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QUANTIFYING STIGMA IN THE ADULT POPULATION OF CAPE TOWN

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Aids and Society Research Unit

QUANTIFYING STIGMA IN THE ADULT POPULATION OF CAPE TOWN

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August 2006

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Quantifying Stigma in the Adult Population of Cape Town[1]

Abstract

This paper builds on previous analyses of HIV/AIDS-related stigma among young adults (aged 15-23) in the Cape Metropolitan Area by using a representative sample of adults from the same area. It compares the findings from both surveys, and assesses whether the differences between the findings amongst young adults and previous national studies were due to the different age profiles of the samples. Findings show that age is not an important determinant of stigma, indicating similar levels of stigma for all ages, and AIDS education should target all age groups, not just young adults. As was the case with earlier research conducted with young adults only, the prevalence and magnitude of HIV/AIDS-related stigma in Cape Town was found to be significantly greater than stigma levels measured in previous national surveys. Most surveys measure stigma by focussing on behavioural intentions towards people living with HIV/AIDS, often concentrating on behavioural intentions towards family or friends. This paper measures behavioural intentions as well as three attitudinal components of HIV/AIDS-related stigma: instrumental (i.e. indicating fear of infection), symbolic (holding negative attitudes based on values) and resource-based (holding negative attitudes based on resources). Behavioural intentions are deconstructed into (1) intentions towards family/friends and (2) intentions towards strangers. Results show that behavioural intentions are less negative to family/friends with HIV than to strangers with HIV, and that if stigma is measured as symbolic stigma or instrumental stigma, then a higher degree of stigma is evident. Levels of resource-based stigma are very low. Instrumental stigma is a significant predictor of negative behavioural intentions towards people living with HIV/AIDS. This highlights the importance of HIV education. General bigotry and symbolic stigma also influence different dimensions of stigma. This suggests that although education is a necessary component for stigma alleviation, it is by no means sufficient. Racial differences are salient in predicting the determinants of the different dimensions of stigma. This highlights the necessity of considering cultural and environmental aspects in understanding stigma.

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Introduction

HIV/AIDS[2]-related stigma[3] is a complex, multidimensional social phenomenon which manifests in different ways among different people (Berger *et al.*, 2001; Crandall & Glor, 1997; Deacon *et al.*, 2004; Fife & Wright, 2000; Herek & Capitanio, 1998; Maughan-Brown (forthcoming)[4]; Stein, 2003). Manifestations of stigma might be overt in nature, such as outright rejection, or more subtle, such as 'gossip behind one's back'. Measuring stigma is therefore extremely difficult and attempts to do so need to be cognisant of the multidimensionality and the contextual factors that influence stigma.

Previous attempts to measure stigma in South Africa have identified apparently low levels of stigma, with general tolerance towards people living with HIV/AIDS (PLWHA) (Shisana & Simbayi, 2002; Parker *et al.*, 2002). The validity of these findings has been questioned due to the methods of measurement employed and the limited definition of stigma guiding such measurement (e.g. Stein, 2003; Deacon *et al*, 2004; Maughan-Brown, forthcoming). Most studies measure stigma according to behavioural intentions (i.e. intended behaviour towards PLWHA, such as the willingness to take care of a sick family member or remain friends with someone with HIV), and pay little or no attention to the attitudinal dimensions of stigma.

Deacon *et al.* (2004) highlighted the main problem with this approach: it makes the assumption that stigma and behavioural intentions are interchangeable measures. Although stigma (understood here as what people believe) can lead to negative behavioural intentions (what people say they will do), it is not a one-to-one relationship. Not all of the negative behavioural intentions are a product of stigmatising attitudes, and not all stigmatising attitudes will lead to negative behavioural intentions. A respondent stating, for example, that he/she is not willing to look after a close family member with AIDS might be motivated by skill or time constraints. Negative behavioural intentions in such a case bare little association with stigma. In addition, the questions used to measure behavioural intentions are hypothetical in nature. This is problematic because many people might not know how they would act in certain situations and might not even be aware of stigmatising attitudes they have, or of how these may translate into behavioural outcomes in unintended or unexpected ways.

[2] Although HIV and AIDS are two separate medical conditions, this paper does not differentiate between stigma towards people living with HIV and stigma towards people living with AIDS.

[3] The term stigma is used throughout this paper to refer to HIV/AIDS-related stigma.

[4] This forthcoming article is an adapted version of Maughan-Brown (2004) in which the stigma indicators and statistics have been revised.

In 2003, the Cape Area Panel Study (CAPS) of young adults attempted a more comprehensive measurement of stigma by aiming to capture symbolic stigma, instrumental stigma and resource-based stigma as well as behavioural intentions (Maughan-Brown, forthcoming). Symbolic stigma involves moral judgements, negative associations and symbolism around HIV/AIDS, such as blaming PLWHA for becoming infected. Instrumental stigma measures any attitudes or beliefs based primarily on fear of infection, such as not sharing eating utensils due to concerns about catching HIV. Lastly, resource-based stigma involves any negative attitudes towards PLWHA as a result of resources being allocated to, or spent on them, or reductions in their contribution to the household resources, as a result of having HIV/AIDS.

Figure 1 displays the theoretical assumptions used in the CAPS. Stigma is shown to be comprised of three attitudinal components: instrumental, symbolic and resource-based. Behavioural intentions are seen as a potential product of stigmatising attitudes. However, as illustrated in figure 1, one needs to be aware that "other factors" can also influence behavioural intentions.

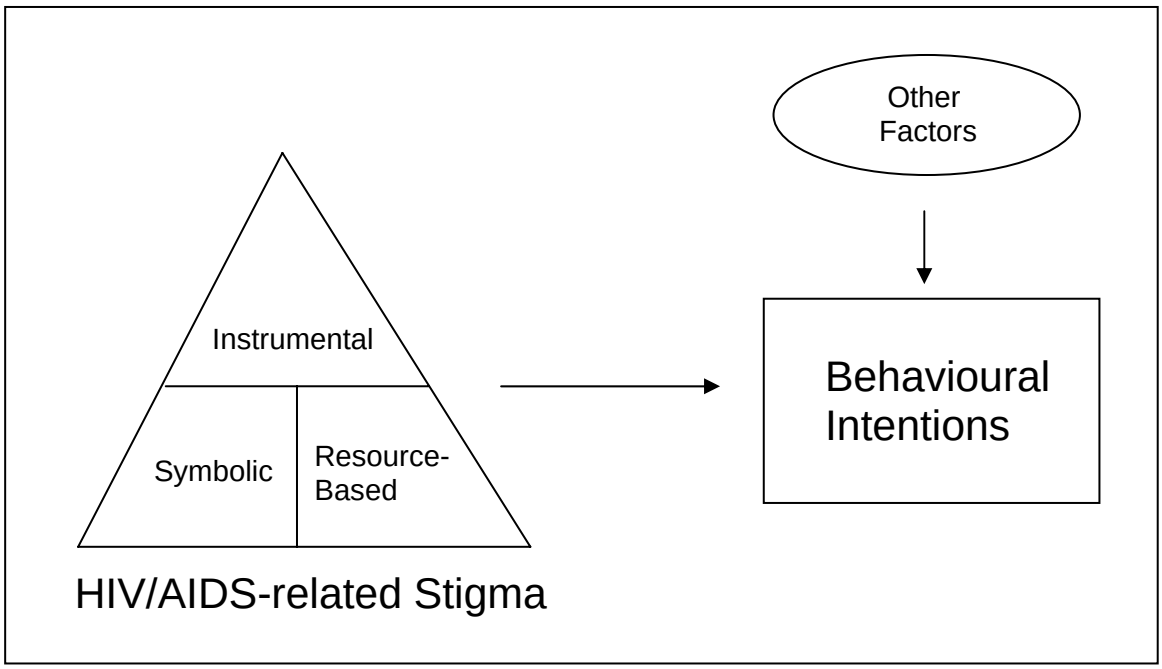

Figure 1. The theoretical assumptions used in CAPS

Cape Town is a multi-cultural city with a high degree of segregation between the different population groups (Seekings *et al.*, 2005). Given that stigma is context-specific, stigma was examined within the different population groups in Cape Town.

Table 1. Population distribution, HIV prevalence and per capita income for the three largest population groups in the Western Cape, South Africa.

Population Group	[a] *Population*	[a] *HIV positive*	[a] *% HIV positive*	[b] *Average per capita Monthly Income*
Black	1306748	152322	12%	R877
Coloured	2529615	41912	2%	R1000
White	904349	9574	1%	R6511

Notes
[a] Estimates for July 1 2003 from the ASSA 2003 HIV/AIDS Projection models (ASSA, 2005).
[b] Calculated from the 2001 South African Census.

Table 1 highlights the different socioeconomic contexts within the three largest population groups in the Western Cape[5]. Blacks, on average, have the lowest *per capita* income, at less than a seventh of the income of whites. Coloureds have a greater *per capita* income than blacks, but still less than a sixth of the income of whites. Previous research has shown that such inequalities in income, as well as inequalities in infrastructure, schooling and health care leave the majority of blacks and many coloureds in a position of relative, and often absolute, poverty (Seekings *et al*., 2004; Seekings & Nattrass, 2004; Turok, 2001; Van der Berg, 2002; Makinen *et al*., 2000).

