

**Is social capital a useful conceptual tool for exploring community
level influences on HIV infection? An exploratory case study from
South Africa**

Catherine Campbell PhD*, Social Psychology, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, Telephone: 020-7622 3042
Fax: 020-7955 7565, Email: c.campbell@lse.ac.uk

Brian Williams PhD, Miningtek, Council for Scientific and Industrial Research, P. O. Box 91230, Auckland Park 2006, Johannesburg, South Africa

Denise Gilgen DPhil, Epidemiology and Public Health, Swiss Tropical Institute, Socinstr. 57, 4002 Basel, Switzerland.

*Address for correspondence

Early prepublication version of a paper which was later published in AIDS Care:.

Full reference of final article: Campbell, C., Williams, B. and Gilgen, D. (2002) Is social capital a useful conceptual tool for exploring community level influences on HIV infection? An exploratory case study from South Africa. *AIDS-Care*. 14(1), 41-55 (February)

Is social capital a useful conceptual tool for exploring community level influences on HIV? An exploratory case study from South Africa

Abstract:

This paper reports on an exploratory study investigating links between sexual health and social capital in a South African mining community. In this study, social capital is defined in terms of peoples' membership of voluntary community organisations (e.g. church, residents' associations, youth groups). Using biomedical and social survey data from a stratified random sample of 1 211 Carletonville residents we tested the hypothesis that organisational members were less likely to have HIV. Multivariate analysis of variance sought to identify significant associations between nine organisational memberships and HIV infection as well as three risk factors for infection (casual partners, condom use with casual partners and alcohol consumption). Analysis yielded a range of significant results, but findings varied across age and gender, and were not all in the hypothesised direction. For example, young men and young women who belonged to sports clubs were less likely to be HIV positive, and young women who belonged to sports clubs were more likely to use condoms with casual partners than non-members. Amongst members of *stokvels* (voluntary savings clubs accompanied by social festivities) however, young men were more likely to be HIV positive, women of all ages were more likely to have a casual partner, and both young men and young women were more likely to drink alcohol than non-members. While our exploratory study has produced sufficient evidence to justify the need for further research in this area, it also highlights that the interface between HIV infection and social capital is a complex area that defies easy generalisation.

Is social capital a useful conceptual tool for exploring community level influences on HIV? An exploratory case study from South Africa

Introduction

In this paper we present data from an exploratory case study that investigates associations between social capital and sexual health, with particular reference to HIV infection. The study was carried out in Khutsong, a South African township in Carletonville, a gold mining area near Johannesburg. This paper is located within the context of recent debates regarding how best to conceptualise community-level influences on health, and the view that the concept of social capital might provide a starting point for this task. This issue has been extensively debated in the social science literature but there are few hard data that provide evidence either for or against the utility of social capital in developing explanations of observed patterns of health and illness.

A substantial body of published social science research deals with associations between people's health and individual level factors (such as knowledge, attitudes and behaviours), inter-individual factors (such as social support), and various macro-social factors (such as socio-economic deprivation, ethnicity and gender) (see Campbell, Wood and Kelly, 1999, and references therein). However, much remains to be learned about community-level influences on health (Barnett and Whiteside, 1999; Beeker, Guenter Gray and Raj, 1998). It has been argued that Putnam's (1993, 1995, 2000)

concept of social capital, developed in the fields of political science and economics, might provide a useful conceptual tool for exploring the relationship between health and community-level networks and relationships (Baum 1999b; Gillies, Tolley and Wolstenholme, 1996; Kawachi, Kennedy and Prothrow-Stith, 1997; Lomas, 1998). Following Putnam, 'social capital' refers to the community cohesion that results from positive aspects of community life, more particularly from high levels of 'civic engagement' as reflected in membership of local voluntary associations. Such membership is said to be associated with the positive community norms of trust and reciprocity between community members and a positive local identity.

High levels of social capital have been associated with a range of positive political and economic outcomes in contexts as diverse as Italy (Putnam, 1993) and Tanzania (Narayan and Pritchett, 1997). Other researchers have argued that social capital might also be associated with positive health outcomes so that Putnam's concept might be usefully applied in the field of health promotion and help to advance debates as to what Tawil, Verster and O'Reilly (1995) call a "health-enabling community". Such a community enables and supports health-enhancing behaviour, and is characterised by positive community networks and relationships that serve as a buffer to health-damaging stress. These researchers include Gillies and colleagues in England (Campbell, Wood and Kelly, 1999; Cooper, Arber, Fee *et al*, 1999; Gillies, 1998), Kreuter, Kawachi and colleagues in the United States and Russia (Kreuter, 1997; Kawachi, Kennedy and Prothrow-Stith, 1997; Kennedy, Kawachi and Brainerd, 1998), a number of researchers in Africa (Campbell and Mzaidume, 2000; Gillies, Tolley and Wolstenholme, 1996), and Baum in Australia (Baum, 1999a, 1999b).

Even strong supporters of the concept of social capital have argued that the links between social capital and health, if any, are likely to be complex, and that much work remains to be done in exploring this complexity. Baum (1999b) argues that while some forms of social capital might be associated with beneficial outcomes in some contexts, this might not always be the case. She points to the need to distinguish between positive, health-enhancing social capital on the one hand, and negative 'anti-social capital' on the other hand. She points out that cohesive communities might sometimes be characterised by distrust, fear, racism and exclusion of outsiders, and as such may not be healthy for those who are not part of them, or for insiders who disagree with the majority. Campbell, Wood and Kelly (1999) emphasise that social capital is not a homogenous resource equally available to all members of a community. The impact of community-level factors on health and well-being might vary according to factors such as age (Morrow, 1999), gender (B. Campbell, 1996), socio-economic status (Cooper, Arber, Fee *et al.*, 1999) and ethnicity (Nazroo, 1998; Wallace, 1993).

