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HIV AND PSYCHOLOGICAL FUNCTIONING AMONG BLACK SOUTH AFRICAN  
WOMEN: AN EXAMINATION OF PSYCHOSOCIAL MODERATING VARIABLES

by

GRETCHEN K. LINDNER

Under the Direction of Lisa Armistead

ABSTRACT

**Introduction:** South Africa has an HIV-infection rate of 5 million people. Between 1995 and 2005, South Africa is expected to have the highest number of AIDS-related deaths on the African continent, a total of 2.7 million. Many infected individuals are women. However, there is very little research conducted with South African women examining the relationship between HIV-infection and psychological distress. Research conducted in the United States indicates that HIV-infection is associated with increased rates of depression and anxiety. This research project aims to explore the relationship between HIV-infection and psychological functioning in the unique socio-political context of South Africa. In addition, the aim is to begin identifying potential factors that moderate this relationship.

**Method:** A group of HIV-infected Black South African women (N = 104) and a community control sample (N = 144) were recruited from both urban and rural areas in the Gautang Province. These women participated in a one-on-one verbally administered interview assessing for psychological distress and various material, personal, family, and social resource factors.

**Results:** HIV-infection was associated with higher rates of depression, but not anxiety. In addition, women with HIV-infection reported more malnutrition risk, emotion-focused coping,

stressful life events, powerlessness in relationships with male partners, HIV-stigma, and healthcare satisfaction, than the non-infected women. Variables that were directly associated with depression and anxiety included nutrition, stressful life events, powerlessness in relationships, family social support, and community agency access. HIV-stigma was also directly associated with depression. Furthermore, health-care access, emotion-focused coping, and family social support moderated the relationship between HIV-status and depression, and stressful life events moderated the relationship between HIV-status and anxiety.

**Discussion:** This research study provides further evidence for the relationship between HIV-status and psychological distress among Black South African women. It also identified potential protective factors that could be directly addressed through community-based interventions in order to enhance the psychological functioning of these women.

**INDEX WORDS:** HIV, AIDS, Women, Black, South Africa, Psychological distress, Depression, Anxiety, Psychosocial variables

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WOMEN: AN EXAMINATION OF PSYCHOSOCIAL MODERATING VARIABLES

by

GRETCHEN K. LINDNER

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

**Doctor of Philosophy**

in the College of Arts and Sciences

Georgia State University

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|                  |                |
|------------------|----------------|
| Major Professor: | Lisa Armistead |
| Committee:       | Page Anderson  |
|                  | Sarah Cook     |
|                  | Leslie Jackson |

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## CHAPTER 1

### Introduction

In the two decades since the first AIDS diagnosis in 1981, over 20 million people have died from AIDS (UNAIDS, 2004). Although substantial prevention efforts have been undertaken, HIV transmission continues, and this disease continues to have a devastating impact on individuals throughout the world. The latest statistics by the Joint United Nations Programme on HIV/AIDS (UNAIDS) reveal that an estimated 5 million people around the world became newly infected with HIV in 2003 (UNAIDS, 2004), the largest number of new infections in any one year since the beginning of the epidemic. Additionally, in 2003 there were over 40 million people living with HIV and almost three million killed by AIDS globally (UNAIDS/WHO, 2003). These statistics highlight the global impact of HIV; however, there are specific regions of the world which are disproportionately impacted by this disease.

Sub-Saharan Africa is the region of the world which is most affected by the HIV/AIDS epidemic (UNAIDS, 2004). Of the statistics described above, Sub-Saharan Africa accounts for 26.6 million of the people living with HIV, 3.2 million of the newly infected people in 2003, and 2.3 million of the deaths in 2003 (UNAIDS/WHO, 2003). As such, although southern Africa accounts for only 2% of the world's population, it accounts for over 30% of the people living with HIV/AIDS worldwide. South Africa is one country in this region that has been significantly impacted by the HIV/AIDS epidemic.

One way of assessing the impact of HIV in South Africa is by examining the HIV-prevalence rates. This country has an extremely high HIV-prevalence rate; with approximately five million HIV-infected individuals (Fassin & Schneider, 2003; UNAIDS/WHO, 2004).

Epidemiological data indicate that at the end of 2003, the national adult HIV-prevalence rate was approximately 21.5% (UNAIDS/WHO, 2004). However, prevalence rates range significantly by region. For example, in 2002 HIV-prevalence estimates ranged from 11.2% (Western Cape) to 36.5% (Kwazulu-Natal), depending on the region of South Africa examined. Although Gauteng is the smallest province in South Africa, it has the second highest estimated HIV-prevalence rate of any province, at approximately 32% (Department of Health, 2003).

An additional way of assessing the impact of HIV/AIDS is by examining mortality rates and changes in life expectancies. The impact of HIV on mortality in South Africa has been significant, with AIDS accounting for 25% of all deaths in 2000 (Fassin & Schneider, 2003). Scientists predict that life expectancy will fall from the current 54 years to 41 years by 2010 because of the impact of AIDS (Dorrington, Bourne, Bradshaw, Laubscher, & Timaeus, 2001). Reports also indicate that in response to AIDS-related deaths crude death rates are higher, improvements in infant and child mortality rates have been reversed, and population growth has slowed (US Bureau of the Census, 1999). As such, it is clear that the South African population is greatly impacted by HIV and AIDS. However, just as regions around the world are disproportionately impacted by this disease, so are different groups in South Africa disproportionately impacted by HIV/AIDS.

In 2001, women comprised 57% of the new HIV-infections in South Africa (UNAIDS/WHO, 2002) and in 2002, 26.5% of pregnant women were HIV-positive (Department of Health, 2003). Women aged 25 through 29 and women aged 30 through 34 are heavily affected by HIV, with 34.5% and 29.5% of pregnant women in these age groups, respectively, being HIV-infected (Department of Health, 2003). The impact of AIDS-related deaths on women of child bearing age is pervasive. For example, the mortality rate among young, adult

women in South Africa has increased to be 3.5 times higher than the mortality rates for this group in 1985, and the current death rates are higher among women in their 20s than among women in their 60s (Dorrington, et al., 2001). More specifically, HIV is the most prevalent among Black South Africans, with the epidemic spreading most rapidly among women in this subgroup (Douglas, 2000). Black women are the poorest, least educated, and most economically marginalized group in South Africa, making them particularly vulnerable to HIV-infection (Barbarin & Richter, 2001). Moreover, given their marginalized and often impoverished status, they may also be susceptible to the adverse psychosocial outcomes associated with infection.

Although there have been many large-scale prevention campaigns aimed at minimizing the spread of HIV in South Africa (e.g., Lovelife, 2000), it is clear from these data that HIV continues to be a major problem for Black South African women, particularly mothers. Despite the large impact of AIDS on this group, there has been limited research assessing the impact of HIV-infection on women's functioning. Perhaps more importantly, there has been limited research examining what factors mitigate the impact of HIV-infected. Without additional information, it is challenging to develop informed interventions aimed at improving the quality of life among HIV-infected women. Consequently, research on the impact of HIV and on the identification of mitigating resources in this population is essential. As such, the goal of this research is to understand the impact of HIV on women's functioning and to identify protective resources that may be amenable to change.

### The South African Context

The HIV/AIDS epidemic in South Africa cannot be examined without discussing the broader historical and socio-economic context of this country. Foreign settlement in South Africa began in 1652 when the first Dutch settlers arrived in the Cape area. Since that time,

residents of this country have been the victims of continuous colonisation by the Dutch, French, and British. Major battles occurred between the Xhosa and the Boers (e.g., Battle of Blood River), as well as between the Boers and the British (e.g., Anglo/Boer War), creating a context of violence and political unrest.

In the early 1900s policies of racial separation and discrimination were first introduced, leading to the restriction of rights among Black South Africans. For example, in 1910 the Union of South Africa was created, federating the British colonies and the old Boer republics, thereby denying Blacks the right to vote. In 1913 the Native Land Act was passed, which restricted Black ownership to 7% of the country's land. In response to these restrictions Black South Africans created organizations aimed at forwarding the resistance and liberation movements (e.g., African National Congress). After World War II white South Africans became fearful of the growing power of these movements and as such, elected the right-wing National Party in the 1948 election. This party was responsible for established the Apartheid system, under which racial segregation was strictly enforced (e.g., laws against interracial sex or marriage, separate and inadequate education systems for Black children). The Apartheid system was maintained by the National Party until it was finally abolished in 1990 under the leadership of Nelson Mandela and F.W. de Klerk. In 1994 a new constitution was drafted, and Nelson Mandela was elected President in the first democratic elections of South Africa, signifying to many a new era of reconciliation. For a full account of South African history please refer to *A History of South Africa* by Thompson (2001).

Although the apartheid system has been abolished, it is informative to explore the continued economic legacy of this system. Under the apartheid system, Black South Africans were disenfranchised politically, socially, and economically, and were often the victims of

human rights violations (Campbell & Mzaidume, 2001; Baldwin-Ragaven, London, & De Gruchy, 2000). In the post-apartheid era, Black's continue to suffer the impact of this type of systematic abuse. For example, according to the World Bank (2002), approximately 13% of the nation's population lives in "first world" conditions, whereas 53% lives in "third world" conditions. In addition, 35% of South Africa's population lives on less than 2 US dollars a day. These statistics reflect the continued significant income disparities between the rich (predominantly white) and the poor (predominantly Black) in South Africa. In addition, employment opportunities for unskilled women with low educational attainment are poor (Campbell & Mzaidume, 2001), making Black women particularly vulnerable to economic instability.

The history of colonialism and apartheid has also impacted issues related to sexuality. For example, in a recent paper, Delius & Glaser (2002) explore the way that Black South African's views of sexuality and sexual communication have changed as a result of these political systems. They discuss that before colonialism Black South African's had a more liberal and open view of sexuality, where sex was discussed often and comfortably. Additionally, they note that, in Black communities, adolescent peer influence was often used to help monitor and manage adolescent sexuality. In the 20<sup>th</sup> century, in response to Western influence, sexuality has become a more taboo topic, and the positive influence of adolescent peer groups has diminished. This paper serves as an example of the way that South Africa's history likely influences issues related to sexuality, and thus HIV/AIDS.

In addition to understanding South African history, it is also critical to highlight the current political context, as it relates to HIV and AIDS. Jones (2001) discussed the considerable amount of international attention received in response to comments made by the South African

president, Mr. Mbeki, and his spokesperson, Mr. Mankahlana, related to HIV. In 2000, the president discussed his skepticism that HIV in fact causes AIDS and instead posited that AIDS may be caused by poverty. The government at this time spent two million rand on research re-examining the etiology of AIDS (Jones, 2001). The administration received a significant amount of criticism from the world community and from HIV/AIDS activists in the country (e.g., BBC, 2002), who believed that his comments were contrary to current scientific knowledge. However, Jones (2001) points out that Mr. Mbeki's comments must be understood within the context of apartheid, where Black South Africans experienced widespread exclusion and marginalization from scientific and medical information. It is not difficult to see how someone in this context would be distrustful of Western science and medicine. For the purposes of this study, it is important to note that these types of comments impact the context of HIV/AIDS in South Africa. For example, they might create a climate in which citizens experience increased confusion about HIV and questions about the validity of HIV-prevention and intervention messages.

It is also important to understand that South Africa is currently in a period of major transition, moving from an apartheid-based system to a democratic republic based on equality. Citizens are attempting to move away from the legacy of apartheid and toward reconciliation between members of their society, as expressed in the National Unity and Reconciliation Act of 1995. This is clearly a complicated process that will likely take many decades. During this process, Black South Africans will likely be learning how to balance commitment to their African roots, while also being influenced by the current climate of globalization. Given all of these factors, South Africa can be considered a unique country in terms of its history and its current socio-political climate. It will be interesting to explore the relationship between HIV-status, psychological distress, and access to resource within this unique context.