Table 1 shows that HIV prevalence is greatest in the black population, with 12% estimated to be HIV positive. The prevalence rate is considerably lower among the coloured population (2%) and lowest amongst whites (1%). This suggests that the salience of issues related to HIV might differ between the population groups.

The analyses of stigma among young adults in Cape Town revealed a greater prevalence and magnitude of stigma than measured in previous South African studies (Maughan-Brown, forthcoming). The majority of respondents, 97%, were found to reveal some stigmatising attitude or behavioural intentions towards PLWHA. Measures of both instrumental stigma (the most prevalent dimension) and symbolic stigma were found to be much greater than negative behavioural intentions towards PLWHA. This provided evidence for the hypothesis that low levels of stigma found in previous national surveys were a product of their methodology, which focused on measuring stigma predominantly in terms of behavioural intentions towards PLWHA (*ibid*). This evidence was, however, far from convincing as the CAPS sample (aged 15 to 23) had a very different age profile to the previous national surveys (aged 15 and above) so one cannot be sure if the different results for different measures of

[5] Approximately 65% of the population of the Western Cape, one of the nine provinces in South Africa, reside in Cape Town (Rhoode, 2005).

stigma is a result specific to young adults, or if it holds within the general population.

The models of potential determinants of stigma amongst young adults in Cape Town indicated that HIV transmission knowledge was the most significant predictor of stigma. Respondents with less accurate knowledge showed greater levels of stigma. Instrumental stigma was also found to be a significant predictor of negative behavioural intentions towards PLWHA. These two findings highlighted the importance of HIV education. However, as general bigotry and symbolic stigma were found to influence different dimensions of stigma, this suggested that although education is a necessary component for stigma alleviation, it is by no means sufficient. Racial differences were also salient in predicting both the magnitude of stigma and its determinants. This was seen to highlight the importance of considering cultural and environmental context in understanding stigma (*ibid*).

This paper assesses whether stigma among adults in Cape Town shows similar characteristics to stigma in the young adult population of Cape Town. This is achieved by extending the analyses of the behavioural intentions and stigmatising attitudes towards PLWHA among young adults to a small, but representative sample of adults in the Cape Metropolitan Area: the Cape Area Study (CAS) of adults. This paper retests the hypothesis that previous national surveys found low levels of stigma as a result of their methodology. Finally, this paper aims to add to the current understanding of stigma through an extended analysis of potential determinants (including age) of stigma.

The data analysis presented here utilises a subset of the questions from CAPS that was repeated in the 2003 Cape Area Study (CAS). This selection of questions does not facilitate direct comparison between CAPS and CAS. However, they can be used to ascertain whether the findings among young adults appear to be applicable to the general population and whether the critique made of previous measurements of stigma appears to be robust.

Method

This paper uses data from the 2003 Cape Area Study (CAS)[6] which interviewed 588 adults (18 to 84 years old) in the Cape Town Metropolitan Area on a wide range of topics, including demographics, social environments, beliefs, attitudes and behaviours. This survey included a module of questions probing attitudes and behavioural intentions towards PLWHA. The majority of these questions

[6] The full survey instrument and survey design for CAS can be found at http://www.cssr.uct.ac.za/ssu_surveycas_spa.html

are an identical, but limited, selection of questions from the CAPS[7]. The questions and associated response frequencies from this module are displayed in Tables 2 and 3. Table 2 lists the CAS questions which did not appear in CAPS, while Table 3 displays the questions that did.

Table 2. Questions probing behavioural intentions towards PLWHA, which did not appear in CAPS 2003, with response frequencies and identification of the index to which they are allocated.

How likely is it that you would take part in action to prevent a person infected with HIV/AIDS from….	*Very likely*	*Likely*	*Not likely*	*Not at all likely*	*Don't know*	*Total*
[BS] D51. teaching your children?	17%	16%	22%	41%	4%	100%
[BS] D52. moving into your neighbourhood?	11%	14%	24%	49%	2%	100%
[BS] D53. operating a business in your area?	9%	14%	23%	49%	5%	100%
[BS] D54. sitting in the same classrooms as your child?	13%	16%	21%	45%	5%	100%

Note: [BS] Behaviour Intentions towards Strangers.

Following the methodology outlined in Maughan-Brown (forthcoming), questions were assigned to different stigma indices (based on face validity) and then the indices were tested for consistency using factor analysis. The questions used in each index are indicated in superscript in Table 2 and Table 3. The decision process resulting in each index is described below.

[7] The full survey instrument and survey design for CAPS 2A, completed in 2003, can be found at http://www.cssr.uct.ac.za/ssu_surveycaps_spa.html

Table 3. Questions taken from CAPS 2003, probing attitudes and behavioural intentions towards PLWHA, with response frequencies for CAS and identification of the index to which they are allocated.

In your opinion:	*Definitely yes*	*Probably yes*	*Probably no*	*Definitely no*	*Don't know*	*Total*
[R] E23. Do you think the government should provide free health care for people who need it?	71%	24%	2%	2%	1%	100 %
[R] E24. Do you think the government should provide free health care for people with AIDS?	73%	22%	2%	2%	1%	100 %
[R] E25. Would it be a good idea for the government to give job training to unemployed young people?	78%	21%	1%	0	0%	100 %
[R] E26. Should youth who are infected with HIV get this job training?	66%	28%	2%	1%	3%	100 %
[BF] E27. Would you be willing to look after a close family member with AIDS?	60%	34%	2%	1%	3%	100 %
[BF] E28. Imagine that you find out that one of your friends is HIV infected. Would you still be friends with them?	63%	32%	1%	2%	2%	100 %
[I] E29. Would you drink from the same bottle of water as an HIV infected friend?	37%	23%	19%	15%	6%	100 %
[NA] E30. Imagine you meet someone you really like and he/she tells you that he/she is HIV positive, would you still go out on a "date" with him/her?	31%	26%	16%	19%	8%	100 %
[NA] E31. Do you think the names of people with HIV/AIDS should be made public?	13%	13%	18%	48%	8%	100 %
[S] E32. Do you think that many people who get HIV infected through sex have only themselves to blame?	18%	25%	26%	25%	6%	100 %

Notes
[R] Resource-based Stigma [S] Symbolic Stigma [I] Instrumental Stigma
[BF] Behavioural Intentions towards family/friends [NA] Not Allocated to any index

Behavioural Intentions Indices

The following questions are assessed on face value to be measuring behavioural intentions towards PLWHA:

- How likely is it that you would take part in action to prevent a person infected with HIV/AIDS from….
    - D51. teaching your children?
    - D52. moving into your neighbourhood?
    - D53. operating a business in your area?
    - D54. sitting in the same classrooms as your child?

- E27. Would you be willing to look after a close family member with AIDS?

- E28. Imagine that you find out that one of your close friends is HIV infected. Would you still be friends with them?

- E30. Imagine you meet someone you really like and he/she tells you that he/she is HIV positive, would you still go out on a "date" with him/her?

The exploratory factor analysis highlights two aspects worth considering. Firstly, the answers to question E30 are not correlated with those of the other questions – thus suggesting that the question is not picking up the same underlying dimension of stigma. It is possible that different perceptions of what a "date" constitutes might have resulted in a variety of interpretations of the question, rendering a comparison between respondents unsuitable. Question E30 is excluded from further analyses.

Secondly, questions D51-D54 (α[8] = 0.95) are identified to be measuring a different dimension of behavioural intentions towards PLWHA than questions E27 and E28 (α = 0.74). This intuitively makes sense as questions D51-D54 are probing attitudes towards people that are strangers to the respondents, while questions E27 and E28 probe attitudes relating to personal acquaintances of the respondents. It is not surprising that people's behavioural intentions would be different towards these separate groups. Existing studies of HIV/AIDS have not, however, distinguished between strangers and family/friends. Two separate indices are therefore formed for behavioural intentions towards PLWHA- behavioural intentions towards strangers (BS) and behavioural intentions towards family/friends (BF).

[8] Cronbach's Alpha (α) measures how well a set of items (or variables) measures a construct- it is a coefficient of reliability (or consistency). It is generally accepted that an alpha of about 0.6 or greater indicates a reliable index.

Symbolic Stigma Indicator

One question was assessed on face value to be measuring the respondents' value judgements of PLWHA:

- E32. Do you think that many people who get HIV infected through sex have only themselves to blame?

The factor analysis identified this question as separate from all others. This provides evidence that it is measuring a different dimension of stigma to the other questions and should stand alone as a proxy for a symbolic stigma index. One needs to be aware that one question is not an index and neither is it a comprehensive measure of symbolic stigma, which is composed of a myriad of factors. These include a range of negative associations made between HIV/AIDS and already marginalised groups (prostitutes, drug users and homosexuals for example), and negative judgements of PLWHA (irrespective of whether they also belong to these groups). However, as the answers to this question in CAPS were correlated with other questions measuring symbolic stigma, it is probably a reasonable indicator of symbolic stigma (Maughan-Brown, forthcoming).