However, much of the current debate regarding possible links between social capital and health has taken place at the level of conjecture and hypothesis, and to date no published research specifically explores these issues in relation to the field of sexual health. It is within this context that this paper investigates possible associations between social capital and HIV infection through the analysis of survey data collected as part of an HIV-prevention intervention in a South African gold mining community. It also seeks to explore the validity of criticisms that suggest that the impact of social capital on health might be far more complex than early papers have assumed. This will be achieved through examining whether possible associations between sexual health

and particular dimensions of social capital are always positive (in the light of debates about anti-social capital) and examining the extent to which the association between aspects of social capital and health might be mediated by factors such as age and gender.

Methods

Study site

In August 1998 a survey was carried out in the township of Khutsong in the Carletonville district where the Mothusimpilo ('working-together-for-health') Project is developing ways to reduce the transmission of HIV infection focussing on mineworkers, sex-workers and adolescents (Williams, Campbell and MacPhail, 1999). Carletonville, which is the biggest gold mining complex in the world, has a population of approximately 70,000 mine workers, over 90% of whom are migrants either from rural areas in South Africa or from neighbouring countries, while Khutsong township has a population of approximately 150,000 people (Carletonville Municipal Authority, 1996). Khutsong is the historically black township in the district and contains a range of housing types including private, council, site-and-service¹, and informal settlements. Income per dependant ranges from an average income per dependent of R330 (US\$55) a month in private housing to R170 (US\$28) amongst mineworkers in mining hostels, and R133 (US\$22) in both council and informal settlements. (Williams, Campbell and MacPhail, 1999). Among people in Khutsong 43% are unemployed, with 11% in full time employment; the rest are in seasonal employment

¹ In the case of site and service housing, the local authority provides running water and flush sanitation on a small plot of land on which the owner builds a structure which is usually a tin shack

(5%), self employed (10%), housewives (6%), students (25%) and retired or disabled (1%) (Williams and Campbell, 1996). Within the Khutsong township and the adjacent Carletonville town, formal sports and leisure facilities are few, as are state-provided welfare facilities, and people rely on a range of voluntary organisations to meet their needs for leisure and social support. While there are a few formal churches with their own buildings, many residents attend informal churches that meet on open plots of ground.

While levels of HIV infection in Carletonville are high, as will be seen below, and while the epidemic has an intrinsic doubling time of close to one year (Williams and Campbell, 1999), the relative recency of the epidemic in South Africa meant that in 1998, at the time our survey was conducted, peoples' first-hand experience of persons with AIDS was still fairly limited.

Subjects

In August 1998 a survey was carried out on a random sample of 1,211 Khutsong residents (499 men and 712 women), aged between 13 and 60 years. Because of the presence of approximately 70,000 male mine workers in the Carltonville district, living in hostels without their wives who remain in the rural labour sending areas, more adult women than adult men are attracted to Khutsong, motivated by the possibility of finding employed boyfriends. This is illustrated in Figure 1 where it is seen that the excess of women occurs among those aged 20 and 44 years. The sample was stratified according to four housing types, private, council, site-and-service, and informal settlements, in proportion to the number of people living within each housing

type, to ensure that all socio-economic classes were represented. Within each stratum, cluster sampling was done by choosing index houses at random from aerial survey photographs and then taking every second house in a clockwise direction until the pre-specified size of the cluster had been met. In order to balance logistical demands with the need to maximise the level of randomisation it was decided that there should be an average of five houses per cluster. We used the average number of people per house for each housing type, determined in previous surveys, to calculate the number of houses in each cluster.

Potential survey informants were approached in their own houses by trained recruitment teams, composed of people who lived in Khutsong. The recruitment teams spent approximately twenty minutes at each house explaining the purpose of the study to the residents. If they agreed to participate they were transported to a central point, usually one of the schools in the area, where they were asked to sign the consent form (Appendix 1) which was read out to them in the language of their choice. Full details of the sampling methodology are given in Gilgen, Williams and Campbell (2000).

Questionnaire

The survey included a biomedical and a social component. The biomedical part of the survey included tests for HIV, gonorrhoea, syphilis and chlamydia as well as extensive questions on symptoms of STDs. The social component, included sections relating to a range of broad background characteristics such as age, housing, ethnic group and so on, associational memberships, relationships with spouse and regular partners, relationships with casual partners, STDs and health issues, knowledge of Social capital and HIV

HIV/AIDS, risk perception and behaviour change, reported condom use with casual and regular partners, and attitudes to the project (see Gilgen, Williams and Campbell, 2000, for a copy of the questionnaire).