## Conceptual Framework

In exploring the impact of HIV on women's functioning it is important to have a conceptual framework that serves as a foundation and guide for examining this question. Throughout the last century there has been a progression away from the biomedical model and toward the biopsychosocial model in an attempt to understand and predict individuals' functioning in a healthcare context (Winiarski, 1997). Up until the 1960s, when trying to understand patients with chronic and/or terminal health conditions, a biomedical model was often utilized (Smith & Nicassio, 1995). This strict biomedical model posits that to understand a person's disease progression and functioning, one must only understand that person's biological status. For example, one would only need to understand the disease progression and symptoms of HIV/AIDS in order to predict the functioning and health of an individual who is HIV-infected. This model suggests that illness is only a result of biological malfunction, and, thus, that disease progression can be predicted by understanding biochemistry and physiology. The biomedical model in no way takes into account the fact that an individual's personality, social factors, and/or societal conditions may also impact his/her disease progression. It is therefore a reductionistic perspective which considers social and psychological factors irrelevant.

The major weakness of the biomedical model is that it cannot explain why two individuals with the same disease might have different clinical presentations, symptom development, and disease progressions. In the 1960s it became evident that, although the biomedical model led to many significant medical discoveries, it did not fully explain patients' functioning. Scientists began to discuss the idea that other factors were likely interacting with biological factors and impacting patients' functioning. Engel (1977) was the first scientist to use



the term “biopsychosocial” and to highlight the need for a broader conceptualization of illness in the fields of medicine and psychiatry.

In his influential papers, Engel (1977, 1980) presents the biopsychosocial model, which states that the onset, course, and treatment of physical illness are best understood by examining the patient at three levels: (1) biological; (2) psychological; and (3) social. Engel notes that his model is highly influenced by the principle in general systems theory stating that nature is organized in hierarchical units which increase in complexity (von Bertalanffy, 1968). Each of these units is unique and distinctive; however, the units at each level interact with each other, and units at one level can influence the units at levels both above and below it. This notion highlights the interdependence of systems and asserts that to understand one system, one must understand the surrounding, interconnected systems (Smith & Nicassio, 1995). Engel (1980) applied this general systems principle when developing the biopsychosocial model by asserting the importance of thinking about a patient’s functioning at multiple, interacting levels. He presents the following interacting, hierarchical units (from lowest to most complex) that should be examined when working with a patient: cells, tissues, organs, nervous system, person, two-person, family, community, and culture/subculture. The biopsychosocial model therefore affirms that these units can be addressed by considering a patient’s biological, psychological, and social aspects when attempting to understanding his/her functioning.

Winiarski (1997) gives examples of what should be considered under each of these aspects. In considering the biological aspect of a patient, he notes it is important to consider the impact of flesh, blood, bone, organism, and viral problems. When addressing psychological aspects it is important to consider the intrapsychic processes of the patient, including factors such as emotions, self-judgments, motivations, and coping styles. Last, in considering the social

aspects of a patient, it is necessary to consider family involvement, social support, community influences, and societal pressures and influences. Winiarski (1997) points out that traditionally individuals in the healthcare setting consider only some of these aspects or consider each of these aspects separately. However, he highlights that the biopsychosocial model asserts the importance of looking at these processes together, rather than just examining one in isolation.

It is fitting to use the biopsychosocial model to guide an examination of the way that HIV impacts functioning in women. This model emphasizes the importance of considering numerous psychological and social factors when trying to predict the impact of HIV, rather than just examining biological factors (e.g., CD4 count). Given that the researcher is interested in examining psychological functioning as an outcome, this model seems particularly relevant. Further, because this research study is one of the first to examine the impact of HIV on women in South Africa and is therefore exploratory in nature, it is helpful to have a model that provides a framework for identifying which factors may be important for a first round examination. Additionally, there is precedence in the literature for applying the biopsychosocial model to understanding and guiding research and practice around HIV and functioning in the United States (Cohen, 1990; Cohen & Weisman, 1986; Marcus, Kerns, Rosenfeld, & Breitbart, 2000; Thomason, Jones, McClure, & Brantley, 1996; Winiarski, 1997; Wolfe et al., 1991) and also in South Africa (Schlebusch & Cassidy, 1995).

### Research Questions

When examining the impact of HIV on women in South Africa, the biopsychosocial model illuminates the importance of thinking about psychological factors. This research will measure psychological distress as an outcome variable (i.e., depression, anxiety). In addition, when trying to identify mitigating resources in the relationship between HIV and psychological

functioning, the biopsychosocial model posits the importance of examining both individual- and social-level variables. Consequently, when attempting to identify potential mitigating factors, the researcher will examine four sets of variables: (1) material (e.g., housing); (2) personal (e.g., coping resources); (3) family (e.g., family social support); and (4) social (e.g., community resources) (Figure 1). To these aims the researcher will attempt to answer two research questions. First, is there a relationship between HIV-infection and psychological distress? Second, what factors (i.e., material, personal, family, and social) moderate the relationship between HIV-infection and psychological distress?

### HIV and Psychological Functioning

Individuals who receive a diagnosis of HIV are likely to experience increased stress related to the prospect of physical, social, and sexual threats associated with their new health status. Consequently, a significant amount of research has been conducted in the United States assessing the relationship between HIV-status and psychological functioning. The majority of these studies have specifically examined the relation between HIV and depression. Although original research conducted in this area yielded inconsistencies (for review see Schonnesson, 2002), a recent meta-analysis indicated that the rate of major depression among individuals who are HIV-positive is twice as high as the rate among individuals who are HIV-negative (Ciesla & Roberts, 2001). However, it is important to note that the majority of the studies included in this meta-analysis were conducted with Caucasian gay males. The research conducted with HIV-infected women suggests that women exhibit rates of depression ranging from 30-60% (Kaplan, Marks, & Mertens, 1997; Moore et al., 1999), while the estimated rates of depression in HIV-infected males is typically 20% or lower (Perkins et al., 1994; Schonnesson, 2002). In addition, studies directly testing sex differences found that women with HIV report significantly more

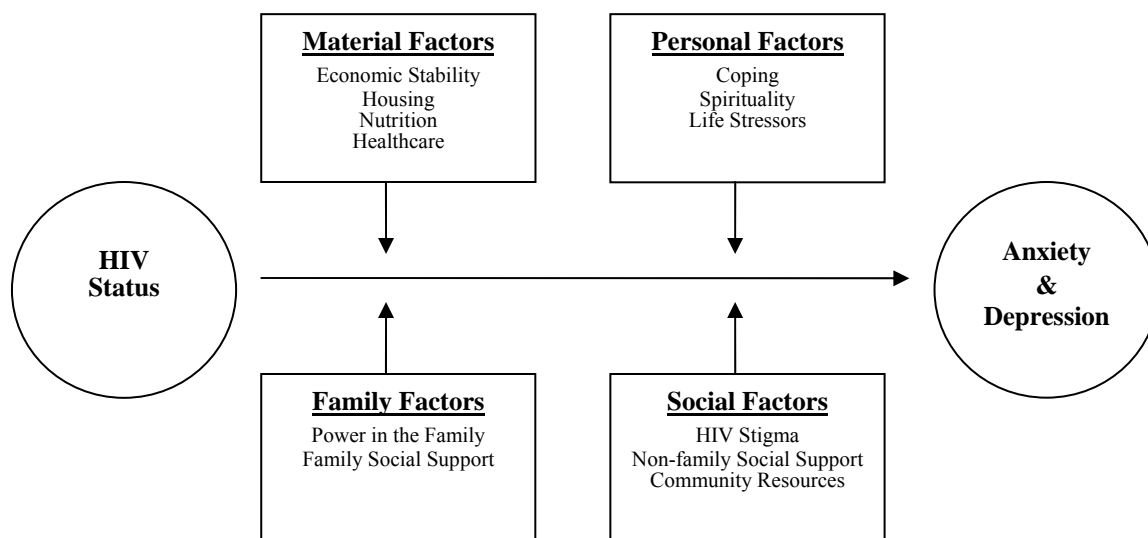


Figure 1

Potential Moderators in the Relationship between HIV and Psychological Functioning

symptoms of depression than men with HIV (Lipsitz, Williams & Rabkin, 1994; Zorilla, McKay, Luborsky, & Schmidt, 1996).

Similar relationships between HIV and depression have also been established when looking specifically at African-American women. One recent large-scale longitudinal study found that single African-American women who are HIV-infected display significantly more depression than a group of matched non-infected women (Jones, Beach, & Forehand, 2001). These group differences were maintained on both self-report and clinician-rated measures and on measures that included only cognitive and affective symptoms. Thus, the data in the United States strongly suggests that individuals with HIV are at increased risk for depression, and, more specifically, that African-American women with HIV are particularly vulnerable to depression.

There has been significantly less research in the United States examining the link between HIV-status and anxiety. However, preliminary research indicates that individuals with HIV report mood distress that may be characterized as anxiety, such as anguish, worry, and powerlessness (Schonnesosn, & Ross, 1999). In addition, two studies with women have shown higher rates of anxiety among individuals who are HIV-infected, as compared to non-infected women (Kaplan, Marks, Mertens, 1997; Moneyham et al., 1997). A study conducted by Morrison et al. (2002) with women (55% African-American) found that although there were no differences between HIV-infected and non-infected women in terms of rates of anxiety disorder diagnoses, the HIV-infected women displayed significantly more anxiety symptoms than their HIV-negative counterparts. Therefore, the existing data on the link between HIV-infection and anxiety seems to suggest that women with HIV may not be more susceptible to specific anxiety disorders, but that they may have an overall elevated level of anxious symptoms or features (e.g.,

worry, stress, difficulty sleeping). However, the studies examining this link are fairly limited and as such, more research is necessary in order to elucidate this relationship.

Although the data from the United States provide strong support for a relationship between HIV and psychological functioning there are limited data exploring these relationships in the unique socio-political context of South Africa. Preliminary studies from other areas of Africa that compare HIV-infected to non-infected individuals have revealed a significant relationship between HIV status and depressive symptoms (Malanda, Meadows, & Catalan, 2001; Wilk & Bolton, 2002). One recent study in South Africa found a 35% rate of depression and a 15% rate of post-traumatic stress disorder among men and women with HIV-infection (Olley et al., 2003). This study found no significant gender differences in terms of the prevalence of mood disorder. Similarly, a study with AIDS patients in South Africa found significantly higher rates of depression and anxiety (33%) in HIV-infected individuals than in non-infected individuals (24%). In addition, another study found higher levels of anxiety among an HIV-infected group in South Africa, relative to a non-infected group (Mfusi & Mahabeer, 2000). However, this study found no difference in level of depression between HIV-infected and non-infected individuals. Therefore, although the preliminary data from South Africa suggest that there may be a relationship between HIV-infection and mental health, the literature is limited and is unclear about exact nature of this relationship. As such, additional research is needed that investigates this question within the context of South Africa and that focuses exclusively on women, as they may be particularly vulnerable to depression and anxiety.

It is important to understand the way that HIV impacts psychological functioning, as one's mental health may be directly related to other outcome variables. Recent research in the United States suggests that the psychological functioning of an HIV-infected individual is

associated with health-related outcome variables. For example, a prospective, longitudinal research study with HIV-infected women showed that depressive symptoms are associated with HIV disease progression (Ickovics et al., 2001). More specifically, in this study women who were depressed were two times more likely to die than women with no depressive symptoms, and these women exhibited a significantly greater decline in their CD4 cell counts. Additionally, a recent study examining the health impact of a cognitive behavioral stress management intervention found that individuals with HIV who had been through this training experienced improvements in mood, neuroendocrine functioning, and immunologic status (Antoni, 2003). This study suggests that interventions aimed at improving psychological functioning may directly impact physical health. Research in the United States therefore shows a strong link between psychological functioning and physical health.