Instrumental Indicator

A single question was identified on face value to be measuring instrumental stigma:

- E29. Would you drink from the same water bottle as an HIV infected friend?

The assumption is made that this survey item is measuring instrumental stigma. The assumption underlying this question was that a negative response (i.e. would not drink from the same water bottle) indicated fear of HIV infection. Results using this question are interpreted as representing instrumental stigma. It must be noted, however, that there are other possible explanations for a negative response to this question. This question could be measuring general health-related orientation, not specifically HIV-related (if respondents are unwilling to drink from the same glass, cup or mug as anyone, at anytime).

Although it would have been preferable to have more than one indicator question, it is also worth noting that the answers to this question were found to be positively correlated with those to other questions probing instrumental stigma in the CAPS data (Maughan-Brown, forthcoming).

Resource-Based Indicators

The following pairs of questions were designed to measure resource-based stigma:

- E23. Do you think the government should provide free health care for people who need it?

- E24. Do you think the government should provide free health care for people with AIDS?

- E25. Would it be a good idea for the government to give job training to unemployed young people?

- E26. Should youth who are infected with HIV get this job training?

Resource-based stigma is indicated by the opinion that PLWHA are less deserving of government funding. To measure resource-based stigma it was, therefore, necessary to separate respondents who believed that PLWHA are less deserving of government welfare from those who were generally opposed to the government providing welfare to people (whether AIDS-sick or not).

To achieve this, questions E23 and E24 were combined into a variable called "E23E24" to indicate discrimination of PLWHA with respect to the provision of free health care. "E23E24" was created by assigning 'no stigma' scores to respondents who thought that free health care should not be provided for people who need it (E23), while free health care should be provided for people with AIDS (E24). Respondents' opinions were scored as 'stigmatising' when they thought that free health care should be provided for people who need it (E23), but not to people with AIDS (E24). Respondents who gave the same answer to both questions were assigned 'no stigma' scores as this was seen to indicate general opinions about government welfare. Similarly, questions E25 and E26 were combined into the variable "E25E26" to indicate discrimination towards PLWHA with respect to capacity building.

The working assumption guiding the analysis was that both these variables would give an indication of reluctance to allocate resources to PLWHA and therefore comprise a resource-based stigma index. The factor analysis, however, indicated that these two variables were not probing the same dimension of stigma ($\alpha = 0.04$). This finding is consistent with research done using the same questions asked in the CAPS (Maughan-Brown, forthcoming). It provides evidence against the hypothesis that it was the young age group in CAPS that resulted in inconsistency between the questions probing resource-

based stigma. It is possible that these questions are probing different aspects of resource-based stigma, regarding health and capacity building respectively. These variables are therefore analysed separately and not combined in a composite 'index'.

The Analyses

These indices are used in the next section of this paper to provide a measurement of stigma. Variables are then formed to describe the respondents' demographics, beliefs, attitudes and social environments. Descriptive statistics are used to assess the effect of variations in these variables on the different dimensions of stigma (different indices). Ordered logistic regression models are then used to predict potential determinants of stigma.

Measures of Stigma

The answers to questions about stigma were coded so that a score of 0 indicates no stigma and a score of 3 indicates maximum stigma. Where questions are grouped together in an index, the answers to each question were summed to form the overall stigma score for each index. These scores were then divided by the number of questions in each index so that all stigma indicators range from 0 to 3. A 'general stigma' index was created by dividing both the resource-based indicators and the behaviour indices by two and then summing all the indicators. Halving each of the two resource-based indicators and the two behaviour indices ensured that these dimensions of stigma had the same weight in the general stigma index as the instrumental and symbolic dimensions, which each consisted of one indicator.

Table 4 shows the degree of stigma within each indicator. Four levels of stigma are shown in the table. 'No Stigma' represents respondents who scored the lowest possible score in each indictor. Low, moderate and high levels of stigma record respondents scoring within the lower third, second third and upper third of each indicator respectively. The data in the table have been weighted to match the gender and race profile of the sample with the profile of the general adult population of Cape Town in 2003.

Levels of stigma are shown to vary significantly depending on the dimension of stigma being evaluated. Furthermore, levels of discriminatory behavioural intentions towards PLWHA vary depending on who the subject is. More specifically, tolerance is generally shown towards family/friends: 96% of respondents reveal no/low negative behavioural intentions towards

family/friends, with the remaining 4% displaying moderate levels of negative behaviour intentions. When the target subject is a stranger with HIV/AIDS, greater levels of intolerance are displayed: 58% of respondents show some negative behavioural intentions towards strangers, a third display moderate/high levels and 17% reveal high levels.

Table 4. Measures of Stigma in each index showing the percentage of respondents expressing each level of stigma.

	No Stigma	*Low Levels*	*Moderate Levels*	*High Levels*	*Total*
Behaviour Index (Friends/Family)	53%	43%	4%	0%	100%
Behaviour Index (Strangers)	42%	25%	17%	16%	100%
Symbolic Stigma	25%	28%	27%	20%	100%
Instrumental Stigma	38%	25%	20%	17%	100%
Resource-based Stigma (Health)	92%	6%	2%	0%	100%
Resource-based Stigma (Capacity building)	84%	14%	2%	0%	100%
General Stigma	6%	65%	28%	1%	100%

The symbolic and instrumental indices show that these negative attitudes towards PLWHA are expressed more frequently and to greater degrees than negative behavioural intentions. The majority of respondents express some symbolic and instrumental stigma, with more than a third expressing moderate to high levels of each of these dimensions. The prevalence and magnitude of symbolic stigma is greater than that of instrumental stigma, indicating that moral judgements associated with HIV/AIDS are more prevalent than fear of HIV infection from drinking from the same bottle of water as an HIV-positive person. The resource-based stigma indicators reveal low levels of this dimension of stigma.

The general stigma index displays the prevalence of any form of stigma. The vast majority of respondents (94%) are found to reveal some degree of stigmatising attitudes or negative behavioural intentions towards PLWHA. Furthermore, 28% of respondents indicate moderate levels and 1% high levels of stigma.

These findings are similar with the findings amongst young adults in CAPS (Maughan-Brown, forthcoming). This suggests that manifestations of stigma are similar amongst young adults and adults in Cape Town. It also suggests that we can be confident that these data sets are picking up genuine social attitudes, rather than simply reflecting 'noise' generated in the collection of the data (e.g. through interviewer error, questions understood poorly by respondents etc).

Determinants of Stigma

The variations between and within the behavioural, instrumental and symbolic stigma indicators suggest that it would be informative to explore the potential determinants of each dimension separately. Such analyses will provide more detailed information about the factors influencing each dimension. Neither of the resource-based indicators are analysed further due to the small variation within each of these indicators. The behavioural intentions indices (towards family/friends and towards strangers), the instrumental indicators and the symbolic indicators form the dependant variables in ordered logistic regression models. The explanatory variables used in each model are described in the following section. Descriptive statistics are displayed to show how these variables affect the mean scores within each dimension of stigma.

Explanatory Variables

The following explanatory (independent) variables are used in the OLS regression models (and a brief discussion of their reasons for inclusion is provided below):

- Racial groups
- Gender
- Age
- Education
- Employment status
- Religiosity
- General trust
- General bigotry
- Social attitudes
- Neighbourhood problems
- Instrumental stigma
- Symbolic stigma

Stigma is a complex social phenomenon which is moulded by cultural and contextual factors. Accordingly, stigma in South Africa has been found to manifest in different ways among different people (Shisana & Simbayi, 2002; Maughan-Brown, forthcoming). This paper divides the sample into three population groups[9]- blacks, coloureds and whites- to assess whether racial

[9] Data was not available for other population groups.

differences among adults in Cape Town are salient in predicting both the magnitude and potential determinants of stigma.

Attitudes towards, and experiences of HIV and AIDS, can vary between males and females (Greene *et al.*, 2003; Kahn, 2004). Previous research found gender differences in stigmatisation among young adults in Cape Town (Maughan-Brown, forthcoming). A binary variable for gender was therefore included to explore such differences in the adult population of Cape Town.

The Nelson Mandela HSRC study (Shisana & Simbayi, 2002: 84) found that stigma levels varied according to age. Those in the oldest category (>49 years old) displayed the greatest stigma, followed by those in the youngest group (15-24 years old). The 25-49 year old group were found to be the most accepting. Although the HSRC study used different indicators of stigma, it was nevertheless hypothesised that similar results would be found in this analysis. This hypothesis was based on the assumption that older respondents know less about HIV and perceive themselves to be less at risk from HIV than the younger respondents. The analyses of the effects of age on stigma used similar age categories used in the HSRC study and CAPS to enable comparison. The sample was divided into three different age groups: 18 to 23 years (this age range matches the 15 to 23 year old age range in CAPS as closely as possible), 24 to 49 years and 50 to 84 years.