Measures of social capital

In this paper we operationalise social capital in terms of *civic engagement or participation* determined by levels of membership of a range of community and social groups.² The groups included in this survey were *stokvels* (a term derived from 'stock fair' to refer to a voluntary savings club), churches (including both the more formal churches - predominantly Pentecostal, Anglican, Lutheran and Dutch Reformed, as well as the more informal Zionist churches); political parties (including the African National Congress, the Pan African Congress and the Inkatha Freedom Party and the United Democratic Movement), sports clubs (particularly football clubs for boys and netball for girls), trade unions (the largest being the National Union of Mineworkers, representing mineworkers in the Carletonville region), burial societies (which collecting regular contributions from members, and offer practical and emotional support to families of deceased members), youth groups (often attached to churches,

² Our measure of social capital was drawn from that used by World Bank researchers Narayan and Pritchett (1997) in Tanzania, adapted for South African conditions. Our decision to focus on organisational membership as a marker of social capital (rather than the norms of trust, reciprocity and local identity, also emphasised in Putnam's 1993 and 2000 classic definition of social capital) was based on a number of considerations. These include the frequently made claim that social capital has become so vague and imprecise that it is in danger of losing its analytical edge (Hawe and Shiell, 2000). In the interests of guarding against such imprecision, we sought to conceptualise social capital very narrowly in terms of peoples' participation in local community networks (what Putnam 1993, 2000 refers to as 'civic engagement'). This is the aspect of social capital that is most consistent with the emphasis on community participation which has long characterised public health policies and interventions, as part of their emphasis on 'community strengthening' as one means of reducing health inequalities. Furthermore it has been argued that the 'network' concept of associational membership has proved to be a more powerful measure of social capital than the three 'norm' dimensions of trust, helpfulness and local identity in a range of research contexts (Foley and Edwards, 2000).

or groups volunteering at the local fire department and ambulance service), residents associations (with elected leaders taking residents' problems to local counsellors) and women's groups.³ We investigate the extent to which group membership is associated with HIV infection as well as with three markers of behaviour that put people at risk of HIV infection: whether or not people have casual partners, use condoms with casual partners and drink alcohol.

Statistical methods

Multivariate analysis of variance was carried out using Statistica[©] to explore the extent to which our measure of social capital is associated with levels of HIV infection and with risk factors for HIV infection including condom use, number of sexual partners and the consumption of alcohol, allowing for age and gender.

Results

We first consider the distribution of associational memberships among respondents in this survey with respect to age and gender (Appendix Tables A1 and A2). Seventy nine percent of women and 82% of men belonged to at least one association while only 5% of both men and women belonged to more than four associations (mean number equal to 1.7 for women, 1.9 for men). The most common associations were churches for both sexes followed by sports clubs and then burial societies for men, and

3 In composing our list of groups we began with those listed in Narayan and Pritchett's (1997) Tanzanian social capital questionnaire. This list was amended for local conditions on the basis of our research group's on-

burial societies and then sports clubs for women. Among men the least common associations were residents associations and *stokvels* while for women they were political parties and trades unions. Sports clubs and youth groups attracted a greater proportion of younger people and all others attracted a greater proportion of older people. Of the associational memberships the only ones that are not significantly associated with age are church membership (for men and women) and membership of a political party or a trades union for women. In particular we note that young people do not in general belong to *stokvels*, political parties, trades unions, burial societies, residents associations or women's groups, and, not surprisingly, older people are less likely than younger people to belong to sports clubs or youth groups. Furthermore, very few women of any age belong to trades unions.

Because associations between HIV infection and associational memberships may be mediated by factors that affect high-risk sexual behaviour, we also examine the relationship between our chosen markers of social capital and the consumption of alcohol, having casual partners and condom use with casual partners. (Only 3% of men and 7% of women said that they regularly use condoms with their regular partners. The power of the tests for this variable were therefore too low to identify any associations so that the analysis is only presented for condom use with casual partners). The proportion of people who report having had one or more casual partners in the last twelve months peaks at 51% among men aged 30 to 34 years and at 31% among women in the same age group (Tables A1 and A2). Alcohol consumption increases with age among both men and women but with more men than women

going qualitative research interviews with local residents in our community of interest, including detailed questions about potential group memberships in the area.

drinking alcohol overall. A substantial proportion, 32% of men and 22% of women, reported having had a casual partner in the last twelve months but of these only 18% of the men and 28% of the women always used a condom with their casual partner. (Because the number reporting condom use with a casual partner is so low, it is not possible to examine trends in relation to age.)

The age and gender distributions of HIV prevalence in our study population are shown in Figure 2. We see that for both men and women prevalence increases rapidly with age among young people (much more rapidly among women than men) and then declines among older people. The decline in older age groups can be explained if we assume that older people are currently less likely to be exposed to HIV than younger people and, when they were younger, the prevalence of HIV, and therefore the risk of infection, was also lower.

Social capital, HIV infection and risk factors for infection

Multivariate analysis of variance, allowing for age and gender, was used to identify significant associations ($p < 0.1$) between associational memberships and the prevalence of HIV infection, as well as some of the more important risk factors for infection. In order to simplify the presentation of the data, Table 1 indicates, for significant associations only ($p < 0.1$), whether group membership increases or decreases the risk of infection or the likelihood of risky behaviour, the significance level and the age range for which the association is significant when appropriate. To identify potential associations we consider all those for which $p < 0.1$, but to ensure

that we do not overstate the results we indicate the significance levels in Table 1 and give the actual odds ratios and p -values in the text.

Associational membership and HIV infection

Several dimensions of associational membership are significantly associated with the risk of HIV infection among young people. Men between the ages of 20 and 29 years are significantly less likely to be HIV-positive if they belong to a sports club (OR 0.44; $p = 0.020$) and significantly more likely to be HIV-positive if they belong to a *stokvel* (OR 1.92; $p = 0.039$). Women aged 15 to 25 years are significantly less likely to be infected if they belong to a sports club (OR = 0.46; $p = 0.0006$) or to a youth group (OR = 0.60; $p = 0.012$). In all cases the associations are only significant for young people: those aged 20 to 29 years for men and 15 to 24 years for women. As can be seen from Figure 2 the rate of increase of infection is greatest for men and women in these two age groups so that the power of the tests will be correspondingly high for these age groups.