If research conducted in South Africa can begin to identify factors that influence psychological outcomes in individuals who are HIV-infected, then more informed and effective interventions can be designed. The US-based research suggests that if one can positively influence HIV-infected women's psychological functioning through interventions, then one is likely to positively influence physical health outcomes as well. Therefore, the first step in this process is to identify factors amenable to intervention that influence psychological functioning of HIV-infected women in South Africa.

#### Material Factors (economic stability, housing, nutrition, healthcare)

The empirical research examining the relationship between HIV-infection and access to material resources in South Africa suggests that HIV-infection clearly impacts an individual's ability to achieve economic stability. For example, research has shown that HIV-infected individuals are more likely to lose their employment and are over-burdened by the re-allocation

of family resources to the medical costs associated with HIV-infection (Roys, 1995; Sandman, 1996). In response to HIV infection, individuals often suffer loss of productivity, income, savings, and assets (UNAIDS, 1999). Statistics from LoveLife (2000) suggest that upon a household member developing AIDS, there is often an increase in medical and other costs (e.g., transportation). These increased costs occur simultaneously with a reduced capacity to work, creating a double-economic burden. In a recent literature review, Teljeur (2002) showed that these effects are stable over time, as HIV/AIDS continues to have a major socioeconomic impact on individuals and families. As such, the relationship between HIV-infection and lack of economic stability in South Africa is clear and well documented.

With respect to HIV-infection's impact on housing stability, the Southern African Regional Poverty Network identified the dispossession of HIV-infected mothers as a significant concern requiring additional research (SARPN, 2002), and a recent study demonstrated that HIV-infected individuals are at risk for loss of housing (Sandman, 1996). During a focus group discussion, HIV-infected individuals in South Africa reported experiences of being placed in a small shack, being kicked out of their home, and being locked in a separate room upon family members' discovery of their HIV-status (Russell & Schneider, 2000). Researchers have also pointed out that in Southern Africa it is sometimes considered culturally appropriate for widows with HIV to lose their land when their husband passes away, therefore making housing for women with HIV a major problem (Teljeur, 2002). These data indicate that HIV-status may directly impact a women's access to stable housing.

It seems probable that given the social-political context of South Africa and the level of stigma associated with HIV, there may be decreased access to healthcare services by people who are HIV-infected. Furthermore, this decreased access may come at times when the women need



these services the most. Although there have been no quantitative studies directly examining healthcare access in South Africa, focus groups conducted in Uganda with HIV-infected individuals indicated decreased access to health-care (McGrath & Ankrah, 1993). In addition, a qualitative study in South Africa found that people with HIV were reluctant to use healthcare services because of a perceived lack of confidentiality by counselors and other health care personnel and because they found that these services were not helpful in managing their disease (Russell & Schneider, 2000). Researchers in South Africa have identified a need for more empirical research examining the impact of HIV on access to healthcare (Goudge & Govender, 2000).

There are numerous ways in which HIV-infection in women is likely to impact nutrition. The department of health in South Africa (2001) states that HIV often leads to lowered food intake. They further assert that this decreased food intake occurs as a direct result of decreased appetite, mouth and throat infections, and social isolation that often co-occur with HIV-infection. Additionally, the department of health points out that HIV and AIDS cause physical problems that impact nutritional intake, such as gut deterioration, malabsorption, and diarrhea. The combination of these factors puts HIV-infected individuals at risk for nutritional problems.

In addition to these warnings by government officials, empirical studies have demonstrated that individuals with HIV-infection are more likely than non-infected individuals to experience nutritional impairment (Kelly et al., 2002) and to have progressive weight loss (van Niekerk, Smego, & Sanne, 2000). These nutritional difficulties have been associated with increased morbidity and mortality (Süttmann et al., 1995), and nutritional education and dietary counseling have been effective in stabilizing and increasing body weight (van Niekerk et al., 2000). Furthermore, research has shown that when families are faced with economic difficulties

associated with having an HIV-infected family member (as described above), a primary economic coping mechanism is to decrease the number of meals and to buy less expensive and nutritious foods (UNAIDS, 1999), further increasing the chance of malnutrition among HIV-infected individuals and among their family members.

In summary, HIV-infection is likely to impact a woman's access to material resources, such as economic stability, housing, healthcare, and nutrition. However, it is not yet clear whether this limited access to material resources further impacts psychological functioning. It seems probable that a woman with limited access to material resources will be more likely to experience psychological distress and that contrastingly, having access to these resources would be protective. For example, in response to the double-economic burden created by lack of economic stability and increased healthcare prices (described above) an HIV-infected woman is likely to experience psychological distress. In fact, a recent qualitative study in Africa indicated that women with HIV worry about poverty and its impact on their ability to provide appropriate food and medicine for themselves and their children (Brouwer, Lok, Wolffers, & Sebagalls, 2000). In a South African study (Russell & Schneider, 2000), people living with HIV/AIDS reported during focus group discussions that they feel as though they are living in desperate poverty and are no longer of value to society. They stated that since becoming ill, they do not have the opportunity to work or make money and as such, their sense of worth is challenged. Although these data indicate that limited material resources may contribute to psychological distress, there is a need for additional quantitative research examining this relationship.

#### Personal Factors (coping, spirituality, life stressors)

In addition to these material factors, there are likely numerous personal factors that may act as moderators in the HIV to psychological functioning relationship, such as coping styles,

spirituality, and life stressors. When examining coping styles, the current study will rely on Folkman and Lazarus' (1980) coping model in which two styles of coping are identified: problem-focused coping and emotion-focused coping. Problem-focused coping is defined as taking goal directed, action-oriented steps aimed at altering the cause of stress. Emotion-focused coping strategies are aimed at managing the emotions aroused by stressors. Research examining these coping styles with HIV-infected women in the United States indicates that both coping styles may be useful. Problem-focused coping has been associated with better psychological adjustment in HIV-infected individuals (Friedland, Renwick, & McColl, 1996; Pakenham, Dadds, & Terry, 1994), and certain forms of emotion-focused coping (i.e., seeking support and optimism) have also been associated with improved psychological functioning (e.g., Moneyham et al., 1998). Moreover, both of these coping styles have specifically been found to be associated with fewer depressive symptoms (Ball, Tannenbaum, Armistead, & Maguen, 2002; Grassi et al., 1998; Moneyham et al., 1998). In the United States, it appears that an important determinant of psychological adaptation to HIV-infection is how well one is able to cope with the diagnosis and the disease. No currently available research examines the coping-functioning relationship in a sample of HIV-infected individuals in South Africa. Given its relationship to functioning among US women, it is critical that this relationship be explored within the South African context.

Likewise, it is important to assess the role of spirituality in adjustment to HIV-infection. Spirituality plays an important role in Africans' conceptualization and understanding of illnesses such as HIV (van Dyk, 2001). However, no empirical studies examining this relationship in African populations are available. Findings from research conducted in the United States are mixed with respect to the spirituality-functioning relationship. More specifically, researchers examining spirituality found that it was inversely related to depression (Simoni & Ortiz, 2003)

and directly related to survival (Ironson et al., 2002) in HIV-infected individuals. In contrast, although Biggar et al. (1999) found higher reports of prayer for HIV-infected versus non-infected women, they did not find a relationship between spirituality and functioning for the women in their study.

Spirituality remains an elusive construct with respect to its measurement, which may partially explain the disparate findings in the United States. However, as spirituality is likely to serve as a resource for women in South Africa it is important to examine this construct. The researcher conducted preliminary research (i.e., focus groups and measure piloting) in South Africa in order to improve this research project's measurement of spirituality (see measures section for more information). Thus, for the current study, some of the measurement issues typically associated with this construct may be ameliorated.

It may also be the case that a woman's stressful life experiences will impact the relationship between HIV and psychological functioning. Numerous research studies conducted in the United States lend support to this hypothesis. First, many researchers have established that HIV-infected women are more likely to report a number of different types of stressful life events when compared to similar non-infected women, including sexual assault, partner abuse, and separation/divorce (Jones, et al., in press; Zierler, Witbeck, & Mayer, 1996). However, other research studies did not find significant differences between HIV-infected and non-infected women in terms of traumatic experiences (Catalan et al., 1996). As such, there is mixed evidence as to whether HIV-status is associated with stressful life events.

In contrast, there is ample evidence that among HIV-infected individuals in the United States there is a strong relationship between stressful life experiences and psychological functioning. For example, one recent study with Africa-American mothers found that a high

level of family stressful events was associated with depressive symptoms, and subsequently with physical health status (Jones, Beach, Forehand, & Foster, 2003). Researchers have also established a relationship between physical assaults and depressive symptoms (Murphy, Koranyi, Crim & Whited, 1999; Simoni & Ng, 2000), as well as between general negative life events and psychological distress (Catalan, et al., 1996; Kimerling et al., 1999; Mellins, Ehrhardt, Rapkin, & Havens, 2000; Silver, Bauman, Camacho & Hudis, 2003). Additional research studies have further shown that more cumulative stressful life events are also associated with faster progression to AIDS (Leserman et al., 1999; Leserman, 2003) and with poorer antiretroviral treatment adherence (Mellins, Kang, Leu, Havens, & Chesney, 2003). Clearly data from the United States with HIV-infected woman reveal a strong associated between stressful life events and functioning; thus warranting an investigation into these relationships in the South African context.

There are only a few empirical studies in South Africa that have examined the rates of stressful life events among HIV-infected women and even fewer that have assessed the relationship between these stressful life events and psychological functioning. One study examined the rates of gender-based violence among HIV-infected women in Soweto (Dunkle et al., 2004). These researchers found that the only type of trauma that was predicted by HIV-status was intimate partner violence; however, they did find high rates of trauma among HIV-infected women. For example, 38% of women experienced intimate partner physical abuse, 27% experienced intimate partner sexual abuse, and 40% experienced both physical and sexual abuse by an intimate partner. In addition, 35% of these women reported a history of child sexual abuse, 38% reported a history of forced first sexual intercourse, and 32% reported a history of an adult sexual assault by a non-partner. This study did not assess for the relationship between

these stressors and psychological functioning; however, one study did find a relationship between negative life events and depression in individuals with HIV-infection (Olley, Seedat, Nei, & Stein, 2004). Other studies, with non HIV-infected samples, have found a relationship between stressful life events and psychological distress (Pretorius, 1998; Spangenberg & Pieterse, 1995). As such, preliminary data from South Africa highlight that the previously established relationship between stressful life events and psychological distress in the United States may also hold true in South Africa. However, additional empirical research is necessary to further explicate this relationship.

#### Family Factors (power in the family, family social support)

Researchers throughout the world have acknowledged at a theoretical level that there is a strong relationship between HIV-infection and power. It has been noted that both the United States and South Africa are patriarchal social systems in which men are typically responsible for leadership, policy formation, resource allocation, and decision making (Jobson, 2002; Travers & Bennett, 1996). In contrast, in these societies women are traditionally responsible for tasks such as child-bearing and homemaking. When women are in these roles, characteristics such as dependence, passivity, nurturance, and other-centeredness, are considered extremely desirable (Travers & Bennett, 1996). These socially defined roles and their associated characteristics clearly influence the dynamics in male-female relationships, wherein these heterosexual relationships are often characterized and defined by power inequalities (Pinch, 1994). Power inequalities in relationships are part of what make woman particularly vulnerable to HIV-infection.

There are numerous theoretical articles published in South Africa that describe this patriarchal system and the subsequent inequities in male/female relationships which put women

at risk for HIV (Jobson, 2003; Lewis, 2003); however, there are no identified empirical studies that have specifically examined the association between relationship or family power and HIV-infection. When examining the impact of HIV-infection on a woman's power in the home, some research has shown that HIV-infection in Black South African women has been associated with partner rejection, family abandonment, loss of social status, and loss of access to family economic resources (Jewkes, Levin, & Penn-Kekana, 2003; Lawson, 1999). These losses likely lead to a decrease in a woman's power and status within her family, and more specifically, a loss of power with her husband. It is likely that a woman's sense of empowerment or powerlessness in the home further impacts her psychological functioning. However, this relationship between power and psychological functioning has never been examined in the South African context, and as such, further empirical research examining this relationship is needed.