Previous research found that higher levels of education are associated with lower levels of stigma (Shisana & Simbayi, 2002; Maughan-Brown, forthcoming). It was hypothesised that a similar result would be found in this analysis. The level of education of each respondent was constructed as the highest year of education successfully completed[10].

The binary variable, 'working', was included in the analysis because previous research found that the employed expressed lower levels of stigma than the unemployed (Shisana & Simbayi, 2002: 84). This variable is the only economic indicator used in the regression models because the majority of respondents, unfortunately, refused to complete the income section in CAS.

[10] In coding the education variable, a year of education was assigned for each year of school completed. If respondents had never attended school they were assigned 0 and if they had finished matric (grade 12) they were assigned 12, for 12 years of education completed. The CAS questionnaire offers numerous post-school study options, ranging from certificates to degrees. Assumptions had to be made about the average number of years taken to complete these certificates and degrees, as no information about the specific courses or academic institutions was available. Diplomas/certificates were assumed to take an average of 1.5 years to complete, undergraduate degrees 3 years and postgraduate degrees 5 years. The education variable therefore ranges from 0 (no schooling) to 17 (postgraduate qualification).

Table 5 displays the mean values of each of the main stigma indicators for these demographic variables. The differences between the mean values are tested for statistical significance[11]. Strikingly, the indicator measuring the behaviour intentions towards family/friends is the only indicator displaying similar results to the HSRC study. Although the CAS has no data for people between the ages of 15 and 18, thus preventing direct comparisons, this strengthens the argument that the HSRC measure of stigma is a reflection of this one dimension of stigma only, and is a poor measure of the overall problem of stigma. Table 5 also highlights the importance of deconstructing stigma into its different dimensions. It shows that different dimensions of stigma are associated with different characteristics of respondents.

The differences in means for behavioural intentions towards family/friends living with HIV/AIDS show significance with respect to population group, gender, age and education. Coloureds, on average, expressed more negative intentions towards friends/family than blacks or whites. Males, on average, expressed significantly greater discriminatory behavioural intentions towards family/friends than do females. On average, the 50 to 84 year old category was found to manifest more negative intentions than the average 24 to 49 year olds. With respect to education, respondents who had completed between grade 7 and grade 11 were on average found to manifest more negative intentions than respondents who had past matric (i.e. grade 12) or some tertiary education.

The variables with significance in the difference between their means for behavioural intentions towards strangers living with HIV/AIDS were somewhat different. On average, the most negative intentions were expressed by blacks and the least by whites. Respondents who had completed some tertiary education indicated, on average, less negative intentions than respondents who had completed any other level of schooling. Finally, respondents who were employed were found, on average, to manifest more negative intentions than unemployed respondents. There was no significant difference in averages for gender or age.

The attitudinal dimensions (instrumental stigma and symbolic stigma) show similar patterns, with significantly different averages for race and age. On average, instrumental stigma is greatest in the coloured population and least among the black population. The 50 to 84 year old group also indicated, on average, more instrumental stigma than the other age groups. Symbolic stigma is found, on average, to be lower among black adults than for either whites or coloureds, and no significant difference was detected between the white and coloured group. Finally, the difference in the means for age was marginal with

[11] This is achieved with t-tests and oneway anova.

respect to symbolic attitudes, with the oldest group showing more stigma than the 24 to 49 year olds.

The remainder of this section describes the variables reflecting respondents' beliefs and social context which might influence stigma. A variable measuring the religiosity of the respondents is included in the regression analysis due to the moral messages embedded within religion that have the potential to influence stigma. The importance of considering religion is highlighted by data showing religious organisations to be the only institution for which the majority (53%) of the CAS respondents indicated membership. It is thought, however, that stigma is influenced more by the salience of religion in someone's life, rather than simply belonging to a religious group. CAS asked how important religion is to the respondent and the responses were combined into a binary variable, 'religiosity'[12].

The effectiveness of HIV/AIDS intervention campaigns is directly correlated with the extent to which their target audiences perceive them to be credible. This was the finding in a study which assessed public trust associated with AIDS in the United States. Public trust was measured by opinions about three statements: (1) Many scientists and doctors say AIDS in not spread by casual contact. Do you think what they are telling us is definitely true, probably true, probably false or definitely false; (2) A lot of information about AIDS is being held back from the public [agree strongly-disagree strongly]; and (3) The government is using AIDS as a way of killing off minority groups [agree strongly-disagree strongly]. It was found that higher levels of AIDS-related distrust were related to greater willingness to avoid and stigmatise PLWHA, and to inaccurate beliefs about HIV transmission (Herek & Capitanio, 1994).

CAS asked respondents whether they believe that, in general, most people can be trusted. Although this question asks about trust in general, inhibiting specific inferences, it may indicate a link between trust and stigma. To investigate the relationship between stigma and general trust, binary variables were created to separate respondents into three groups: (1) generally trusting- 'trustyes'; (2) not sure- 'trustnotsure'; and (3) generally distrustful- 'trustno'.

[12] The base for 'religiosity' is respondents who indicated that religion was not important in their lives.

Table 5. Mean scores of different dimensions of stigma by respondents' characteristics.

		Behaviour (BF)		**Behaviour (BS)**		**Instrumental**		**Symbolic**	
Range of Scores		0-3		0-3		0-3		0-3	
		Family&Friends		Strangers					
		n	mean	n	Mean	n	mean	n	Mean
All Respondents		564	0.41	548	0.92	547	1.16	552	1.41
Race	Black	197	0.35	187	1.31	191	0.62	189	1.16
	Coloured	214	0.54	212	0.88	207	1.55	214	1.53
	White	137	0.30	133	0.46	133	1.17	132	1.47
diff	*b - c*		-0.19***		0.43***		-0.93***		-0.37***
	b - w		0.05		0.85***		-0.55***		-0.31**
	c - w		0.24***		0.42***		0.38***		0.06
Gender	Male	218	0.47	214	0.93	216	1.12	213	1.42
	Female	346	0.36	334	0.92	331	1.20	339	1.39
diff	*m - f*		0.11**		0.01		-0.08		0.03
Age	18 to 23	103	0.45	98	1.09	101	1.00	101	1.34
	24 to 49	312	0.36	308	0.87	303	1.09	301	1.35
	50 to 84	130	0.48	122	0.92	124	1.49	130	1.54
diff	*18 to 23 - 24 to 49*		0.09		0.22		-0.09		-0.01
	18 to 23 - 50 to 84		0.03		0.17		-0.49***		-0.20
	24 to 49 - 50 to 84		-0.12*		-0.05		-0.40***		-0.19*
Education	<grade7	66	0.38	63	1.14	65	1.19	66	1.26
	grade 7to11	251	0.51	244	1.08	238	1.22	244	1.39
	grade 12	138	0.36	128	0.86	131	1.16	132	1.49
	Tertiary	111	0.26	109	0.46	109	0.99	106	1.43
diff	*<g7 - g7to11*		-0.13		0.06		-0.03		-0.13
	<g7 - g12		0.02		0.28		0.03		-0.23
	<g7 - tertiary		0.12		0.68***		0.20		-0.17
	g7to11 - g12		0.15**		0.22		0.06		-0.10
	g7to11 - tertiary		0.25***		0.62***		0.23		-0.04
	g12 - tertiary		0.10		0.40***		0.17		0.06
Working	Yes	263	0.40	277	1.05	261	1.13	252	1.44
	No	285	0.44	255	0.82	271	1.18	284	1.39
diff	*Working - not*		-0.04		0.23**		-0.05		0.05

Note: ***Significant at the 1% level **Significant at the 5% level *Significant at the 10% level

Stigmatisation of specific groups has been found, in part, to be embedded in broader tendencies to denigrate outgroups in general (Sniderman & Piazza, 1993; Joffe, 1999; Maughan-Brown, forthcoming). The influence this effect has on behavioural intentions towards PLWHA and stigmatising attitudes in CAS is examined using a variable labelled 'bigotry'. The respondents were asked, on an 11-point Likert scale, the degree to which they like/dislike blacks, coloureds, whites, Jews, illegal immigrants and homosexuals[13]. For each question a value of 1 was added to the variable 'bigotry' if any dislike was expressed towards that group. After controlling for the racial group of each respondent, this resulted in a scale from 0 (no dislike shown towards any group) to 5 (some dislike shown to every group).

The CAS asked a number of questions probing social attitudes of the respondents. These attitudes could play a central role in the formation of stigma. The primary mode of HIV transmission in South Africa is through sexual intercourse. The nature of associations made between sexual intercourse and HIV, as well as other associations linked to HIV/AIDS, might be influenced by conservative/liberal social attitudes. Two of the questions designed to probe social attitudes factored together with a degree of reliability ($\alpha = 0.65$). These were: (1) It is okay for a woman to have a child as a single parent if she doesn't want to have a stable relationship with a man; and (2) Individuals should have the chance to enjoy complete sexual freedom. Responses to these two statements were combined into a variable called "social-conservative", scores range from 0-8, with higher scores reflecting more conservative social attitudes.