Associational membership and casual partners

An important risk factor for HIV infection is through contact with casual partners and the data show several significant associations with our chosen markers of social capital (Table 1). Men who belong to a church (OR = 0.68; $p = 0.049$) or a residents association (OR = 0.47; $p = 0.041$) are also less likely to have had one or more casual

partners in the last year. For men none of these results show a significant interaction with age.

Young women who belong to youth groups are less likely to have had a casual partner in the last year (OR = 0.60; $p = 0.096$; 15–24 years old) while women who belong to a stokvel are more likely to have had one or more casual partners in the last year, independent of age (OR = 2.82; $p < 0.001$).

Associational membership and condom use with casual partners

Because relatively few people of either sex report having had a casual partner in the last year (co-incidentally 158 for both men and women) the power of the tests in regard to this issue is low. The proportion of women who always used condoms with their casual partners (28%) was significantly higher than the proportion of men who did so (18%; $p = 0.032$). We find no significant associations between associational membership and condom use with casual partners for men of any age but there are some significant associations for women. Failure to use condoms consistently is less prevalent among women who belong to a sports club (OR = 0.32; $p = 0.046$) or a burial society (OR = 0.48; $p = 0.036$; > 20 years old).

Alcohol consumption

Alcohol consumption is associated with increased rates of HIV infection as shown in Table 2 but the only significant differences are between those who never drink and those who do, regardless of frequency of drinking. Since alcohol is associated with

HIV infection it is of interest to examine the links between associational membership and the consumption of alcohol.

There are a number of significant associations between the consumption of alcohol and our chosen measures of social capital. Young men are more likely to drink alcohol if they belong to a *stokvel* (OR = 1.89; $p = 0.040$; 15–24 years old), older men are less likely to drink alcohol if they belong to a church (OR = 0.81; $p = 0.011$; 30–59 years old) and more likely to drink alcohol if they belong to a political party (OR = 1.20; $p = 0.030$; 30–59 years old). For women the only significant association is that young women who belong to a *stokvel* are more likely to drink alcohol than those who do not (OR = 2.44; $p = 0.014$; 15–24 years old).

Discussion

Khutsong township, where this study was conducted, is characterised by high levels of HIV infection, especially among young women (57% in those aged 25 years), low levels of condom use (only 18% of men and 28% of women always use a condom with casual partners), the practice of casual sex (32% of men and 22% of women report having had a casual partner in the last year) and high levels of alcohol consumption (51% of men and 35% of women drink alcohol). In this study we have sought to examine links between various associational memberships and sexual health. We have focused on four markers of HIV-related sexual health (operationalized in

terms of HIV status, and the high risk behaviours of having casual partners, condom use and alcohol use).

Positive social capital among men

Belonging to a church reduces the likelihood that men will have casual partners and that older men will drink alcohol while belonging to a sports club reduces the likelihood that young men will be HIV positive. In a recently conducted focus group study with young Carletonville residents, informants said that young men who belonged to churches were least likely to engage in stereotypically 'macho' sexual behaviours such as having multiple partners and committing acts of violence against women (MacPhail and Campbell, 2000). This association could be due to an increased commitment to conventional 'Christian' norms regarding monogamy, and/or through providing men with the confidence not to be pressured by dominant macho norms of masculinity, associated with having multiple sexual partners (Campbell, 1997).

Positive social capital among women

In women, positive sexual health was most clearly associated with belonging to sports clubs, youth clubs and burial societies. Women, below the age of 25 years, who belonged to youth groups were less likely to be infected with HIV or to have casual partners than those that did not. It is perhaps not surprising that membership of youth groups, which specialise in activities relating to the personal development of young peoples' social skills, confidence and personal ambitions, are associated with better

health and fewer sexual partners among women. Those who belong to sports clubs were also less likely to be HIV-positive and more likely to use condoms with casual partners. Making the effort to belong to a sports club might indicate a commitment to preserving one's health and well-being although there are many other potentially motivating factors such as the desire to meet people and to attend social functions. Nevertheless, participation in sporting activities is health-enhancing, and being physically fit increases one's sense of self-esteem and confidence (Raglin, 1990) – both of which have been identified as important determinants of condom use by young women (Perkel, Strebel and Joubert, 1991), in a social context in which where men are often unwilling to do so (Campbell, 1997; MacPhail and Campbell, 2000).

Negative social capital ('Anti-social capital')

The data provide some examples of negative social capital. For both men and women, *stokvel* membership was associated with increased sexual health risks. For both sexes young people who belong to *stokvels* were more likely to drink alcohol, young men who belong to *stokvels* were more likely to be infected with HIV, and women of all ages who belong to *stokvels* were more likely to have had a casual partner in the last year.

Stokvels are places where people meet on a regular basis and contribute a small sum of money to a common 'pot' and members take turns to take home the 'pot'. The

‘business’ side of the meeting is accompanied by a social gathering, usually involving the sale and consumption of alcohol, with the ‘pot holder’ often also taking home the profits from the liquor sales at that particular meeting. The result is that poor people periodically have access to a relatively large sum of money which they can use for large expenses—such as replacing the roof of a shack or paying funeral expenses—to which they would not otherwise have had access. Furthermore, stokvels often constitute valued friendship groups so that people look forward to the meetings and members often share strong relationships of friendship and support.