Similarly, HIV-infection may also impact a woman's access to family social support, further impacting her psychological functioning. It has been shown that South African women are often blamed by family members for their husband's HIV infection and as a consequence, may be punished through the removal of financial and emotional support from extended family (Ndlela, 2002). This loss of emotional support from family members may further compromise the care she would usually receive from family over the course of her illness, as well as the assistance she may have gotten with childcare responsibilities (Ntozi, 1997). This is particularly relevant because, in the South African context, the nuclear and extended family has traditionally served as the social security system, whereby family members are expected to care for their poor and sick members (Foster, 2000). In a recent focus group study in South Africa, numerous women described significant loss of family support, such as being kicked out of their home or being placed in a small shack on the plot outside of the main family's home upon disclosure of

HIV-status (Russell & Schneider, 2000). Although the relationship between family support and psychological functioning has never been studied directly in South Africa, it is easy to imagine that these experiences of severe loss of family support impact a woman's mental health.

Research conducted in the United States with HIV-infected men and women (72% African-American) found that support from family (e.g., fathers, brothers, extended family, etc.) was inversely related to depression (Kalichman, DiMarco, Austin, Luke, & DiFonzo, 2003; Klein et al., 2000). In addition, another study with HIV-infected women in the US found that there was a significant positive association between unsupportive social interactions and depressive symptoms (Schrimshaw, 2003). Although this relationship between family social-support and psychological functioning has never been directly studied in South Africa, one qualitative study (Jennings, et al., 2002) did find that 37% of HIV-infected individuals interviewed did not think that their family would believe them if they disclosed their HIV-status. In addition, 42% stated that their family would likely blame them for their infection, 38% stated that their family would likely be scared of them if they knew they were infected, and 18% feared rejection if they disclosed their HIV-status. Overall, these statistics indicate that HIV-positive individuals may be afraid to lose family in response to disclosure or may in fact have already lost family support, which is likely to lead to psychological distress. However, it is important to further study these relationships directly using quantitative methodologies.

#### Social Factors (HIV stigma, non-family social support, and community agencies)

A South African researcher (Bollinger, 2002) recently identified four reasons why people with HIV are likely to experience high levels of stigma. First, he noted that HIV is a fatal disease. He hypothesized that this therefore causes people in the community to experience a high level of fear of infection. Second, HIV is often associated with behaviors that are already



stigmatized, such as men having sex with men, women engaging in sex work, or drug use. Therefore, the association between HIV and these already stigmatized behaviors further enhances the level of stigma associated with this disease. Additionally, individuals often perceive that HIV-infected people became infected as a result of choices made by those individuals. This stands in direct contrast to beliefs about other diseases, such as cancer, where people presume that affected individuals have less control over becoming sick. Last, Bollinger (2002) points out that people often view HIV as being a form of punishment for a deviant behavior. Interestingly, researchers in the United States have cited very similar reasons as likely causal factors for HIV-stigma (Herek, 1999).

Studies focusing on HIV-stigma in South Africa have often conceptualized stigma as manifesting in two ways: external stigma and internal stigma (Insideout Research, 2004a). In a recent study conducted in conjunction with the Centre for the Study of AIDS, USAID, and the POLICY Project (Insideout Research, 2004a) external stigma was defined as actual experiences of discrimination toward people with HIV, including things such as domination, oppression, the exercise of power or control, harassment, categorizing, accusation, punishment, blame, exclusion, ridicule, or resentment. As such, external HIV-stigma focuses on the way that people in the community react to or categorize people with HIV-infection. In contrast, internal stigma focuses on the individual's experience of being HIV-positive and the feelings associated with having this disease. Internal stigma is defined as the shame or fear that a person feels in association with being HIV-positive (Insideout Research, 2004a). Given that this researcher is interested in examining the perceived level of stigma toward people with HIV by individuals in their community, this study will focus on external stigma as a variable of interest.

The Insideout research team (2004b) in South Africa conducted 23 focus groups with a total of 205 HIV-infected and non-infected participants throughout the country in order to assess external HIV-stigma. This research team concluded that there were numerous themes in the way that people with HIV were treated which could qualify as external HIV-stigma: (1) avoidance; (2) rejection; (3) moral judgment; (4) stigma by association; (5) unwillingness to invest in people living with AIDS; (6) discrimination; and (7) abuse. The presence of these external stigma themes indicates that HIV-stigma is prevalent throughout the country.

Another study in South Africa, which used a focus group and random household survey methodology, also found an overall high level of external stigma toward people living with HIV (Jennings, Mulaudzi, Everatt, Richter, & Heywood, 2002). When asked questions about the interactions between people with HIV and the general public, 84% of people sampled stated that couples with a partner who has HIV should not have children; 26% believed that people with HIV should have separate healthcare facilities; 22% believed there should be compulsory HIV-testing for jobs; 17% believed that the country should publicize names of HIV-infected individuals; 15% believed that people with HIV should be restricted in their work options or disallowed to work; and 8% believed that people with HIV should be separated from others in the community so as to protect non-infected individuals. Additionally, this study showed stigmatizing beliefs about people with HIV, with 39%, 38%, 27%, and 12% of people believing that HIV-infected people brought it upon themselves; that HIV is punishment from God; that people with HIV got what they deserved; and that HIV only affects homosexuals (respectively). Last, participants endorsed numerous myths surrounding HIV, which may also impact the stigma surrounding this disease, such as believing that it is caused by witchcraft (3%); that it is a lie by

foreign governments in order to control African's sexual behavior (22%); that it is spread only by whites (40%); and it is a young people's disease (54%).

Recent research in South Africa also suggests that women with HIV are stigmatized against more often than men infected with HIV (Jennings, Mulaudzi, Everatt, Richter, & Heywood, 2002). The South African National Council for Child and Family Welfare reported that as a result of HIV infection, women were sometimes abandoned by their families or labeled as witches and killed (South African National Council for Child and Family Welfare, 1999).

Although women with HIV are clearly at a high risk for stigmatization, there has been no research in South Africa examining the way that HIV stigma impacts psychological functioning. However, research in the United States has found perceived stigma to be associated with poorer psychological functioning generally (Clark, Lindner, Armistead, & Austin, 2003), and more specifically, with increased anxiety, depression, hopelessness, and suicidal thoughts (Berger, Ferrans, & Lashley, 2001; Heckman, Kochman, & Sikkema, 2002; Lee, Kochman, & Sikkema, 2002). It is important to have more quantitative research examining the level of external HIV-stigma in South Africa and linking HIV-stigma to outcomes, such as psychological functioning.

Non-family social support is another variable that is likely to be impacted by HIV and to further impact psychological functioning. Research with African samples suggests that, perhaps as a result of stigma, HIV-infection leads to a breakdown in social support systems and withdrawal from existing social networks (Key & DeNoon, 1995; Osei-hwedie, 1994; Strebel, 1996). In South African urban areas, individuals with HIV tend to isolate themselves from non-infected individuals, and infected individuals in rural areas tend to isolate themselves from all non-family members. This isolation has been shown to decrease the availability of social-support (SANCCFW, 1999). Although the relationship between HIV-infection and decreased

non-family social support is well established in South Africa, there has been no research examining the impact of this loss of social support on psychological functioning. Research from the United States indicates a strong relationship between non-family social support and depression among HIV-infected individuals (Blaney, et al, 2004; Honn & Bornstein, 2002; Klein et al., 2000; Mizuno, Purcell, Dawson-Rose, Parsons, & the SUDIS team, 2003; Schrimshaw, 2002; Schrimshaw, 2003). In addition, less social support has been shown to be related to faster disease progression (Leserman et al., 1999; Leserman et al., 2000) and poorer quality of life (Klein et al., 2000). Therefore, it is essential to examine the potential protective role that non-family social support may play for HIV-infected South African women.

Because of the protective functions of social support, interventions aiming to increase social support are being implemented throughout Africa (e.g., Key & DeNoon, 1995; Krabbendam, Kuijper, Wolffers, & Drew, 1998). African communities are implementing programs that seek to increase community involvement and awareness, and to facilitate cooperation between community-based organizations (Williams & Campbell, 1999). These programs appear to have some success in increasing social support (Kaleeba et al., 1997). Thus, organizations in the community may play a pivotal role in responding to the needs of HIV-infected individuals (Sewpaul, 2001; USAID, 2002). However, it is also the case that, because of the stigma associated with this disease, HIV-infected individuals may find it difficult to access these community resources. For example, research in South Africa has shown that lack of confidentiality about HIV has limited HIV-infected individuals' desire to seek out help from health care settings (UNAIDS, 2002). In a recent South African qualitative focus-group study, HIV-infected participants reported significant stress around social workers and healthcare workers not being helpful or sympathetic to their problems (Russell & Schneider, 2000). There

is also some evidence that HIV-infected individuals are hesitant about going to religious organizations, due to the perception that HIV may be a punishment from God (Population Council, 2002). As such, it is important to investigate the relationship between HIV-status and the perception of community support and to further assess the protective role that access to community agencies may play on psychological functioning.

In summary, there is a significant amount of HIV-related stigma in South Africa, and some evidence indicates that individuals who are HIV-infected may experience a decrease in their social support and/or a decrease in access to community organizations. However, this research has been limited and there is a need for more empirical research examining these relationships in the specific South African context. In addition, research examining whether low levels of stigma, non-family social support, and organizational access may be protective for South African women is needed.

### Summary and Hypotheses

Though research in the United States supports a relationship between HIV and psychological functioning, this relationship has not been adequately evaluated in the unique South African context. Moreover, access to material, personal, family, and social resources and the usefulness of these resources (protective or not) has not been fully examined in South Africa. This study aims to address these gaps in the literature in order to inform intervention development. With respect to the first research question (does HIV-status predict psychological distress?), I hypothesize that HIV-infected women will exhibit higher levels of both anxiety and depression when compared to their non-infected counterparts. Given the general lack of literature about potential biopsychosocial moderators in the HIV-functioning relationship and therefore, the exploratory nature of this research, the hypotheses with respect to the second

research question are less specific. However, the researcher hypothesizes generally that with respect to the second research question (what factors moderate the relationship between HIV-status and psychological distress?), the set of material, personal, family, and social variables will each moderate the relationship between HIV-status and psychological functioning. More specifically, I hypothesize that the impact of HIV-infection on psychological functioning will decrease in the context of more access to these sets of resources. It is hypothesized that at low levels of access to these resources, non-infected women will exhibit better psychological functioning than HIV-infected women. However, at high levels of access to these resources, HIV-infected and non-infected women will be more similar with respect to psychological functioning. Thus I hypothesize that access to resources may be a mitigating factor for both groups of women, but may be more so for HIV-infected women.

## CHAPTER 2

### Methods

#### Participants

Data were collected from 104 women who were HIV-infected and 152 women who self-identified as HIV-negative. Fifty-five percent of this sample was recruited from rural areas in the Gauteng Province of South Africa (e.g., Hammanskraal), and the remaining 45% of the sample was recruited from urban areas in this province (e.g., Mamelodi and Kalafong).

Eligibility criteria for these participants consisted of the following. The participants had to be women who self-identified as Black and were able to speak English, Afrikaans, or Northern Sotho. In addition, they needed to have one child between the ages of 11 and 16, as the data collection occurred in conjunction with a larger research project focusing on parenting variables. The target child did not need to be a biological child, but the participant needed to be the primary caretaker for the child and must have resided with the child continuously for the last year. In an attempt to exclude potential confounding variables, women in the control group were excluded from data analysis if they reported major chronic or terminal illnesses (e.g., progressive cancer).