The final variable created acknowledges stigma as a social process which is influenced by the social context (in this case, living conditions) in which it develops. Income is often used as a proxy for the quality of living conditions, but accurate information was not available for this variable. Another variable was therefore developed to proxy for the quality of living conditions. This variable, "problems", measured neighbourhood problems based on the frequency that a certain problem occurred in the respondents' area. Neighbourhood problems were assessed using 9 questions[14] ($\alpha = 0.87$) indicating the frequency of noise disturbance, graffiti, loiterers, drunks,

[13] It should be noted that a lack of information regarding the respondents' sexual preferences or immigration status meant that this variable might not correctly represent views towards outgroups, as some of the respondents might have been homosexuals or illegal immigrants themselves. It was believed, however, that the effect of this error would be small as the respondent would have to be a member of the target group and express dislike towards this group for the index to be affected.

[14] The response options for each question ranged from 0 (i.e. never) to 4 (i.e. very often). The questions were summed and divided by 9 (the number of questions) to maintain a scale ranging from 0 to 4.

vandalism, racial insults or attacks, brake-ins of houses or cars and people being attacked.

In addition to these variables, the indicators of the attitudinal dimensions of stigma (instrumental and symbolic) were included in the analyses. This will assess the degree to which behavioural intentions are influenced by these attitudes, and whether a relationship exists between the attitudes themselves.

The effect that each of these variables had on behavioural intentions and stigmatising attitudes are displayed in Table 6. The means for behavioural intentions towards family/friends are significantly different with religiosity and trust ($p>0.1$), and significantly different from bigotry, instrumental attitudes and symbolic attitudes ($p>0.01$). Respondents who stated that religion is important in their lives expressed, on average, more negative intentions than respondents placing no importance on religion in their lives. Behavioural intentions were, on average, more negative for those who were ambivalent towards trusting people as compared to those who thought people can be trusted. Respondents who expressed greater levels of bigotry and those who expressed more symbolic stigma manifested more negative behavioural intentions. The greatest difference in means is between those who show great fear of infection and those who show less fear of infection. This is intuitive as the behavioural intentions in this particular analysis are towards family/friends, people with whom respondents presumably share close physical proximity.

The differences in means of behavioural intentions towards strangers (second column in Table 6) are not significant for instrumental stigma. This indicates that fears of infection from casual contact have less influence on behavioural intentions when respondents, presumably, are not thinking in terms of close physical proximity. Significance in the difference of means for this dimension was found with religiosity, trust, bigotry, social attitudes and neighbourhood problems. Respondents placing importance on religion, those who expressed general distrust and those who expressed bigoted attitudes were found, on average, to manifest more negative behavioural intentions towards strangers. In addition, the more socially conservative respondents, as well as respondents living in neighbourhoods with more problems, manifested more negative behavioural intentions towards strangers.

Differences in the average of instrumental stigma are found to be significant for two variables- trust and symbolic attitudes. Respondents who expressed lower levels of trust had a greater fear of infection than those who thought that in general most people can be trusted. Respondents who expressed high levels of symbolic stigma had greater fears of infection. The only variable to show significance in the comparison of means for the symbolic stigma indicator is the

instrumental indicator. On average, respondents who expressed high fear of infection expressed more symbolic stigma.

Table 6. Mean scores of different dimensions of stigma by respondents' beliefs, attitudes and social context.

		Behaviour (BF)		**Behaviour (BS)**		**Instrumental**		**Symbolic**	
Range of Scores		0-3		0-3		0-3		0-3	
		Family&Friends		Strangers					
		N	Mean	n	Mean	n	Mean	n	Mean
All Respondents		564	0.41	548	0.92	547	1.16	552	1.41
Religiosity	not at all/very	84	0.31	86	0.64	87	1.16	79	1.43
	rather/very	478	0.43	461	0.98	458	1.17	471	1.41
Diff	*not - rather/v*		-0.12*		-0.34***		-0.01		0.02
Trust	Yes	196	0.37	189	0.69	183	0.88	190	1.38
	not sure	71	0.54	69	1.10	73	1.04	71	1.28
	No	294	0.41	288	1.03	288	1.36	288	1.45
Diff	*yes - not sure*		-0.17*		-0.41***		-0.16		0.10
	yes - no		-0.04		-0.34***		-0.48***		-0.07
	not sure - no		0.13		0.07		-0.32**		-0.17
Bigotry	No	194	0.32	192	0.55	189	1.12	191	1.40
	Yes	370	0.46	356	1.11	358	1.18	361	1.41
Diff	*no - yes*		-0.14***		-0.56***		-0.06		-0.01
Social Attitude	liberal	276	0.46	276	0.75	267	1.09	270	1.35
	neutral	96	0.39	93	1.12	94	1.30	93	1.59
	conservative	191	0.36	178	1.08	185	1.20	188	1.42
Diff	*lib - neutral*		0.07		-0.37***		-0.21		-0.24
	lib - cons		0.10		-0.33***		-0.11		-0.07
	neutral - cons		0.03		0.04		0.10		0.17
Problems	low	329	0.39	318	0.73	319	1.22	324	1.44
	high	230	0.44	225	1.21	223	1.07	223	1.36
Diff	*low - high*		-0.05		-0.48***		0.15		0.08
Instrumental	low	346	0.30	333	0.95	n/a	n/a	279	0.95
	high	181	0.59	185	0.90	n/a	n/a	244	1.34
Diff	*low - high*		-0.29***		0.05	n/a	n/a		-0.39***
Symbolic	low	292	0.32	284	0.98	338	1.30	n/a	n/a
	high	242	0.49	234	0.89	185	1.64	n/a	n/a
Diff	*low - high*		-0.17***		0.09		-0.34***	n/a	n/a

Note: ***Significant at the 1% level **Significant at the 5% level *Significant at the 10% level

Multiple Regression Modelling

The discussion presented so far has explored descriptive statistics between selected variables and the stigma indicators. Ordered logistic regression

analyses are now conducted in order to assess the conditional influence of independent variables on the dependent variable. Ordered logistic regression models are used because the dependent variables have ordinal scales, they are measured on a 4-point Likert Scale. The models predicting potential determinants of behavioural intentions towards family/friends, behavioural intentions towards strangers, instrumental stigma and symbolic stigma are shown in Tables 7-10 respectively.

The tables display the ordered logistic regression coefficients, standard errors, odds ratios and significance levels. The odds ratio is a way of comparing whether the odds of a certain event changes when the explanatory variable increases by one unit. An odds ratio of 1 implies that the odds of the event happening does not change when the explanatory variable increases by one. An odds ratio of greater than one implies that the event is more likely when the explanatory variable increases by one. An odds ratio of less than one implies that the event is less likely when the explanatory variable increase by one. For example in model 7.1, an odds ratio of 1.82 for males (with females as the base) indicates that males have 1.82 greater odds of manifesting more negative behavioural intentions than females, while controlling for everything else. The first model in each table includes the entire sample; the next three models provide separate regressions for blacks, coloureds and whites respectively.

Behavioural Intentions towards Family/Friends

The predicted determinants of behavioural intentions towards family/friends are displayed in Table 7. In the general population (model 7.1), behavioural intentions are predicted to be more negative among males than females, among the 50 to 84 years old group compared to the 24 to 49 year old group, and among those who placed a greater importance on religion in their lives. In addition, respondents who were uncertain about whether most people can be trusted ('trustnotsure') are predicted to manifest more negative intentions than those who expressed general trust in others. Negative behavioural intentions are also predicted to be greater for respondents who expressed more bigotry and for the more socially liberal respondents. The finding that those who are more conservative are more tolerant might initially seem counter-intuitive, but probably indicates that traditional values regarding family/friends over-ride other social attitudes in determining behaviour.

The instrumental indicator (willingness to share a water bottle with an HIV infected friend) is found to have the greatest influence on behavioural intentions. People who expressed high levels of instrumental stigma are predicted to be 15 times more likely to manifest negative intentions than those who expressed no instrumental stigma. This is intuitive as instrumental stigma is assumed to be

measuring fear of getting infected with HIV from casual contact. These fears are likely to have an effect on behaviour towards PLWHA that people come in close contact with, i.e. family/friends. The other attitudinal dimension of stigma (symbolic) is found to have less of an influence on behavioural intentions towards family/friends. People who expressed a moderate level of negative judgement towards PLWHA have greater odds of manifesting negative behavioural intentions than those who expressed no judgemental attitudes[15].

Model 7.1 indicates that there is no significant difference in behavioural intentions towards family/friends between the different population groups. The other models do, however, indicate that there are some differences in the potential determinants of these intentions between the different groups.

In the black population (model 7.2) behavioural intentions towards family/friends with HIV/AIDS are predicted to be significantly more negative among those who manifest more instrumental stigma and, although less significant, among those measuring moderate symbolic stigma. This pattern is consistent across each of the population groups. In addition, coloured respondents (model 7.3) with higher levels of education, those expressing more bigotry, those who are more liberal and those who are not sure whether most people can be trusted are predicted to have more negative intentions. Within the white population group (model 7.4), males, those employed, those with more bigoted attitudes and the 50 to 84 year old group as compared to the 24 to 49 year olds are predicted to have more negative behavioural intentions.