The negative association between stokvel membership and sexual health indicates some of the complexities that arise in unpacking the relationship between health and social capital. On the one hand stokvels give people access to a range of positive benefits: financial empowerment, social support, recreation and conviviality—all of which are potentially health-enhancing. On the other hand, stokvel membership is associated with drinking in both sexes, and with the increased likelihood of casual sexual interactions amongst women—both factors placing their sexual health at risk.

Conclusion

This survey of sexual health and associational memberships in Khutsong has yielded a range of significant results, but not all in the hypothesised direction. It is clear that further research is needed to confirm the findings of this study in greater detail and qualitative studies, in particular, could be used to explore some of the links suggested by these results.

Our study pointed to a range of positive and negative associations between organisational membership and sexual health. Our data suggest that it is important to disaggregate the notion of associational memberships. Using the concept of 'anti-social capital', several authors have criticised Putnam for failing to take adequate account of the fact that community networks and relationships are not always positive in their effects (Portes and Landolt, 1996; Baum, 1999b). Our findings provide empirical support for these criticisms. While *stokvels* both provide an important means of accessing capital in poor communities, in relation to sexual health it seems that the negative influences outweigh the positive, in the light of our evidence that in certain age and gender groups *stokvel* membership is associated with the increased likelihood of alcohol consumption, and casual partners.

As well as illustrating the complex and potentially ambiguous effects of associational membership on health, the findings reported here also have potentially interesting implications for sexual health promotion in our community of interest. They suggest that *stokvels* might be a good place to target peer education activities. The Carletonville intervention initially targeted what were considered the three high-risk groups in the community: migrant mine workers, commercial sex workers and youth. Our analysis suggests a fourth group: *stokvel* members. Given that there are very likely to be some positive, health-associated advantages to belonging to a *stokvel*, they cannot be dismissed as entirely bad and our data suggest that they might be a particularly appropriate site for 'outreach' and community led peer education.

It is perhaps not surprising that age and gender both play an important role in mediating the association between health and various associational memberships,

given the quite different patterns of the epidemic for men and women and for people of different ages. Further work is needed to model the natural history of the epidemic to help to further disentangle the various effects. Given that young people are at greatest risk for infection it is particularly important to understand the ways in which social capital impacts on their sexual health and it is interesting to note that most of the significant affects are only significant in younger age groups.

Much remains to be learned about the mechanisms whereby social capital might impact on health (Wilkinson, 1996), and here we point to three possibly mediating mechanisms between associational membership and health. Firstly, Leonardi (1997) has suggested that fellow associational members might sometimes act as an 'early warning system', urging one another to seek early diagnosis and treatment of incipient health problems. A qualitative evaluation of a community-led peer educational HIV intervention near Carletonville highlighted the way in which sex worker peers urged one another to seek out early treatment for other STDs, which increase their vulnerability to HIV infection (Campbell and Mzaidume, 2000). Secondly, members of cohesive and trusting community groupings are more likely to experience generalised levels of perceived self-efficacy or 'empowerment' which in turns makes it more likely that they will engage in health-protective behaviours (Bandura, 1996; Israel *et al.*, 1994). In the case of sexual health, such behaviours would include condom use or reduction in the number of partners. A third possible mediating mechanism relates to the finding that 'safe' sexual behaviours are shaped by social identities and social norms collectively negotiated within peer groups (Stockdale, 1995). Communities with high levels of membership in various local associations or organisations might provide a broader range of 'peer' contexts within which people

could debate and negotiate the possibility of safer sexual behaviours. Furthermore, some organisations (e.g. church) might be associated with healthier behavioural norms, than others (e.g. *stokvels*). However, much research is clearly needed to fully explore the mechanisms whereby associational membership might affect peoples' sexual health.

The findings presented here provide tentative support for the notion that social capital, measured in terms of associational membership, might be associated with sexual health. Aspects of social capital are associated with positive sexual health amongst some age and gender groups but not others, while other aspects are associated with negative sexual health. We argue that our exploratory study has produced sufficient evidence to justify the need for further research in this area. However, the ambiguity, complexity and even contradictory nature of our findings suggest that the interface between sexual health and social capital is an area that defies easy generalisation, and one where researchers need to proceed with caution.

Acknowledgements

This survey was funded by the British Department for International Development. The views expressed in this paper are solely those of the authors, and do not necessarily reflect the views of the funders. Catherine MacPhail and Gaph Pathedi provided background information for the study, as well as comments on the manuscript. Thanks also to Solly Moema and Zodwa Mzaidume of the Mothusimpilo Project, Dirk Taljaard and his survey team, and the 1 121 members of the Khutsong community who agreed to take part in the survey. Susie Atherton and Sarah van Hest assisted in preparing the manuscript.