This study focuses exclusively on women for several reasons. First, epidemiological data suggests that women in South Africa, particularly low-income, Black, rural women are particularly vulnerable to HIV-infection. In addition, as discussed above, research in the United States has revealed that women with HIV exhibit significantly higher rates of depression and anxiety than males with HIV. Furthermore, there has been a vast under-representation of research specifically focusing on HIV, women, and psychological functioning, as most of the research examining these relationships has focused on Caucasian gay males.

This sample consisted of Black South African women who were diverse with respect to the ethnicity. More specifically, the percent of women identifying with each ethnic group is as follows: 31% Tswana, 25% Pedi, 12% Tsonga, 10% Sotho, 9% Zulu, 8% Ndebele, and 2% Xhosa, Swati, and Venda, each (Table 1). The participants ranged in age from 23 to 59 years, with an average age of 36 years ( $SD = 6.90$ ). The women in this sample, on average, had two children ( $SD = 1.46$ ), with numbers ranging from one to eight. In addition, 46% of the women reported being single, 12% reported never having been married, but currently living with a partner, 10% reported being married, but not living with their husband, 24% reported being married and currently living with their husband, and 8% reported a widowed status. The level of education reported by the women in this sample is as follows: 6% completed less than grade five, 13% completed between grades five and seven, 43% completed between grades eight and eleven, 31% completed matric (high-school), 3% completed post matric (two years), and 5% completed tertiary education. These demographic statistics are further broken down by HIV-positive and non-infected groups in Table 1.

### Measures

In order to ensure that the measures were culturally appropriate, a number of steps were undertaken. The investigator traveled to South Africa as part of a three-person research team in June of 2003 and conducted numerous focus groups with representative women from the Gauteng area. In addition, the battery of measures was reviewed and discussed during round table discussions with community contacts, key informants, and researchers at the University of Pretoria in South Africa. During this trip the investigators also completed piloting of the measures to gain information about the appropriateness of the questions and the length of the interview. The investigators used the information gathered during the focus groups, round table



Table 1

## Descriptive Statistics for Demographic Variables

| Variable                               | HIV-Infected | Non-Infected | Total Sample |
|--|--------------|--------------|--------------|
| Mean Age                               | 35.77 (6.25) | 36.85 (7.31) | 36.40 (6.90) |
| Mean Number of Children                | 2.29 (1.31)  | 2.56 (1.55)  | 2.45 (1.45)  |
| Percent per Ethnic Group               |              |              |              |
| Zulu                                   | 12%          | 6%           | 9%           |
| Xhosa                                  | 4%           | 1%           | 2%           |
| Sotho                                  | 13%          | 8%           | 10%          |
| Tswana                                 | 20%          | 39%          | 31%          |
| Pedi                                   | 26%          | 25%          | 25%          |
| Ndebele                                | 12%          | 6%           | 8%           |
| Swati                                  | 2%           | 1%           | 2%           |
| Tsonga                                 | 12%          | 12%          | 12%          |
| Venda                                  | 1%           | 2%           | 2%           |
| Percent per Marital Status             |              |              |              |
| Single and never married               | 52%          | 42%          | 46%          |
| Married, but not living with husband   | 10%          | 11%          | 10%          |
| Never married, but living with partner | 14%          | 11%          | 12%          |
| Married and living with husband        | 12%          | 32%          | 24%          |
| Widowed                                | 14%          | 4%           | 8%           |
| Percent per Education Level            |              |              |              |
| Less than grade 5                      | 5%           | 7%           | 6%           |
| Between grade 5 and 7                  | 17%          | 9%           | 13%          |
| Between grade 8 and 11                 | 45%          | 41%          | 43%          |
| Matric                                 | 25%          | 35%          | 31%          |
| Post-Matric                            | 4%           | 2%           | 3%           |
| Tertiary/University training           | 4%           | 6%           | 5%           |

discussions, and piloting to modify measures. After these changes were made, the measures were again reviewed by the researchers in the United States, colleagues at the University of Pretoria, and a consultant with extensive research experience in Africa. Before data collection began, another round of piloting was completed and appropriate changes in the measures were made.

Each of the constructs for this research project was assessed using measures that were compiled to create a structured interview for the participants. In addition to an English version, all measures were translated into two commonly-spoken languages in the Gauteng province of South Africa: Afrikaans and Northern Sotho. This allowed the participants to choose to be interviewed in the language with which they felt most comfortable and proficient. Back-translation, described by Brislin (1970), was completed by a translation service provided by the University of South Africa's Editorial Department. In the back-translation technique, the instrument is translated from its source language (in this case English) to the target language, and then translated from the target language back to the source language. The two versions are compared to assess equivalency. The back translated forms of the measures were therefore compared to the original English measures and any inconsistencies were addressed.

After data collection was completed, factor analytic procedures were performed on all the appropriate measures. Unless otherwise noted in the following section, all items were entered into a confirmatory factor analysis using the principal component extraction method. Items whose component values loaded at a value of 0.40 or higher were retained for use in the final measure. Additionally, Cronbach's alpha coefficients were calculated for all measures to ensure appropriate reliability, and these will be reported separately for each measure. Please see the appendix for a copy of each measure in its entirety with the specific items that did not load, and

consequently were not used in final measure, crossed off. The following is a list of measures utilized for this research project.

### **Demographic Information**

Interviewers gathered information related to maternal age, marital status, and educational level using the Household Economic and Social Status Index (HESSI) (Barbarin et al., 1997). This 21-item measure also provides information regarding household membership, and the age, gender, and health status of the participant's children. The HESSI is a self-report measure created for use with South African families which has been use in a large-scale study of Black South African mothers (Barbarin, Oscar, & Richter, 2001).

### **Health Status**

*HIV Status:* Participants' HIV-status was established through women's self report during the interview. The women were asked one question which assessed for their HIV-status. While recognizing the limitations of a self-report strategy, the investigator has a strong rationale for relying on self-report for the identification of HIV status.

In research conducted with U.S. women the percentage of women who misidentify and report that they are HIV-negative due to lack of knowledge of their seropositive status is less than 1% (J. Moore, CDC, personal communication, February 22, 1996). Given the higher infection rate in South Africa relative to the US, this misidentified percentage may be higher among South African women. However, because all participants were mothers and mothers are almost always tested for HIV when they present for prenatal care (Center for the Study of AIDS), it is likely that many of the mothers were knowledgeable about their HIV-status. Despite this, it is important to account for the potential of misidentified cases (i.e., false positives or false negatives). Thus, the sample size of 248 is larger than the base number needed for adequate

power (see results section for power analysis). This increases the ability to detect group differences despite potential misidentified cases. In addition, the researcher examined the non-infected women's severity of physical symptoms in order to screen out women who are extremely sick.

Another area of concern around self-report of HIV-status is that women may not be willing to disclose their HIV-status to the interviewer because of stigma or fear. However, during focus groups and piloting conducted prior to data collection (June 2003), numerous HIV-infected women willingly disclosed to the researchers their seropositive status, suggesting that women feel comfortable disclosing their HIV-status in a research setting. Further, a context that facilitated disclosure of HIV-status was created in this study by asking questions related to HIV-status towards the end of the interview, once rapport had been established between the interviewer and participant.

Finally, this study is one of the first to examine HIV and psychological functioning in South Africa and as such, its scope and financial resources did not allow for HIV testing of all study participants. Moreover, the South African context has currently been described as non-supportive of HIV-infected individuals. Specifically, the South African government has not made antiretroviral treatment broadly available to South Africans (Sidley, 2003) and local communities often have minimal medical, financial, or psychosocial resources for HIV-infected individuals (Center for the Study of AIDS). As such, the investigator is concerned about ethical issues associated with the identification of HIV-infected individuals within a non-supportive context.

*Medical Information:* Women reported on their current health status during the HESSI (described above) by identifying any current major health problems (e.g. diabetes, TB,

hypertension, cancer, etc.). In addition, using the Physical Symptoms Inventory (PSI: Wahler, 1969), the women reported the presence of physical symptoms in the past month. The PSI is a self-report measure of physical symptomatology which assesses the degree to which an individual is bothered by specific somatic complaints. Wahler (1973) reports adequate internal consistency and test-retest reliability for the PSI. In a project focusing on HIV-infected African-American women (Family Health Project Research Group, 1998) the PSI was modified for increased comprehensibility. Seven items were deleted and four items were added to better tap symptoms associated with HIV infection (e.g., vaginal discharge). This modified 37-item version of the PSI was used in this research project. Eleven of these items did not load at the appropriate level during the factor analysis and as such, the final PSI measure consisted of 26 items. A total score was created by summing the 26 items, making it possible for scores to range from 26 to 130. Higher scores on the PSI indicate more severe physical symptoms. The alpha coefficient for this measure with the current sample was 0.90.

### **Psychological Functioning**

*Depression:* Level of depression was assessed using the Center for Epidemiological Studies Depression Scale (CESD) (Radloff, 1977), which is a 20-item self-report scale for epidemiological research that was developed by The National Institute of Mental Health. This measure assesses the respondent's perceived mood and level of functioning within the past 7 days. The CESD has four separate factors: depressive affect, somatic symptoms, positive affect, and interpersonal relations. Internal reliabilities with previous samples ranged from 0.85 in community samples to 0.91 in clinical samples (Himmelfarb & Murrell, 1983). Adequate convergent and discriminant validity have also been established (Radloff, 1997). In addition, this measure has been recommended for use with medically-ill populations (Derogatis, Fleming,

Sudler, & DellaPietra, 1995) and has been used with Black South Africans (Hughes, Jelsma, Maclean, Darder, & Tinise, 2004; Pretorius, 1998). One item in the CESD, which assesses for one's lack of appetite, was not included in the summary score because it overlapped conceptually with symptoms of depression and anxiety. In addition, three items were not utilized because they did not load strongly with the factor. As such, the final CESD composite score was created by summing the remaining 16 items of the measure, making it possible for scores to range from 16 to 64. Higher scores on this measure are indicative of more severe symptoms of depression. The alpha coefficient for this sample was 0.89.

Anxiety: Level of anxiety was assessed using the IPAT Anxiety Scale (Cattell & Scheier, 1963). The IPAT is a 40-item questionnaire that provides a practical measure of anxiety levels, based on five principal factors of anxiety: emotional instability, suspiciousness, guilt-proneness, low integration, and tension. Internal reliabilities with previous samples ranged from 0.78 to 0.92 (Cattell & Scheier, 1963). This measure has been used to assess psychological functioning in South African women and has been translated for use with African individuals (Mfusi & Mahabeer, 2000). The language of this measure was simplified for the current study to make it more accessible to the study population.

A confirmatory factor analysis was conducted to assess if all items loaded on a single anxiety factor, as described in the IPAT manual. However, results from this measure indicated that the items were not loading together onto one factor, with the majority of items not loading at the appropriate 0.40 level. The IPAT manual also stated that the measure could be divided into separate covert anxiety and overt anxiety subscales and as such, the investigator conducted a confirmatory factor analysis attempted to confirm these two subscales. Once again the items did not load at the appropriate level. Next, the investigator ran confirmatory factor analyses forcing

the five separate anxiety factors described above and again, the results indicated that the items were not loading on these identified factors. As such, the researcher decided to perform an exploratory factor analysis using all 40 items in order to assess the factors present with this particular sample. One 11-item factor was created based on the results of this factor analysis. This factor had an appropriate Eigen value (4.13) and accounted for 10% of the variance. In addition, all the items loaded at a level of 0.40 or higher. A summary score was created by summing all 11 items. The possible range of scores on this measure was 0 to 33, with higher scores indicating higher levels of anxiety. Please see the appendix to identify which items were included in this newly created measure of anxiety. The final alpha coefficient for this measure was 0.73.