[15] The scales of both the attitudinal dimensions of stigma need to be considered when interpreting the results of all models. The measures of no and low symbolic stigma are based on answers of *definitely no* and *probably no* respectively to the question about whether people who get HIV infected through sex have only themselves to blame. The measures of moderate and high symbolic stigma reflect *probably yes* and *definitely yes* answers to this question. Inconsistencies may result in the difference between the none and low, and between the moderate and high measures due to social desirability bias, as people avoid definitive or extreme answers (*definitely yes* or *definitely no*) in order to represent themselves more positively/less negatively. The important differences to focus on are therefore those between the none/low measures (a general "no") and the moderate/high measures (a general "yes"). A similar logic applies to the instrumental indicator.

Table 7. Ordered logistic regression models of potential determinants of behavioural intentions towards family/friends

		Behavioural intentions towards family/friends							
		Everyone		*Blacks*		*Coloureds*		*Whites*	
Model		7.1		7.2		7.3		7.4	
		Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio
Whites		-0.306 [0.380]	0.736	n/a	n/a	n/a	n/a	n/a	n/a
Coloureds		0.174 [0.267]	1.190	n/a	n/a	n/a	n/a	n/a	n/a
male		**0.600*** [0.201]**	**1.821**	0.028 [0.352]	1.029	0.465 [0.351]	1.593	**2.176*** [0.642]**	**8.815**
age24to49		-0.255 [0.273]	0.775	0.177 [0.408]	1.194	-0.338 [0.500]	0.713	-1.290 [0.878]	0.275
age50to84		0.248[NB] [0.345]	1.282	-0.506 [0.754]	0.603	0.206 [0.577]	1.228	0.113[NB] [0.792]	1.119
education (0-17)		0.030 [0.037]	1.031	-0.091 [0.068]	0.913	**0.100* [0.057]**	**1.105**	-0.117 [0.149]	0.890
Working		-0.241 [0.220]	0.786	-0.528 [0.368]	0.590	-0.192 [0.362]	0.825	**-1.318** [0.661]**	**0.268**
religiosity: important		**0.670** [0.324]**	**1.955**	0.599 [0.550]	1.820	0.764 [0.625]	2.148	1.146 [0.721]	3.146
Trustnotsure		**0.774** [0.332]**	**2.170**	0.331 [0.456]	1.393	**2.217*** [0.661]**	**9.178**	-0.810 [1.239]	0.445
Trustno		-0.396 [0.245]	0.673	-0.670 [0.420]	0.512	0.015 [0.440]	1.015	0.228 [0.575]	1.256
bigotry (0-5)		**0.256*** [0.079]**	**1.292**	0.089 [0.126]	1.093	**0.338** [0.139]**	**1.403**	**0.689*** [0.252]**	**1.991**
social-conservative (0-8)		**-0.342*** [0.108]**	**0.710**	-0.195 [0.183]	0.823	**-0.443** [0.185]**	**0.642**	-0.278 [0.298]	0.757
neighbourhood problems (0-4)		0.106 [0.105]	1.112	0.278 [0.199]	1.321	0.028 [0.159]	1.029	0.178 [0.427]	1.195
Instrumental Indicator	Low	**2.162*** [0.278]**	**8.691**	**1.704*** [0.399]**	**5.497**	**2.543*** [0.573]**	**12.720**	**3.695*** [0.914]**	**40.236**
	moderate	**2.161*** [0.315]**	**8.683**	**1.567*** [0.592]**	**4.793**	**2.893*** [0.573]**	**18.042**	**1.421* [0.803]**	**4.140**
	high	**2.715*** [0.366]**	**15.111**	0.763 [1.452]	2.145	**3.516*** [0.607]**	**33.656**	**3.622*** [0.986]**	**37.413**
Symbolic Indicator	Low	-0.030 [0.290]	0.971	-0.303 [0.457]	0.739	-0.156 [0.512]	0.855	0.250 [0.861]	1.284
	moderate[NB2]	**0.708** [0.292]**	**2.029**	0.741 [0.488]	2.099	0.541 [0.493]	1.718	**1.614* [0.874]**	**5.023**
	high	0.021 [0.345]	1.022	-0.571 [0.778]	0.565	-0.405 [0.565]	0.667	-0.274 [0.939]	0.761
Number of Observations		455		169		179		101	
Pseudo R-Squared		0.18		0.17		0.22		0.30	

Note: *Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level
Base for race = blacks Base for gender = females
Base for age = 18 to 23 years old Base for religiosity = 'not important'
Base for trust = 'most people can be trusted' Base for employment status = unemployed
Base for instrumental indicator and symbolic indicator = no stigma expressed

[NB]The 50 to 84 year old group showed significantly more negative intentions than the 24 to 49 group (p>0.1)
[NB2]This group was found to express significantly more negative intentions than the 'low' group.
n/a Variables not applicable to this model

Behavioural Intentions towards Strangers

Table 8 shows the predicted determinants of behavioural intentions towards strangers living with HIV/AIDS. Model 8.5 predicts that black respondents manifest more negative intentions than either coloureds or whites. Respondents who were generally more distrusting of people, placed more importance on religion, expressed more bigoted attitudes, were more socially conservative and had high levels of instrumental stigma are predicted to manifest more negative intentions.

For black respondents (model 8.6), those who were less trustful of others, more bigoted and more socially conservative are predicted to have more negative behavioural intentions towards strangers with HIV/AIDS. Paradoxically, intentions are predicted to be more positive amongst those who expressed high levels of symbolic stigma.

Within the coloured population (model 8.7), negative intentions are predicted to be more negative for those who expressed more bigotry, lived in neighbourhoods with more problems, had more conservative social attitudes and were less trustful of others.

Model 8.8 shows that, within the white population, behavioural intentions are predicted to be more negative amongst those who indicated fewer neighbourhood problems and those who expressed greater levels of stigmatising attitudes (instrumental and symbolic).

It appears that differences exits in both the prevalence (see *measures of stigma* section) and potential determinants between behavioural intentions towards family/friends and those towards strangers. In general, instrumental stigma has the most significant influence on predicted probabilities of behavioural intentions towards family/friends. Intentions towards strangers are influenced most by general bigotry towards others. Behavioural intentions towards strangers are predicted to be most negative among blacks, while no significant difference between the population groups was detected for behavioural intentions towards family/friends.

Table 8. Ordered logistic regression models of potential determinants of behavioural intentions towards strangers

		Behavioural intentions towards strangers							
		Everyone		Blacks		Coloureds		Whites	
Model		8.5		8.6		8.7		8.8	
		Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio
Whites		**-0.986*** [0.313]**	**0.373**	n/a	n/a	n/a	n/a	n/a	n/a
coloureds		**-1.244*** [0.237]**	**0.288**	n/a	n/a	n/a	n/a	n/a	n/a
male		0.091 [0.181]	1.095	-0.238 [0.308]	0.788	0.215 [0.305]	1.240	0.716 [0.486]	2.047
age24to49		-0.230 [0.239]	0.794	-0.250 [0.359]	0.779	0.371 [0.436]	1.450	-1.130 [0.718]	0.323
age50to84		-0.127 [0.298]	0.881	-0.436 [0.616]	0.647	0.635 [0.501]	1.887	-0.663 [0.728]	0.515
education (0-17)		-0.036 [0.031]	0.964	-0.015 [0.062]	0.986	0.045 [0.050]	1.046	-0.027 [0.106]	0.973
Working		0.085 [0.197]	1.089	0.031 [0.333]	1.032	-0.099 [0.333]	0.906	-0.583 [0.544]	0.558
religiosity: important		**0.472* [0.280]**	**1.603**	0.779 [0.480]	2.179	-0.098 [0.570]	0.907	0.582 [0.567]	1.789
Trustnotsure		0.264 [0.300]	1.302	**1.020** [0.418]**	**2.773**	**-1.263** [0.636]**	**0.283**	-0.974 [1.112]	0.378
Trustno		**0.636*** [0.212]**	**1.888**	**1.170*** [0.368]**	**3.221**	0.251[NB] [0.374]	1.285	0.454 [0.503]	1.575
bigotry (0-5)		**0.487*** [0.069]**	**1.627**	**0.415*** [0.113]**	**1.515**	**0.530*** [0.126]**	**1.698**	-0.023 [0.212]	0.978
social-conservative (0-8)		**0.293*** [0.091]**	**1.341**	**0.306* [0.164]**	**1.358**	**0.365** [0.152]**	**1.441**	0.055 [0.238]	1.057
neighbourhood problems (0-4)		0.073 [0.094]	1.076	-0.042 [0.171]	0.959	**0.318** [0.147]**	**1.375**	**-0.610* [0.367]**	**0.543**
Instrumental Indicator	Low	0.265 [0.231]	1.304	-0.110 [0.345]	0.896	0.287 [0.453]	1.332	**1.121* [0.639]**	**3.069**
	moderate	0.195 [0.268]	1.216	-0.276 [0.564]	0.759	-0.111 [0.443]	0.895	**1.780*** [0.628]**	**5.932**
	high	**0.759* [0.301]**	**2.137**	-0.986 [1.013]	0.373	0.580 [0.448]	1.786	**1.579** [0.708]**	**4.849**
Symbolic Indicator	Low	0.071 [0.257]	1.074	0.628 [0.408]	1.875	-0.059 [0.458]	0.942	-0.416 [0.725]	0.660
	moderate	0.177 [0.257]	1.194	-0.115 [0.427]	0.891	0.672 [0.443]	1.958	0.808 [0.700]	2.243
	high	-0.093 [0.287]	0.911	**-1.553*** [0.593]**	**0.212**	0.536 [0.496]	1.709	**1.458* [0.762]**	**4.297**
Number of Observations		443		159		180		98	
Pseudo R-Squared		0.07		0.09		0.08		0.13	