References

- BANDURA, A. (1996) **Self-efficacy in changing societies**. Cambridge: Cambridge University Press.
- BARNETT, T AND WHITESIDE, A (1999) HIV/AIDS and development: case studies and a conceptual framework. **European Journal of Development Research**, 11(2), 200-234.
- BAUM, F. (1999a) Editorial. Social capital: is it good for your health? Issues for a public health agenda. **Journal of Epidemiology and Community Health**, 53(4), 195-196.
- BAUM, F. (1999b) The role of social capital in health promotion: Australian perspectives. **Health Promotion Journal of Australia**, 9(3), 171-178.
- BEEKER, C., GUENTHER GRAY, C. AND RAJ, A. (1998) Community empowerment paradigm and the primary prevention of HIV/AIDS. **Social Science and Medicine**, 46 (7), 831-842.
- BERKMAN, L. (1995) The role of social relations in health promotion. **Psychosomatic Medicine**, 57, 245-254.
- CAMPBELL, B (1996) Gender crisis and community. In S. Kraemer, S. and Roberts, J. (Eds) **The politics of attachment: towards a secure society**. London: Free Association.
- CAMPBELL, C (1997) Migrancy, masculine identities and AIDS: the psycho-social context of HIV-transmission on the South African gold mines. **Social Science and Medicine**, 45 (2), 273-281.
- CAMPBELL, C. AND MZAIDUME, Y. (2000, submitted for publication) Grassroots participation, peer education and HIV prevention amongst sex workers in South Africa.

- CAMPBELL, C. WITH WOOD, R. AND KELLY, M. (1999) **Social capital and health**. London: Health Education Authority.
- CARLETONVILLE MUNICIPAL AUTHORITIES (1996) Unpublished demographic survey.
- COOPER, H., ARBER, S., FEE, L. AND GINN, J. (1999) **The influence of social support and social capital on health: A review and analysis of British data**. London: Health Education Authority.
- FOLEY, M. AND EDWARDS, B. (2000, forthcoming) Is it time to disinvest in social capital? **Journal of Public Policy**.
- GILGEN, D., WILLIAMS, B.G. AND CAMPBELL, C.M. (2000) **HIV/AIDS in Carletonville: The 1998 survey**. Johannesburg: CSIR.
- GILLIES, P (1998) The effectiveness of alliances and partnerships for health promotion. **Health Promotion International**, 13: 1-21.
- GILLIES, P., TOLLEY, K. AND WOLSTENHOLME, J. (1996) Is AIDS a disease of poverty? **AIDS Care**, 8 (3), 351-363.
- GOODMAN, R., SPEERS, M., MCLEROY, K., FAWCETT, S., KEGLER, M., PARKER, E., SMITH, S., STERLING, T. AND WALLERSTEIN, N. (1998) Identifying and defining the dimensions of community capacity to provide a basis for measurement. **Health Education and Behaviour**, 25 (3), 258-278.
- HAWE, P. AND SHIELL, A. (2000) Social capital and health promotion: a review. **Social Science and Medicine**, 51, 871-885.
- ISRAEL, B., CHECKOWAY, B., SCHULZ, A. AND ZIMMERMAN, M. (1994) Health education and community empowerment: conceptualising and measuring perceptions of individual, organisational and community control. **Health Education Quarterly**, 21 (2), 149-170.

- KAWACHI, I. AND KENNEDY, B. (1999) Income inequality and health: pathways and mechanisms. **Health Services Research**, 34 (1), 215-227.
- KAWACHI, I., KENNEDY, B. AND WILKINSON, R. (1999) Crime: Social disorganisation and relative deprivation. **Social Science and Medicine**, 48, 719-731.
- KAWACHI, I., KENNEDY, B., LOCHNER, K. AND PROTHROW-STITH, D. (1997) Social capital, income inequality and mortality. **American Journal of Public Health**, 87 (9), 1491-1498.
- KENNEDY, B., KAWACHI, I. AND BRAINERD, E. (1998) The role of social capital in the Russian mortality crisis. **World Development**, 26 (11), 2029-2043.
- KREUTER, M. (1997) National level assessment of community health promotion using indicators of social capital. WHO/EURO Working Group Report. CDC, Atlanta.
- LEONARDI, R. (1997) A review of the literature on social capital. Interim report to the Health Education Authority. London: Health Education Authority. (unpublished)
- LOMAS, J. (1998) Social capital and health: implications for public health and epidemiology. **Social Science and Medicine**, 47 (9), 1181-1188.
- MACPHAIL, C. AND CAMPBELL, C. (2000, accepted for publication) 'I think condoms are good but, aai, I hate those things': Condom use among adolescents and young people in a southern African township. **Social Science and Medicine**.
- MORROW, V. (1999) Conceptualising social capital in relation to the health and well-being of children and young people: a critical review. **Sociological Review**, 47(4), 744-765.
- NARAYAN, D. AND PRITCHETT, L. (1997) Cents and sociability: household income and social capital in rural Tanzania. World Bank Social Development Policy Research Working Paper, No. 1796.
- NAZROO, J (1998) Genetic, cultural and socio-economic vulnerability? Explaining ethnic inequalities in health. **Sociology of Health and Illness**, 20 (3), 710-750.

- PERKEL, A., STREBEL, A. AND JOUBERT, G. (1991) The psychology of AIDS transmission - issues for intervention. **South African Journal of Psychology**, 21(3) 148-152
- PORTES, A. AND LANDOLT, P. (1996) The downside of social capital, **The American Prospect**, 26, 18-21.
- PUTNAM, R. (1993) **Making democracy work**. New Jersey: Princeton University Press.
- PUTNAM, R. (1995) Bowling alone: America's declining social capital. **Journal of Democracy**, 6 (1), 65-79.
- PUTNAM, R (2000) **Bowling alone: The collapse and revival of American Community**. New York: Simon and Schuster.
- RAGLIN, J.S. (1990) Exercise and mental health: beneficial and detrimental effects. **Sports Medicine**, 9(6), 323-329.
- STOCKDALE, J. (1995) The self and media messages: match or mismatch? In: Markova, I. and Farr, R. (Eds) **Representations of health, illness and handicap**. London: Harwood. 31-48.
- TAWIL, O., VERSTER, A. AND O'REILLY, K. (1995) Enabling approaches for HIV/AIDS promotion: can we modify the environment and minimise the risk? **AIDS**, 9, 1299-1306.
- WALLACE, R. (1993) Social disintegration and the spread of AIDS II: meltdown of socio-geographic structure in urban minority neighbourhoods. **Social Science and Medicine**, 37, 887-896.
- WILKINSON, R. (1996) **Unhealthy societies: The afflictions of inequality**. London: Routledge.
- WILLIAMS, B. G. AND CAMPBELL, C. M. (Eds) (1996) **Priorities for the Management of HIV/AIDS Transmission in the Mining Industry**. Johannesburg: ERU.