### **Material Factors**

*Economic Stability and Housing:* The HESSI, discussed above, was used to evaluate economic status and the quality of a family's shelter. The HESSI combines multiple indicators of the material and housing resources available to South African families (Barbarin, 1997). Economic stability was assessed by examining a number of factors, including number of consumer goods (e.g. car, refrigerator), number of sources of income in the home, participation in a savings plan and/or funeral policy, and relative material deprivation of members of the household. This summary score was calculated by taking the sum of 20 dichotomously coded items, leading to a possible range of scores from zero to 20. Higher scores on this measure indicated more economic stability. In addition, the HESSI assessed for type of housing, number of rooms in a house, toilet facilities, and amenities in the household. Four items, each with scores ranging from zero to three, were summed in order to create a quality of shelter index. The total scores on this measure therefore ranged from zero to 12, with higher scores denoting a

higher quality of shelter. Factor analyses and reliability coefficients were not calculated for these two measures, as it was not expected that the responses on these measures would load onto one factor or that responses would be consistent across questions (e.g., a participant that owns a television, would not necessarily be expected to also have life insurance).

*Healthcare Access*: Information regarding access to healthcare was obtained using a 10-item questionnaire developed for the purposes of this study, as the investigator was unable to identify an existing healthcare access questionnaire. This measure was created in response to information gathered during focus group discussions. Information related to factors that influence participants' ability to access healthcare was obtained, as well as information related to the participants' satisfaction with healthcare services. Based on a factor analysis, the responses on five of these items were summed to create a total healthcare access score, with a possibility of scores ranging from 5 to 20. Higher scores on this measure signified more healthcare access. The alpha coefficient for this measure with this sample was 0.80.

*Nutrition*: Maternal nutrition was assessed using the Determine Your Nutritional Health Checklist (NSI Checklist) (Dwyer, 1994). The NSI Checklist is a 10-dichotomous-item (Yes/No) checklist designed to assess overall nutritional health status and identify individuals at risk for malnutrition. Each of the ten questions corresponds to a risk factor for malnutrition, including disease, eating poorly, tooth/mouth pain, economic hardship, reduced social contact, multiple medicines, involuntary weight loss/gain, and needing assistance in self-care. This measure has been recommended by nutritionists as a useful screening tool for malnutrition (Sahyoun, 1999) and has been shown to accurately predict individuals with body weight loss (de Groot, Beck, & Staveren, 1998). This measure had never been used in South Africa and as such, was modified slightly in response to focus group and piloting feedback. Twelve dichotomously scored items



were summed to create a total index score. As such, the range of possible scores was zero to 12, with higher scores indicating more malnutrition risk factors. Factor analyses and reliability coefficients were not calculated for this measure, as it is not expected that the responses on this measure would load onto one factor or that responses should be consistent across questions (e.g., a participant that endorses eating less than two meals a day is not necessarily expected to also endorse drinking 3 or more alcoholic drinks per day).

### **Personal Factors**

*Coping:* Coping was assessed using the COPE (Carver, Scheier, & Weintraub, 1989). This is a 60-item inventory designed to assess the way that people respond to stress. It incorporates 15 conceptually distinct scales or coping strategies, including denial, self-distraction, behavioral disengagement, venting, active coping, planning, social support (instrumental and emotional), restraint, positive reframing, acceptance, humor, alcohol, religion, and stoicism. These 15 scales fall into the categories of problem-focused coping, emotion-focused coping, or problematic coping. Carver et al. (1993) present adequate internal reliability estimates for the COPE scales (alphas > 0.60). Further, convergent and divergent validity for this measure has been established with general (Carver et al., 1989) and medical populations (Fortune, Richards, Main, & Griffiths, 2002). This measure has been used successfully in a large-scale longitudinal study of HIV-infected individuals in the United States (Leserman et al., 2000) and in research conducted with HIV-infected individuals in South Africa (Olley et al., 2003; Olley, Seedat, Nei, Stein, 2004).

For the purpose of this project, a shortened 25-item version of the COPE was used to make the measure more time-manageable and culturally appropriate. This shortened version was previously used in a large-scale longitudinal study of HIV-infected woman in the US, in which

women received problem-focused and emotion-focused coping scores (Family Health Project Research Group, 1998). HIV-positive women in the current study were asked to think about problems they had experienced related to their HIV disease in the last three months. In contrast, HIV-negative women were asked to think about a specific problem they had to deal with in the last three months. Next, both groups of women were asked to rate how often they utilized each of the coping strategies to deal with their identified problem.

The investigator chose to utilize the COPE's problem-focused and emotion-focused subscales as indexes of coping because, although the literature in the coping field is mixed, these are the two types of coping styles that have been shown to be the most associated with psychological functioning among individuals with HIV. As such, confirmatory factor analyses were performed to confirm that the appropriate items loaded onto the two separate factors indicating problem-focused coping and emotion-focused coping. Four items from the problem-focused subscale loaded together and six items from the emotion-focused subscales loaded together. Consequently, two coping scores were created by summing the items that loaded onto these two subscales. On the problem-focused coping index the possible scores ranged from four to 16, and the alpha coefficient with this sample was 0.65. On the emotion-focused coping index the possible scores ranged from six to 24, and the alpha coefficient with this sample was 0.69. Higher scores on each of these indexes indicate higher utilization of these coping techniques.

*Spirituality*: There was no measure identified that assessed for spirituality in the South African context. As such, spirituality was assessed using a measure developed specifically for the purposes of this study. The newly created Religious and Spiritual Beliefs Questionnaire is 6-question survey that evaluates type of spiritual beliefs, level of spiritual/religious participation, and ways that religion/spirituality helps participants in their lives. This measure was created

based on focus groups conducted in South Africa on the topic of spirituality and was piloted prior to data collection. Given the lack of variance in participants' responses to numerous items on this measure during data collection, only two correlated items,  $r(248) = 0.45$ ,  $p \leq .01$ , were summed to create the spirituality index. Therefore, scores on this measure could range from two to eight.

*Stressful Life Events*: The Life Stressor Checklist (LSC) (Wolfe & Kimerling, 1997) was used to measure stressful life events. The LSC is a 22-item measure that is designed to assess the nature, as well as the self-report impact, of stressful life events relevant to women. The participants were asked whether or not they had experienced each of the stressful life events. If the participants endorsed an event, then they were asked how upset they were by the event at the time that it occurred on a Likert-Scale ranging from (1) not at all to upset to (4) very upset. The LSC has been used successfully in the United States on a large-scale longitudinal project with HIV-infected women (Jones, Beach, Forehand, & Foster, 2003). For the purposes of this project, the items were modified slightly to make the language more understandable and to make the questions more culturally appropriate. In addition, one item was added based on piloting feedback, making it a 23-item measure. There was limited variance in this sample on the ratings of how upset the women were by their reported stressful life events. Consequently, a summary score of the number of stressful life events was created by calculating the sum of the 23 dichotomous items. The possible scores on this measure ranged from zero to 23, and higher scores indicated more stressful life experiences. No alpha coefficient was calculated for this measure as one does not expect that one would answer consistently across items (e.g., because a woman reported being divorced, does not indicate that she is also likely to have witnessed an accident).

## **Family Factors**

*Power in the Family:* The Sexual Relationship Power Scale (SRPS: Pulerwitz, Gortmaker, & Dejong, 2000) was used to assess maternal power and status in the home. The SRPS is a 23-item measure of relationship power which contains two subscales: Relationship Control and Decision-Making Dominance. The internal consistency coefficient of the overall scale is 0.84 and adequate construct validity is reported (Pulerwitz et al., 2000). This measure has been used to assess for HIV-risk with women in the United States (Pulerwitz, Amaro, de Jong, & Gortmaker, 2002) and with South African women presenting at antenatal clinics for an HIV-test (Dunkle et al., 2004).

The investigator added five questions to this measure in order to gain information about the type of relationship (e.g., boyfriend or husband) and about the length of the relationship being assessed. If participants in this study were in a current relationship they answered questions about that relationship; however, if participants did not identify a current relationship, they were asked to think about the previous most significant relationship in their life.

The Relationship Control Subscale of the SRPS was used for the purpose of this investigation. Based on results from a factor analysis, a summary score was created by adding the responses on 13 items of this subscale, thereby allowing for a range of scores from 13 to 52 on this measure. Higher scores on this measure signified higher levels of powerlessness. The alpha coefficient for this subscale with this sample was 0.80.

*Family Social Support:* To assess family social support and ties, the Social Resources and Social Supports Questionnaire (SRSQ: Myers, 1996) was used. This 12-item measure assesses characteristics of social networks and the level of support obtained from primary non-familial relationships. The SRSQ consists of three subscales: social network, social supports,

and social relationship stress. For the purposes of this study, only the social network and social supports scales were used. The social network scale asked for the number of family members seen as significant by the respondent. The social supports scale assesses the degree of perceived satisfaction with the amount and quality of support provided by family members. The family support is rated based on five types of support: (1) emotional; (2) informational (advice); (3) tangible aid; (4) social/recreational support; and (5) social feedback/guidance. This measure was developed for use in research on the health and psychological well-being of African-Americans living in the United States (Myers, 1996). Preliminary tests of the psychometric properties of this instrument show it to be reliable and valid (Myers, 1996). For the purpose of this study, the researcher summed scores for all questions assessing the level of satisfaction with social support (i.e., questions 8-12), creating an index with a range of possible scores from five to 20. Higher scores on this measure indicated higher levels of satisfaction with family social support. The alpha coefficient for this measure with this sample was 0.94.

### **Social Factors**

*Stigma:* To assess for level of stigma in the community toward people with HIV, the HIV Stigma Scale (Berger, Ferrans, & Lashley, 2001) was utilized. This 40-item scale is designed to measure perceived stigma by HIV-infected individuals. Factor analysis on this measure has revealed four factors: (1) personalized stigma; (2) disclosure concerns; (3) negative self-image; and (4) concern with public attitudes about people with HIV. The measure and each of the four factors have been shown to have adequate internal reliability (alpha coefficients > 0.90) and construct validity (Berger et al., 2001).

Because of the investigator's interest in perceptions of community-level stigma, the 12-items comprising the fourth factor of the HIV Stigma Scale were utilized. These items assess for

what “most people in your community” think about people with HIV and how they treat individuals with HIV. Additional items were added in response to feedback gathered during focus groups and piloting. As such, the final HIV Stigma Scale for this project was made up of 20 items. After conducting a factor analysis, twelve items were summed to create an HIV stigma variable with a possible range of scores from 12 to 48. Higher scores on this measure designated higher levels of perceived community stigma. The alpha coefficient for this measure with this sample was 0.88.

*Non-Family Social Support:* To assess for non-family social support the researcher used the SRSQ (Myers, 1996) described above. The only change in the measure was that participants were asked to think about special people in their life that were not family members (e.g., best friends, neighbors), instead of thinking about individuals in their family. Similar to the family social support measure, the five items assessing for the level of satisfaction with non-family social support were summed to create this index. This led to possible range of scores from five to 20, with higher scores denoting higher levels of satisfaction with non-family social support.

*Community Resources:* The availability of community resources was assessed using a measure created by the research team based on focus group and piloting feedback about existing community resources around the Gauteng Province, South Africa. This 9-item Community Resource measure evaluated the existence and utility of community organizations in six domains: (1) government; (2) religious; (3) healthcare; (4) mental health; (5) social service; and (6) other (as identified by participant). Participants were asked to identify organizations that exist in their community. For each identified organization, participants were then asked to evaluate the utility of these organizations, as well as the extent to which these organizations fulfilled their needs. In addition, participants rated their overall involvement in and satisfaction

with services in their community. The researcher calculated a mean helpfulness score for each of the categories of services (e.g., mean government score, mean religious score, etc.). Next, the researcher calculated a total mean score, based on these six individual means. Therefore, the scores possible on this index ranged from 1 to 4, and higher scores indicated higher satisfaction with access to community resources.