Note: *Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level
Base for race = blacks Base for gender = females
Base for age = 18 to 23 years old Base for religiosity = 'not important'
Base for trust = 'most people can be trusted' Base for employment status = unemployed
Base for instrumental indicator and symbolic indicator = no stigma expressed

[NB]The 'trustno' group showed significantly more negative intentions than the 'trustnontsure' group (p>0.01)
n/a Variables not applicable to this model

Instrumental Stigma

The models predicting potential determinants of instrumental stigma amongst respondents are shown in Table 9. White and coloured respondents are predicted to display significantly greater fear of infection than black respondents (model 9.9). In addition, respondents who expressed less trust of others in general, and those who expressed moderate levels of symbolic stigma, are predicted to have higher levels of instrumental stigma.

Table 9. Regression models of potential determinants of Instrumental Stigma.

		Instrumental Indicator							
		Everyone		Blacks		Coloureds		Whites	
Model		9.9		9.10		9.11		9.12	
		Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio
Whites		**1.178*** [0.305]**	**3.249**	n/a	n/a	n/a	n/a	n/a	n/a
coloureds		**1.465*** [0.223]**	**4.328**	n/a	n/a	n/a	n/a	n/a	n/a
male		-0.094 [0.178]	0.910	-0.306 [0.345]	0.737	**-0.510* [0.282]**	**0.601**	**0.807* [0.432]**	**2.241**
age24to49		-0.069 [0.234]	0.933	-0.024 [0.396]	0.976	-0.406 [0.395]	0.666	0.332 [0.591]	1.394
age50to84		0.328 [0.292]	1.389	-0.962 [0.721]	0.382	0.204 [0.465]	1.226	**1.036* [0.614]**	**2.818**
education (0-17)		-0.032 [0.031]	0.969	0.062 [0.068]	1.064	-0.041 [0.045]	0.960	-0.084 [0.093]	0.920
Working		-0.004 [0.194]	0.996	**-0.667* [0.361]**	**0.513**	0.488 [0.309]	1.630	-0.216 [0.478]	0.806
religiosity: important		0.009 [0.265]	1.009	0.185 [0.513]	1.203	0.101 [0.491]	1.107	0.388 [0.503]	1.475
Trustnotsure		**0.673** [0.298]**	**1.961**	0.652 [0.456]	1.920	**1.056** [0.560]**	**2.874**	0.608 [0.850]	1.837
Trustno		**0.577*** [0.199]**	**1.781**	0.368 [0.401]	1.445	**0.975*** [0.340]**	**2.651**	**0.735* [0.434]**	**2.085**
bigotry (0-5)		-0.030 [0.067]	0.970	-0.109 [0.122]	0.897	-0.138 [0.107]	0.871	0.095 [0.182]	1.100
social-conservative (0-8)		0.059 [0.087]	1.061	-0.173 [0.179]	0.841	0.057 [0.135]	1.059	**0.427** [0.216]**	**1.533**
neighbourhood problems (0-4)		0.057 [0.092]	1.059	0.054 [0.182]	1.055	0.109 [0.135]	1.115	**-0.608* [0.323]**	**0.544**
Symbolic Indicator	Low	0.057 [0.248]	1.058	0.537 [0.420]	1.711	0.309 [0.406]	1.362	**-1.513** [0.590]**	**0.220**
	moderate	**0.777*** [0.246]**	**2.175**	**1.598*** [0.446]**	**4.943**	**0.728* [0.397]**	**2.071**	-0.781 [0.609]	0.458
	high	0.203 [0.282]	1.226	**-1.945* [0.930]**	**0.143**	0.678 [0.440]	1.970	-0.936 [0.644]	0.392
Number of Observations		469		169		191		103	
Pseudo R-Squared		0.08		0.11		0.05		0.10	

Note: *Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level
Base for race = blacks Base for gender = females
Base for age = 18 to 23 years old Base for religiosity = 'not important'
Base for trust = 'most people can be trusted' Base for employment status = unemployed
Base for symbolic indicator = no stigma expressed
n/a Variables not applicable to this model

Within the black population (model 9.10 in Table 9) instrumental stigma is influenced by employment status and symbolic stigma. Those who are working are predicted to have less instrumental stigma then those who are unemployed. The influence of symbolic stigma is ambiguous. Those who had moderate levels of symbolic stigma are predicted to manifest the most instrumental stigma, while those who had high levels of symbolic stigma are predicted to manifest the least instrumental stigma.

Within the coloured population (model 9.11), instrumental stigma is predicted to be greater amongst females, those who expressed more distrust, and for those who expressed moderate symbolic stigma compared to those expressing none.

Amongst the white population group (model 9.12), males, the 50 to 84 year old group compared to the 18 to 23 year olds, those who expressed less trust, and the more socially conservative are predicted to have greater levels of instrumental stigma. Paradoxically, those who had fewer neighbourhood problems and those who expressed the least symbolic stigma are predicted to have more instrumental stigma.

Symbolic Stigma

The model predicting the potential determinants of symbolic stigma for all respondents (Table 10, model 10.13) is very weak (psuedo R-squared = 0.02). This is not surprising due to the complex nature of such attitudes, which are influenced by a myriad of factors. It does, however, provide an indication that whites and coloureds expressed more symbolic stigma than blacks. In addition, respondents from neighbourhoods with more problems and who expressed high levels of instrumental stigma expressed more symbolic stigma.

The model for the black population group (model 10.14) is the strongest for this dimension (pseudo R-squared of 0.10). The model predicts more symbolic stigma to be expressed amongst the 50 to 84 year old group than the youngest group, those who had a higher level of education, those who had more neighbourhood problems and those who expressed more instrumental stigma. Lower levels of symbolic stigma are predicted for those who stated religion to be important in their lives and for those who were uncertain about whether most people can be trusted.

Within the coloured population (model 10.15), females, respondents who expressed more bigotry, the more socially liberal and those who expressed greater levels of instrumental stigma are predicted to express more symbolic stigma. Model 10.16 shows that, within the white population, males and those

who placed more importance on religion are predicted to express more symbolic stigma.

Table 10. Ordered regression models of potential determinants of Symbolic stigma.

		Symbolic Indicator							
		Everyone		Blacks		Coloureds		Whites	
Model		10.13		10.14		10.15		10.16	
		Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio	Coefficient [Std Error]	Odds Ratio
Whites		**0.515*** [0.294]**	**1.674**	n/a	n/a	n/a	n/a	n/a	n/a
coloureds		**0.637* [0.218]**	**1.891**	n/a	n/a	n/a	n/a	n/a	n/a
male		0.101 [0.173]	1.106	0.392 [0.303]	1.480	**-0.555* [0.293]**	**0.574**	**0.800* [0.413]**	**2.226**
age24to49		0.044 [0.228]	1.045	0.316 [0.376]	1.371	-0.165 [0.417]	0.848	-0.149 [0.553]	0.861
age50to84		0.219 [0.282]	1.245	**1.090* [0.581]**	**2.975**	0.138 [0.447]	1.148	-0.457 [0.616]	0.633
education (0-17)		0.039 [0.029]	1.040	**0.104* [0.054]**	**1.110**	-0.013 [0.045]	0.988	0.099 [0.087]	1.104
working		0.015 [0.186]	1.015	-0.247 [0.314]	0.781	0.370 [0.318]	1.448	0.170 [0.478]	1.185
religiosity: important		0.143 [0.261]	1.153	**-0.871* [0.473]**	**0.419**	-0.127 [0.515]	0.881	**1.451*** [0.484]**	**4.267**
trustnotsure		-0.373 [0.284]	0.689	**-1.255*** [0.411]**	**0.285**	0.691 [0.550]	1.995	0.256 [0.726]	1.291
Trustno		-0.199 [0.196]	0.819	-0.581 [0.356]	0.559	0.159 [0.351]	1.173	-0.103 [0.426]	0.903
bigotry (0-5)		0.057 [0.065]	1.058	-0.112 [0.104]	0.894	**0.376*** [0.116]**	**1.456**	-0.012 [0.191]	0.988
social-conservative (0-8)		-0.080 [0.086]	0.923	0.233 [0.156]	1.263	**-0.266* [0.143]**	**0.767**	0.086 [0.218]	1.090
neighbourhood problems (0-4)		**0.161* [0.088]**	**1.175**	**0.540*** [0.156]**	**1.716**	-0.182 [0.136]	0.834	0.256 [0.301]	1.292
Instrumental Indicator	low	-0.109 [0.216]	0.897	-0.270 [0.339]	0.763	**-1.022** [0.403]**	**0.360**	0.304 [0.527]	1.356
	moderate	0.259 [0.237]	1.296	**0.982** [0.465]**	**2.669**	-0.152[NB] [0.404]	0.859	-0.402 [0.521]	0.669
	high	**0.636** [0.289]**	**1.889**	-1.899 [1.429]	0.150	0.610[NB] [0.410]	1.841	-0.376 [0.636]	0.687
Number of Observations		469		169		191		103	
Pseudo R-Squared		0.02		0.10		0.06		0.07	