WILLIAMS, B.G. AND CAMPBELL, C.M. (1998) Understanding the Epidemic of HIV in South Africa: Analysis of the Antenatal Clinic Survey Data. **South African Medical Journal** 88 247–251.

WILLIAMS, B.G., CAMPBELL, C.M. AND MACPHAIL, C. (Eds) (1999) **Managing HIV/AIDS in South Africa: Lessons from Industrial Settings**. Johannesburg: CSIR.

Table 1. The dimensions of social capital that are significantly associated with the likelihood that a man or a woman will be HIV positive (HIV), have had a casual sexual partner in the last year (CP¹), does not use condoms with casual partners (Con²), and drinks alcohol (Al³). The arrows give the direction of the effect: ↑ increased and ↓ decreased risk of infection or likelihood of risky behaviour. + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. The questions asked are given in the footnote to the table. Where the effect is significant only for people in a particular age range this is indicated in the table (ages in years). The actual odd-ratios and significance levels are given in the text.

Associations	Men				Wom			
	HIV	CP	Con	Al	HIV	CP	Con	Al
Stokvel	↑ + 20–29			↑ * 15–24		↑***		↑ * 15–24
Church		↓ *		↓ * 30–59				
Political party				↑ * 30–59				
Sports club	↓ * 20–29				↓ *** 15–24		↓ * 15–24	
Trade Union								
Burial society							↓ *	
Youth group					↓ * 15–24	↓ + 15–24		
Res. Association		↓ *						
Women's group								

1. ‘How many times have you had sexual intercourse with anyone (else) in the last 12 months (other than a regular partner)? This includes mistresses, girlfriends, casual partners, prostitutes, or somebody you met in a bar or at a special occasion.’ The analysis is based on the proportion of people who had had intercourse with one or more people in the last 12 months.
2. ‘Think of the last casual partner you had sex with. Did you use condoms with this casual partner: Never; Sometimes; Always?’ The analysis is based on the proportion of people who replied ‘Always’.
3. ‘How often did you have drinks containing alcohol in the last four weeks? Would you say: Never; At least once a day; Less than once a day but at least once a week; Less than once a week’. The analysis is based on the proportion of people who drink at all regardless of frequency.

Table 2. HIV prevalence amongst men (over the age of 20 years) and women (over the age of 15 years) who consume alcohol daily, weekly, monthly or never. Comparing individual levels the only significant difference is between those who never drink and those who drink regardless of frequency (χ^2 test of significance, $p < 0.001$ for both men and women).

	Men	Women
Daily	31.3	49.5
Weekly	31.7	51.5
Monthly	32.5	58.6
Never	22.4	34.7

Appendix

Table A1. Percentage of men responding positively to questions about social capital (see caption to Table 1), belonging to various groups, reporting a casual partner in the last year, or drinking alcohol by age bands ($n = 495$ to 499 depending on the group and allowing for missing values). Significance levels (p -values) are for χ^2 tests of association between each factor and age. Among the 158 men who had a casual partner in the last year 28 (18%) said that they always used condoms with casual partners.

Groups	Age (years)								All	p
	12–14	15–19	20–25	26–29	30–34	35–39	40–49	50–59		
Associations	77	90	69	73	82	82	86	74	80	0.014
Stokvel	0	4	10	17	18	10	13	11	10	0.042
Church	57	62	37	42	45	55	49	60	50	0.280
Political party	3	4	18	19	29	27	23	11	17	<0.001
Sports club	58	70	35	37	41	25	22	11	39	<0.001
Trade Union	0	2	7	20	31	32	33	23	18	<0.001
Burial society	0	5	10	22	39	32	40	34	22	<0.001
Youth group	19	33	26	14	16	8	4	0	17	<0.001
Res. Association	3	2	3	7	18	19	15	14	9	0.001
Casual part.	7	18	45	45	51	23	28	35	32	<0.001
Alcohol	2	16	53	71	80	69	65	71	51	<0.001
Prop. by age	6	20	18	12	10	12	15	7	100	0.001

Table A2. Percentage of women responding positively to questions about social capital (see caption to Table 1), belonging to various groups, reporting a casual partner in the last year, or drinking alcohol by age bands ($n = 698$ to 708 depending on the group and allowing for missing values). Significance levels (p -values) are for χ^2 tests for association between each factor and age. Among the 158 women who had a casual partner in the last year 44 (28%) said that they always used condoms with casual partners.

