, Murray Leibbrandt, and Anne Case. Both authors of this paper have been involved with CAPS since its inception. Youth were initially

recruited into CAPS in 2002 (wave 1); a subset was re-interviewed in 2003/2004 (wave 2), with the complete sample interviewed again in 2005 (wave 3) and 2006 (wave 4) (see Lam et al. 2008 for details).

Perceived risk of HIV/AIDS was measured in CAPS 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?" At each wave, respondents were asked if they had ever had sexual intercourse, and whether or not they personally knew anybody who had HIV/AIDS. Gender, age, and race/ethnicity were also recorded in each wave. The sample is restricted to respondents who reported perceived HIV/AIDS risk in waves 1, 3 and 4. (Respondents who self-identified they were HIV positive, a very small number, were excluded.) The analysis sample includes 2,463 young adults, ages 14 – 22 in wave 1 (average age: 21.3 in wave 4).

Analysis. Two separate dependent variables are analyzed. First we examine the respondent's reported perceived risk of HIV/AIDS in waves 1, 3 and 4, using multivariate generalized estimating equation (GEE) models (controlling for gender, age, and race). Secondly, we will examine the change in risk perceptions over time, measured as perceived risk in wave 4 minus risk in wave 1, using ordinal logistic regression with robust standard errors (again controlling for gender, age, and race).

Results. Table 1 shows the frequency distribution of perceived HIV/AIDS risk in each of the panels. In each wave the modal response was "no risk," yet perceived risk increased substantially following wave 1, primarily through many respondents shifting to "very small risk." Table 2 depicts the change in perceived risk between waves 1 and 4. Most (57%) of respondents who reported no risk in wave 1 were unchanged by wave 4, though over 43% did increase their perceived risk. For higher risk levels (very small risk, some risk and great risk), most (50 – 52%) of respondents have decreased their perceived level to no risk by wave 4. Overall, 45.6% of respondents reported the same level of risk in waves 1 and 4; 23.2% decreased their risk while 31.2% increased it (not shown in table).

(Tables 1 and 2 about here)

Table 3 presents GEE models of perceived risk, using the full panel data from waves 1, 3 and 4. Two separate models are presented. In both models, gender has no effect on perceived risk; risk increased with age; and coloureds have lower perceived risk than blacks, while whites are not significantly different from blacks. With respect to sexual experience, respondents who have had sex report higher perceived risk than virgin respondents, while those who know somebody with HIV/AIDS also report greater perceived risk than those who do not.

(Table 3 about here)

Table 4 presents analyses of the change in perceived risk from wave 1 to wave 4. In this analysis, we include measures that capture change in our predictor variables across waves. For model 1, the

baseline is respondents who were virgins in both waves 1 and 4 (20.3% of respondents). Youth who were non-virgins in both waves have raised their perceived risk more than virgins, while youth who experienced first sex between waves 1 and 4 have raised their perceived risk the most. In model two, the baseline is respondents who did not know someone with HIV/AIDS in either waves. Compared to them, respondents who knew somebody with HIV/AIDS in both waves, or in wave 1 but not wave 4, are not significantly different in terms of perceived risk. However, youth who did not know someone with HIV/AIDS in wave 1 but did by wave 4 have increased their perceived risk significantly across the panels.

<div align="center">(Table 4 about here)</div>

These results show that HIV/AIDS risk perception is not constant for youth in Cape Town but fluctuates over time, decreasing for some and increasing for others. We find that being sexually active or knowing somebody with HIV/AIDS both result in increased perceived risk of HIV infection in Cape Town. Furthermore, entry into those states – either first sexual activity or first knowing somebody with HIV/AIDS – is associated with greatest increased perceived risk over time. Thus, at least some of the changes in risk perceptions are in ways that health behavior models would predict. In order to further investigate HIV risk perceptions over time, a number of additional analyses will be conducted. For example, data from waves 3 and 4 will be used to investigate how much risk perceptions change over a one year period compared to a four year period (i.e., the analysis of risk perceptions using data from waves 1 and 4 that is reported here).

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Table 1. Levels of perceived HIV/AIDs risk in waves 1 and 4

	Wave 1		Wave 3		Wave 4	
	freq	*%*	*freq*	*%*	*freq*	*%*
1. no risk	1,538	62.44%	1,186	48.15%	1,340	54.41%
2. very small risk	610	24.77%	867	35.2%	774	31.43%
3. some risk	171	6.94%	231	9.38%	204	8.28%
4. great risk	144	5.85%	179	7.27%	145	5.89%
	2,463	100%	2,463	100%	2,463	100%

Table 2: Percentage change in perceived HIV/AIDS risk from waves 1 to 4

	Risk in wave 4				
Risk in wave 1	*1. no risk*	*2. very small risk*	*3. some risk*	*4. great risk*	*total*
1. no risk	**56.63**	30.62	6.89	5.85	100.00
2. very small risk	50.00	**34.59**	10.00	5.41	100.00
3. some risk	52.05	28.07	**15.20**	4.68	100.00
4. great risk	52.08	30.56	7.64	**9.72**	100.00

Table 3. GEE models of HIV/AIDS perceived risk

	Model 1			Model 2		
	coeff.	*std. error*	*p*	*coeff.*	*std. error*	*p*
Intercept	1.375	0.077	0.000	1.132	0.073	0.000
Male	-0.012	0.022	0.593	0.005	0.022	0.811
Age	0.008	0.004	0.053	0.025	0.004	0.000
Black (omitted)	—	—	—	—	—	—
Coloured	-0.057	0.023	0.015	-0.051	0.024	0.032
White	0.078	0.045	0.086	0.072	0.044	0.106
Ever had sex	0.244	0.027	0.000	—	—	—
Know somebody with HIV/AIDS	—	—	—	0.215	0.026	0.000
N (obs)	7222			7360		
N (individuals)	2463			2463		
Wald chi-sq	177.46			159.46		

Table 4: Ordinal logit models of change in HIV/AIDS risk between waves 1 and 4

	Model 1			Model 2		
	coeff.	*std. error*	*p*	*coeff.*	*std. error*	*p*
Male	-0.163	0.076	0.033	-0.163	0.076	0.032
Age	-0.017	0.018	0.339	-0.010	0.015	0.492
Black (omitted)	—	—	—	—	—	—
Coloured	-0.891	0.085	0.000	-0.926	0.090	0.000
White	-1.269	0.147	0.000	-1.285	0.140	0.000
Virgin in both waves 1 & 4 (omitted)	—	—	—			
Non-virgin in both waves 1 & 4	0.285	0.119	0.016			
Experienced first sex between waves 1 & 4	0.468	0.098	0.000			
Did not know anyone HIV+ in waves 1 or 4 (omitted)				—	—	—
Knew someone HIV+ in both waves 1 & 4				-0.282	0.177	0.110
Knew someone HIV+ in wave 1 but not wave 4				-0.070	0.156	0.652
Knew someone HIV+ in wave 4 but not wave 1				0.275	0.114	0.015
N	2371			2444		
Wald chi-sq	193.43			189.13		