Note: *Significant at the 10% level **Significant at the 5% level ***Significant at the 1% level
Base for race = blacks Base for gender = females
Base for age = 18 to 23 years old Base for religiosity = 'not important'
Base for trust = 'most people can be trusted' Base for employment status = unemployed
Base for instrumental indicator = no stigma expressed

[NB]This group expressed significantly more symbolic stigma than the 'low instrumental' group
n/a Variables not applicable to this model

Table 11 provides a summary of the variables which showed statistical significance in the different models. For independent factors which consist of more than two dummy variables, i.e. race, age, trust, instrumental stigma and symbolic stigma, an estimation of their significance is made from the overall effect of each category.

Table 11. Summary of the variables which showed statistical significance in the different models.

Sample	Component of Stigma	Gender	Race[NB]	Age[NB]	Education	Working	Religiosity	trust[NB]	Bigotry	Conservative	Problems	Instrumental[NB]	Symbolic[NB]
EVERYONE	Behaviour (Family/Friends)	*** +		** +			** +	** +	*** +	*** -		*** +	** +
	Behaviour (Strangers)		*** -				* +	*** +	*** +	*** +		** +	
	Instrumental Stigma		*** +					*** +					*** +
	Symbolic Stigma		*** +								* +	** +	
Sample													
BLACKS	Behaviour (Family/Friends)											*** +	* +
	Behaviour (Strangers)							*** +	*** +	* +		* +	
	Instrumental Stigma					* -							
	Symbolic Stigma			* +	* +		* -	*** -			*** +	** +	
Sample													
COLOUREDS	Behaviour (Family/Friends)				* +			*** +	*** +	** -		*** +	* +
	Behaviour (Strangers)								*** +	** +	** +		* +
	Instrumental Stigma	* -		* +				*** +					* +
	Symbolic Stigma	* -							*** +	* -		** +	
Sample													
WHITES	Behaviour (Family/Friends)	*** +		* +		** -			*** +			*** +	* +
	Behaviour (Strangers)										* -	** +	** +
	Instrumental Stigma	* +		* +				* +		** +	** -		
	Symbolic Stigma	* +					*** +						

Notes: * Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Base for race = Africans
Base for trust = 'most people can be trusted'
Base for Religiosity = 'not important'
Base for Gender = Females

NB: The significance of these variables is taken as an estimate of the overall effect from the categories within these variables.

Conclusion

This paper shows that the prevalence and magnitude of stigma amongst adults in the Cape Metropolitan Area is significantly greater than found in earlier national surveys that did not use the fine-tuned and multi-dimensional measure of stigma used in this study. Most adults (94%) are found to express some degree of negative behavioural intentions or stigmatising attitudes towards PLWHA. Furthermore, 29% of these adults express moderate/high levels of stigma. This concurs with findings that 97% of young adults in Cape Town expressed some degree of stigma and 46% expressed moderate/high levels (Maughan-Brown, forthcoming). As found in the analysis of young adults, it is apparent that the prevalence and magnitude of stigma varies according to which dimension of stigma is being measured. Symbolic and instrumental stigma is expressed more often and to greater degrees than negative behavioural intentions towards PLWHA. Levels of resource-based stigma are very low.

A new empirical finding emerging from this research is that behavioural intentions towards PLWHA can also be deconstructed into different dimensions. Responses to family/friends with HIV/AIDS differ from responses to PLWHA with whom the respondents are not closely acquainted. Responses towards family/friends are found to be much more positive. This finding is supported by qualitative research which found that people with HIV/AIDS generally find support from at least one member of their family when they disclose their status (Kahn, 2004; Almeleh, unpublished). This intuitively makes sense as one would expect people to show more tolerance towards those with whom they share an emotional bond. This finding suggests that studies of stigma need to be cognisant of the relationship between the respondent and the potentially stigmatised subject.

These findings have important implications for two previous studies conducted in South Africa. The Nelson Mandela HSRC Study (Shisana & Simbayi, 2002) and a study commissioned by the department of health (Parker *et al.*, 2002) both measured stigma using behavioural intentions towards PLWHA as the indicator of stigma. They concluded that levels of stigma are low and that people are generally tolerant towards PLWHA. These conclusions were, however, drawn mainly on the basis of behavioural intentions towards family/friends- the dimension of stigma measuring the lowest level in this study. Given that this study found a greater prevalence and magnitude of stigma using a more fine tuned and multi-dimensional measure of stigma, this emphasises the importance of such an approach to measuring stigma and provides a possible explanation for the low stigma levels found in previous research.

This paper measured very low levels of resource-based stigma amongst the adult population of Cape Town. This concurs with previous measures amongst young adults. These findings are an encouraging sign that, in Cape Town, resource-based negative attitudes towards PLWHA are limited. It must, however, be noted that the methods used in these studies represent one of the first attempts to measure this dimension of stigma.

An analysis of the potential determinants of stigma among adults in Cape Town highlights the complex nature of stigma and the significance of social context in understanding stigma. The determinants of the different dimensions of stigma vary in significance and magnitude between the different population groups. Negative behavioural intentions towards strangers are most pronounced among the black population, while the white and coloured populations display significantly greater levels of instrumental and symbolic stigma. Conclusions from these findings are limited due to a single question measuring instrumental and symbolic stigma. However, it does suggest that health promotion campaigns should be sensitive to the social and cultural context of their audiences.

Greater religiosity among some respondents is found to be associated with greater levels of stigma. Given the high membership of religious organisations, this emphasises the potential role that religious organisations could play in reducing levels of stigma.

Fear of infection (instrumental stigma) is found to be the most salient determinant of behavioural intentions towards family/friends, and also to influence behavioural intentions towards strangers. Previous research found that knowledge about HIV/AIDS transmission was the most salient predictor of all dimensions of stigma (Maughan-Brown, forthcoming). This highlights the importance of HIV/AIDS education.

This study finds that age has a minimal influence on predicting different dimensions of stigma, with the oldest respondents manifesting slightly greater levels of stigma. This implies that previous findings amongst young adults can be extrapolated to the general population. Given that knowledge of HIV transmission has been found to be an important determinant of stigma (*ibid.*), this indicates that anti-stigma campaigns, including HIV/AIDS education, need to targ*et al*l ages.

Trust is found to be a significant determinant of instrumental stigma and behavioural intentions towards PLWHA, with lower levels of general trust associated with greater fear of infection and more negative behavioural intentions. A measure of trust was included in the analyses due to Herek & Capitanio's (1994) finding that AIDS-related distrust in the United States was

associated with greater willingness to avoid and stigmatise PLWHA. Given that trust, in this paper, is measured based on opinions about whether, in general, most people can be trusted, and not directly about trust associated with AIDS, no specific inferences can be made. The findings do, however, indicate that trust is an important determinant of stigma in Cape Town and needs to be investigated further.

Years of education completed is found to have no positive influence on stigma and, in two models, to negatively effect behavioural intentions and stigmatising attitudes. An increase in years of education completed is associated with more negative behavioural intentions towards family/friends with HIV/AIDS amongst coloureds, and associated with more symbolic stigma amongst blacks. It must be noted that the majority of this education would have been completed in a different context, due to the age profile of the sample, than the current education system. In addition, this general measure of education does not assess HIV/AIDS-related education specifically. It is recommended that further research into the relationship between education and stigma should examine HIV/AIDS-related education specifically.

General levels of bigotry and symbolic stigma are associated with more negative behavioural intentions towards PLWHA. In addition, symbolic stigma and instrumental stigma are positively correlated. These findings indicate that stigma interventions should be geared towards promoting greater tolerance more generally. Finally, neighbourhood problems are also linked to stigma, suggesting that alleviating socioeconomic problems may be a necessary step for stigma reduction. Given that stigma is influenced by factors that are not directly associated with HIV/AIDS education, it is concluded that although HIV/AIDS education is a necessary component in stigma alleviation, it is by no means sufficient.

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