### Procedures

**Recruitment:** Participant recruitment began in April of 2004 and continued until data collection was completed in September of 2004. Researchers at the University of Pretoria were responsible for managing recruitment activities. These researchers worked closely with the Center for the Studies of AIDS (CSA), an organization designed to facilitate community research in South Africa, to identify potential recruitment sites and outreach workers. In order to access both urban and rural HIV-infected and non-infected women, recruitment occurred in areas throughout the Gauteng province in South Africa. Therefore, recruitment activities and data collection took place at community centers, university campuses, community-based organizations, a community mental health clinic, and a state hospital.

At each recruitment and data collection site, a primary outreach worker was identified who took responsibility for recruiting participants. Outreach workers used multiple recruitment strategies to access women in the communities of interest, including directly contacting potential participants, contacting relevant organizations and handing out flyers describing the project, using word of mouth, and contacting key contacts in the community who could inform others about the project. In addition, outreach workers traveled to places where women often spend time, such as water taps and markets, and discussed the research project. Recruitment from the

aforementioned sites allowed outreach workers to reach women who may not necessarily be utilizing community based organizations.

Women provided their HIV-status during the interview and, thus, outreach workers did not need to ask information about HIV-status at the point of recruitment. Because the measures were exactly the same for HIV-infected and non-infected women, it was not necessary to know the women's HIV-status before the interview. Once outreach workers identified interested participants, he/she screened the individuals to make sure that they qualified for the project. The women were told that the interview would last approximately two hours and that they would be reimbursed R70 (approximately \$12) to compensate them for their travel, time, and effort. They were also told that they would receive a small gift (e.g., hand lotion) upon data completion, a strategy which was well received by focus group participants. If participants qualified and were interested in participating, they were scheduled to come to the data collection site, which was typically within 10 miles of the recruitment area.

The number of HIV-infected and non-infected participants were tracked throughout the course of the project and recruitment efforts were modified as needed in an attempt to secure approximately equal numbers of HIV-infected and non-infected women were recruited. Matching of the infected and non-infected groups did not occur on a case-by-case basis, but rather occurred based on relevant demographic variables, such as mother's age, number of children, and SES.

**Interviewer Training:** Interview training was conducted in May of 2004, prior to data collection. All interviews with mothers were conducted by trained interviewers who had previous experience working with individuals who are HIV-infected. Two interviewers were Black South African female employees from the Center for the Study of AIDS, and three



additional interviewers were graduate students from Georgia State University's clinical psychology program (one African-American female and two Caucasian females). Focus groups indicated the importance of matching interviewers and participants based on gender and language choice identified by the participants. As such, the participants were always appropriately matched based on these criteria.

Training occurred at the University of Pretoria and was conducted jointly by individuals from Georgia State University and the University of Pretoria who had experience in training interviewers. Training required approximately two days to complete, as the interviewers already had previous experience working with this population and were knowledgeable about diversity issues. The training focused on familiarizing interviewers with the purpose and measures of the study, practicing interviews, and preparing them for potential problems.

**Data collection:** Data collection began in May of 2004 and was completed in September of 2004. When the participants arrived for their appointment, they were greeted at the door by an interviewer who welcomed them and asked them about their language of preference. A language-matched interviewer then briefly explained the course of events for the day and double-checked that the woman met eligibility criteria. The interviewer and participant then exited the main greeting area and went to a private area to begin the research interview.

Refreshments (e.g., apple, orange, cookies, and a juice box) were provided to the mother at the start of the interview process. The interviewer began by explaining the study to the participants and completing the informed consent procedures. During the consenting process, which involved the participants signing a consent form, the purpose and design of the study were presented. The participants were told that they would be completing a number of verbally administered self-report measures. The interviewers explained that their responses to questions

would be confidential, with the following exceptions: any disclosure of child neglect or abuse or any indication of suicidal or homicidal behavior. The interviewer also provided the participants with the opportunity to ask questions and voice any concerns throughout the interview.

Upon obtaining informed consent, the interviewer proceeded to verbally administer the study measures. All questionnaires were verbally administered to the participants in a one-on-one format in her language of preference. Throughout the interview, women were always presented with cue cards that had images which depicted their responses options. They were informed that they could stop the interview at any time and take breaks as needed. The order in which the instruments were presented was semi-randomized. The conceptually related measures were kept together (e.g., psychological functioning, material factor measures, social factor measures) so as to minimize the amount of confusion and set-switching on the part of the participants. In addition, certain groupings of measures were always placed near the front of the interview (e.g., material measures), while other groupings of measures were always near the end of the interview (e.g., health-related measures). This was to allow sensitive questions (e.g., HIV-status) to occur after rapport was established. However, within each conceptual category the measures appeared in random order and the conceptual categories were in random order (except as previously described).

The interviews, including consenting, typically lasted two hours. At the end of the interview, the woman received R70 (approximately \$12) and hand lotion for her transport, participation, and effort. In addition, every participant was provided with a list of organizations that help women in their communities (e.g., mental health, physical health, social services, NGOs). If a woman became distressed at any point during the interview, interviewers spent time debriefing the participant and ensured that she was provided with an appropriate referral. A

clinical psychologist from the University of Pretoria was always available as back-up in the case of clinical emergencies.

## CHAPTER 3

### Results

#### Power Analysis

A power analysis was conducted prior to data collection in order to estimate a sample size that would allow for adequate power in detecting both the main and interaction effects in a hierarchical multiple regression analysis. The BWPower program (Bakeman & McArthur, 1999) was employed in conducting the power analysis. This program performs a power analysis for multiple regression analyses using methods described by Cohen (1988). The investigator tested for power based on the analysis that would require the most number of participants in order to have adequate power: the hierarchical regression analysis testing for the main effects and interaction effects of HIV-status and the material factors ( $N=4$ ) on psychological functioning. Sample size is based on the following assumptions: Alpha was set at .05 (two-tailed) and beta was set at .10, and thus a power of .90. In addition, a moderate effect size of 0.20 was estimated for the main effect of HIV (# of predictors = 1), a moderate effect size of 0.20 was estimated for the main effect of the material factors (# of predictors = 4), and a small effect size of 0.07 was assumed for the interaction effect of these variables (# of predictors = 4), because interaction effects typically account for a small proportion of variance. Given these assumptions, a sample size of 126 provides adequate power to detect the main effects, as well as the interaction effects. It is important to note that the proposed sample size is sufficient to adequately test for the moderation effects and as such, the sample will have adequate power to test for all other proposed analyses, as they require less power. However, given the complications associated

with self-report of HIV-status, the researchers obtained a sample size of 256. This allowed for more power in detecting the effects.

#### Data Management and Checking

Data was entered in an SPSS system file throughout data collection at the University of Pretoria. Data entry was performed by the three graduate students from Georgia State University. Subsequent to data entry, copies of the protocols were shipped to Georgia State University. In order to check for the accuracy of data entry, 20% of the sample was randomly selected to be checked against the original protocols. Next, data checking procedures were performed, which included checking for out of range values and for missing data, and assessing for outliers. When inconsistencies were discovered, they were checked against the original protocol and corrected.

As outlined prior to data collection, the group of non-infected women was screened for other terminal health conditions. One woman in the control group reported a cancer diagnosis and as such, was excluded from analyses. In addition, given that HIV-status was assessed through a self-report format, there was a chance of non-disclosure of HIV-infection. Consequently, the researcher closely examined the severity of physical symptoms among the group of non-infected women. The Whaler Inventory was used as an index of physical health. In order to maintain a relative healthy control group, non-infected women with high standardized Whaler scores ( $z\text{-score} > 2$ ), relative to other non-infected women, were excluded from analyses. Based on this criterion, seven women in the control group were excluded. Therefore, after data screening, the total sample size was 248.

Last, the data were checked to ensure that the assumptions of the statistical test were met. To ensure that all predictor and outcome variables were normally distributed, the skewness

statistic for each variable was divided by its standard error. The variable was considered normally distributed if this statistic was less than two. Depression, anxiety, economic stability, nutrition, and stigma scores were normally distributed. In contrast, the healthcare access, problem-focused coping, emotion-focused coping, spirituality, stressful life events, family social support, power in the family, non-family social support, and community resources variables were not normally distributed, with skew scores (i.e., statistic/std. error) ranging from 2.31 to 9.73. These variables were transformed to create a normal distribution so that the results from the subsequent statistical tests could be considered valid.

First, variables that were negatively skewed (i.e., healthcare access, problem-focused coping, emotion-focused coping, spirituality, family social support, non-family social support, community resources) were reflected by subtracting every score from a constant that was one greater than the highest score. This procedure was necessary to allow for appropriate transformation procedures. Next, three sets of transformations were performed. First, all non-normal variables were transformed by taking the square root of the scores. This transformation was successful in creating a normal distribution in the problem-focused coping, emotional-focused coping, and stressful life events variables. Second, the remaining variables were changed using a more powerful logarithmic transformation. This transformation was successful for the healthcare access, power in the family, and non-family social support variables. Last, the remaining variables were transformed by the even more powerful negative reciprocal technique. This transformation was successful for the remaining variables of spirituality, family social support, and community resources. The transformed variables all had skew scores which were less than two and as such, were normally distributed.

## Descriptive Statistics

**Outcome Variables:** The average score of the total sample on the 16-item depression measure (CESD) was 31.35 ( $SD = 10.12$ ) (Table 2). HIV-infected women had an average CESD score of 33.38 ( $SD = 10.83$ ) and non-infected women had an average score of 29.88 ( $SD = 9.34$ ). The total sample's average score on the 11-item anxiety measure (IPAT) was 10.27 ( $SD = 4.11$ ), with HIV-infected women scoring an average of 10.93 ( $SD = 4.04$ ) and non-infected women scoring an average of 9.81 ( $SD = 4.11$ ).

**Material Factors:** The average score on the Economic Stability Scale was 6.59 ( $SD = 2.57$ ). More specifically, 25% of the women endorsed earning an income, 22% endorsed participating in a savings plan, 35% endorsed having life insurance, 65% endorsed owning a home, and 44% endorsed that their children have had to go hungry because of a lack of money for food. The average score on the Housing Scale was 6.39 ( $SD = 3.00$ ), with 59% of women reporting that their home has a separate kitchen and 27% reporting that their home has a separate bathroom. In addition, when asked about the number of rooms just for sleeping, 3% of women reported no such rooms, 17% reported one room, 43% reported two rooms, and 37% reported three or more rooms. Two percent of the women reported no toilet facilities at their home, while 48% reported a pit or bucket, 31% reported an outside flush toilet, and 18% reported an inside flush toilet. On the Healthcare Access Questionnaire the average score was 17.24 ( $SD = 3.37$ ). Last, on the Determine Your Nutritional Health Checklist the average score was 5.34 ( $SD = 1.60$ ).

**Personal Factors:** The scores on the coping measure (COPE) were divided into emotion-focused coping and problem-focused coping. On the emotion-focused coping scale the average score was 18.41 ( $SD = 3.96$ ), and on the problem-focused coping scale the average score

was 11.82 ( $SD = 3.11$ ). The average score on the Religious and Spiritual Beliefs Questionnaire was 6.95 ( $SD = 1.30$ ). Last, on the Life Stressor Checklist there was an average score of 6.34 ( $SD = 3.61$ ), indicating that, on average, women endorsed 6 stressful life experiences. The most commonly endorsed stressful life events included seeing non-family violence (64%), having a loved one die (59%), being very physically sick (58%), having emotional problems (53%), being emotionally abused (53%), seeing a serious accident (41%), being separated/divorced (35%), seeing family violence (35%), having their parents separate/divorced while they lived with them (31%), being attacked by someone they did not know (27%), and being attacked by someone they know (24%).