	Age (years)								All	p
	12–14	15–19	20–25	26–29	30–34	35–39	40–49	50–59		
Associations	90	80	73	81	74	81	75	82	78	0.349
Stokvel	0	4	7	17	10	18	15	10	11	0.002
Church	70	69	57	62	62	56	53	67	61	0.280
Political party	0	5	5	9	12	8	4	13	7	0.098
Sports club	60	39	22	11	8	7	5	0	16	<0.001
Trade Union	0	2	1	5	4	8	7	5	4	0.120
Burial society	3	9	22	39	31	43	48	54	32	<0.001
Youth group	37	37	35	15	3	2	2	0	15	<0.001
Res. Association	0	2	2	10	12	17	13	15	9	<0.001
Women's group	0	2	7	13	17	15	19	21	12	<0.001
Casual part.	0	18	25	27	31	26	16	11	22	0.004
Alcohol	3	13	32	38	45	45	49	36	35	<0.001
Prop. by age	4	15	17	17	15	13	14	6	100	0.000

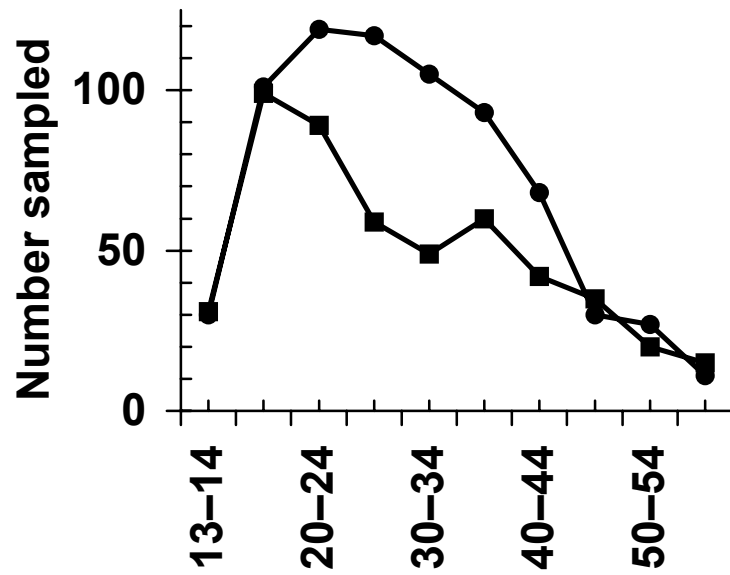
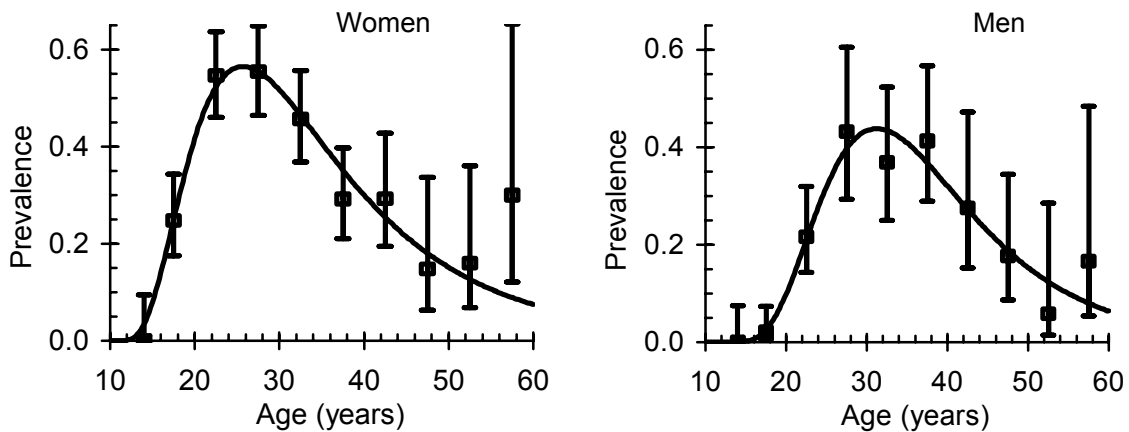


Figure 1. The number of men (squares) and women (circles) living in Khutsong. The



numbers in the youngest age group are small because it covers two years only while the remaining points cover five years.

Figure 2. Prevalence of HIV infection among men and women in Khutsong, excluding sex workers and mine workers. Error bars are 95% binomial confidence limits.

Appendix 1. Ethical Approval and Informed Consent

The protocol for the project was submitted to the committee for Research on Human Subjects (Medical), of the University of Witwatersrand, Johannesburg, and was approved on 10 March 1997 (Protocol M 970235). The consent form read as follows:

Hello, I am and I am working for Progressus CC. We are doing a project which we hope will help to reduce the spread of HIV in this community. The project has the support of the Carletonville AIDS Action Group, the National Union of Mineworkers, the Mining Houses and the Department of Health. The project will include improving the treatment of sexually transmitted diseases, running education programmes concerning HIV and making condoms more easily available to those who wish to use them.

If we are to know if the project is successful we need to find out about the levels of sexually transmitted diseases as well as HIV and about peoples knowledge of sexually transmitted disease and about their partners. We will ask you to give a sample of blood and urine and to answer some questions. If you want to find out if you have a sexually transmitted disease we will give you the test results and free treatment if you have a disease. If you feel that you do not want to be part of this survey you are free to refuse. It should take about 35 minutes to complete the questionnaire.

All of the information will be strictly confidential and your name will not be on any of the forms or blood and urine samples. If you wish to know your HIV status we will arrange for an HIV test to be done for you separately. If you agree to participate you will be asked to sign this form to ensure you understand the aims of the project and agree to participate in the project. This form cannot be linked to your questionnaire or blood samples so all results will remain confidential.

Consent

I the undersigned agree to participate in the above mentioned study. I understand the aims of the study which have been clearly explained to me.

Signed

Date