**Family Factors:** Responses on the Sexual Relationship Power Scale (SRPS) indicated that 72% of the women were in a current relationship. The average length of these relationships was 93.50 months ( $SD = 83.41$ ) or seven years and nine months. Of those in a current relationship, 33% were married and living with their husband, three percent were married and not living with their husband, 15% were living with their boyfriend, and 49% had a boyfriend with whom they did not live. Women who were not in a current relationship (28%), answered questions based on the most important previous relationship in their lives. Of those women describing a previous relationship, 34% had been married and living with their husband, three percent had been married and not living with their husband, 30% had been living with their boyfriend, and 33% had had a boyfriend with whom they did not live. The average length of these relationships was 98.37 months ( $SD = 82.76$ ) or eight years and two months. On the Relationship Control subscale of the SRPS the total sample of women's average score was 24.60 ( $SD = 7.80$ ). Additionally, the average score on the family version of the Social Resources and Social Supports Questionnaire (SRSQ) was 16.82 ( $SD = 4.69$ ).



**Social Factors:** The average score on the 12-item HIV Stigma Scale was 25.71 ( $SD = 8.55$ ). On the non-family version of the SRSQ the women's average score was 14.24 ( $SD = 6.28$ ). Last, the average score on the Community Resource measure was 3.54 ( $SD = .53$ ).

**Predictor Variables by HIV-Status:** Demographic statistics were also calculated for all variables separately for HIV-infected and non-infected women. Table 2 provides all of the means and standard deviations associated with each variable by group. In addition, one-way ANOVAs were conducted to test the mean differences between HIV-infected and non-infected women, and these results are also presented in Table 2.

### Preliminary Analyses

Appropriate statistical tests (e.g., correlations, chi-squares, one-way ANOVAs) were conducted in order to assess which demographic variables should be controlled for in the subsequent analyses. The variables of interest included the women's age, level of education, marital status, and number of children. First, tests were run to assess which demographic variables were associated with the outcome variables (i.e., depression and anxiety). As such, a correlation matrix was generated for all continuous variables (i.e., depression, anxiety, age, and number of children) (Table 3). Age,  $r(245) = 0.13, p \leq .05$ , was the only variable significantly associated with depression, such that an increase in age was associated with an increase in depressive symptoms. None of the continuous demographic variables were significantly associated with anxiety. In addition, one-way ANOVAs were used to test the association between categorical variables (i.e., level of education and marital status) and the continuous outcome variables. Mean depression scores,  $F(5, 241) = 1.54, p > .05$ , and anxiety scores,  $F(5, 236) = 1.28, p > .05$ , were not significantly different across women's levels of education.

Table 2

## Descriptive Statistics for Predictor and Outcome Variables

|                           | Total Sample |           | HIV-Infected |           | Non-Infected |           | F       |
|---------------------------|--------------|-----------|--------------|-----------|--------------|-----------|---------|
|                           | M            | <i>SD</i> | M            | <i>SD</i> | M            | <i>SD</i> |         |
| Outcome Variables         |              |           |              |           |              |           |         |
| Depression                | 31.35        | 10.12     | 33.38        | 10.83     | 28.88        | 9.34      | 7.43**  |
| Anxiety                   | 10.27        | 4.11      | 10.93        | 4.04      | 9.81         | 4.11      | 4.42*   |
| Material Resources        |              |           |              |           |              |           |         |
| Economic Stability        | 6.59         | 2.57      | 6.62         | 2.55      | 6.57         | 2.59      | 0.02    |
| Housing                   | 6.39         | 3.00      | 6.24         | 3.06      | 6.50         | 2.96      | 0.46    |
| Nutrition                 | 5.34         | 1.60      | 5.74         | 1.52      | 5.05         | 1.60      | 11.19** |
| Healthcare                | 17.24        | 3.37      | 17.87        | 3.14      | 16.76        | 3.47      | 8.32**  |
| Personal Resources        |              |           |              |           |              |           |         |
| Problem-Focused Coping    | 11.82        | 3.10      | 11.99        | 3.18      | 11.68        | 3.05      | .83     |
| Emotion-Focused Coping    | 18.41        | 3.96      | 19.03        | 4.03      | 17.86        | 3.84      | 6.06*   |
| Spirituality              | 6.95         | 1.30      | 7.15         | 1.11      | 6.81         | 1.40      | 2.92+   |
| Life Stressors            | 6.34         | 3.61      | 7.19         | 3.38      | 5.70         | 3.65      | 12.03** |
| Family Resources          |              |           |              |           |              |           |         |
| Power in the Family       | 24.60        | 7.80      | 25.82        | 7.71      | 23.71        | 7.76      | 5.30*   |
| Family Social Support     | 16.82        | 4.69      | 16.57        | 5.26      | 16.99        | 4.25      | .43     |
| Social Resources          |              |           |              |           |              |           |         |
| HIV Stigma                | 25.71        | 8.55      | 27.99        | 8.71      | 24.07        | 8.07      | 13.33** |
| Non-Family Social Support | 14.24        | 6.28      | 13.14        | 6.89      | 15.03        | 5.69      | 2.13    |
| Community Agencies        | 3.54         | .53       | 3.53         | .52       | 3.54         | .54       | .12     |

Note: \*\* $p < .01$ ; \*  $p < .05$ ; + $p < .10$ .

Table 3

Correlation Matrix between Demographic Variables and Outcome Variables

|                    | Depression | Anxiety | Age   | Number of Children |
|--------------------|------------|---------|-------|--------------------|
| Depression         | -          | .53**   | 0.13* | 0.08               |
| Anxiety            | -          | -       | 0.05  | 0.04               |
| Age                | -          | -       | -     | 0.27**             |
| Number of Children | -          | -       | -     | -                  |

Note: \*\* $p < .01$ ; \* $p < .05$ .

Similarly, mean depression scores,  $F(4, 241) = 1.18, p > .05$ , and anxiety scores,  $F(4, 236) = 1.70, p > .05$ , were not significant different across women's different types of marital status.

Second, tests were run to assess for demographic differences between HIV-infected and non-infected groups. One-way ANOVAs were conducted between the continuous demographic variables and the dichotomous HIV variable. There were no differences between HIV-infected and non-infected women on age,  $F(1, 243) = 1.44, p > .05$ , or number of children,  $F(1, 246) = 2.15, p > .05$ . Next, chi-square analyses were conducted between the categorical demographic variables and the dichotomous HIV variable. The percent of participants with HIV differed by marital status,  $\chi^2(4, N = 246) = 18.69, p \leq .01$ , but did not differ by education level,  $\chi^2(5, N = 247) = 6.90, p > .05$ . Table 1 shows the percent of women at each level of marital status for the HIV-infected and non-infected groups. These statistics demonstrate that women with HIV are more likely to be single and widowed, while non-infected women were more likely to be married and living with their husbands. Given the results of these preliminary analyses, all subsequent analyses that included depression as the outcome controlled for age and all analyses that included HIV-status as a predictor controlled for marital status.

### Structure of Analyses

Multiple hierarchical regression analyses were conducted in order to address the two primary questions of this study: (1) whether HIV-infection affects psychological functioning (i.e., depression and anxiety), and (2) whether the material, personal, family, and social factors moderate the relationship between HIV-infection and psychological functioning. A hierarchical regression analysis technique was employed as it allows the researcher to test for the main effect of HIV (question 1) and to test for the interaction effect between HIV and potential mitigating factors (question 2). Eight sets of regressions were conducted: four examining predictors of

depression and four examining predictors of anxiety. For each regression analysis, relevant demographic variables were entered in the first step of the equation and HIV-status was entered in the second step of the equation. In the third step, all the moderator variables (either the set of material, personal, family, or social variables) were entered into one step. Next, the interaction terms between HIV-status and the moderator variables were entered in the fourth step.

In order to reduce the potential problems associated with multicollinearity, all of the moderator variables were centered after they were transformed. The centering procedure was performed by subtracted the sample mean for the particular variable of interest from each participant's score on that variable. Interaction terms were then created by multiplying the HIV-status variable by the centered moderator variables. As such, for the material factors four interaction terms were created; for the personal factor four interaction terms were created; for the family factors two interaction terms were created; and for the social factors three interaction terms were created.

Although the final sample size was 248, the sample size for each of these analyses is slightly different. Cases were included in the analyses on a list-wise basis and as such, depending on the combination of variables included in each regression, a slightly different number of participants were included in the analyses.

### HIV and Depression

**Material Factors:** Age and marital status were entered into the first step of the analysis assessing the relationship between HIV, material factors, and depression (Table 4). These variables together were significant predictors of depression,  $F(2, 218) = 3.11, p \leq .05$ , and accounted for three percent of the variance in depression scores. More specifically, marital

Table 4

Results of Regression with Material Factors Predicting Psychological Functioning

|            |                       | Change Statistics |        | Unstandardized Coefficients |         |
|------------|-----------------------|-------------------|--------|-----------------------------|---------|
| Outcome    | Predictor Variables   | R <sup>2</sup>    | F-test | b                           | SE of b |
| Depression | 1. Age                | 0.03              | 3.11*  | 0.17+                       | 0.10    |
|            | Marital Status        |                   |        | -0.80*                      | 0.40    |
|            | 2. HIV Status         | 0.03              | 5.74*  | 3.21*                       | 1.34    |
|            | 3. Economic Stability | 0.08              | 5.13** | -0.12                       | .30     |
|            | Housing               |                   |        | -0.37                       | .26     |
|            | Nutrition             |                   |        | 1.17**                      | .42     |
|            | Healthcare            |                   |        | 3.28+                       | 1.73    |
|            | 4. HIV*Econ. Stab.    | 0.02              | .92    | 0.98                        | .60     |
|            | HIV*Housing           |                   |        | -0.45                       | .52     |
|            | HIV*Nutrition         |                   |        | 0.74                        | .92     |
|            | HIV*Healthcare        |                   |        | 1.10                        | 3.54    |
| Anxiety    | 1. Marital Status     | 0.02              | 3.78*  | -0.32*                      | 0.17    |
|            | 2. HIV Status         | 0.01              | 1.80   | 0.76                        | 0.57    |
|            | 3. Economic Stability | 0.08              | 4.65** | -0.72                       | 0.13    |
|            | Housing               |                   |        | -0.01                       | 0.11    |
|            | Nutrition             |                   |        | 0.68**                      | 0.18    |
|            | Healthcare            |                   |        | 0.61                        | 0.72    |
|            | 4. HIV*Econ. Stab.    | 0.02              | 1.01   | -0.00                       | 0.26    |
|            | HIV*Housing           |                   |        | -0.26                       | 0.22    |
|            | HIV*Nutrition         |                   |        | 0.39                        | 0.39    |
|            | HIV*Healthcare        |                   |        | 0.51                        | 1.50    |

Note: \*\* $p < .01$ ; \*  $p < .05$ ; + $p < .10$ .

status was significantly associated with depression ( $b = -0.80, p \leq .05$ ), and the relationship between age and depression approached significance ( $b = 0.17, p = .08$ ) (Table 4).

HIV-status was entered in the second step of the equation and was a significant predictor of depression above and beyond the variables entered in step one,  $F(1, 217) = 5.74, p \leq .05$ .

HIV-status accounted for an additional three percent of the variance in depression scores. When looking at the mean depression scores for each group, it is clear that HIV-infected women ( $M = 33.38$ ) endorsed significantly more depressive symptoms than non-infected women ( $M = 29.88$ ).

The centered economic stability, housing, nutrition, and healthcare variables were entered together in step three of the regression equation. These variables together were significant predictors of depression,  $F(4, 213) = 5.13, p \leq .01$ , and accounted for an additional eight percent of the variance in depression scores. More specifically, the coefficients associated with the individual variables revealed that nutrition significantly predicts depression ( $b = 1.17, p \leq .01$ ), such that an increase in malnutrition risk factors is associated with an increase in depression. In addition, the healthcare access variable approached significance in predicting depression ( $b = 3.28, p = 0.06$ ). This variable was reflected before being transformed and as such, the coefficient must be interpreted inversely. Therefore, an increase in healthcare access is associated with a decrease in depression.

Last, the four interaction terms between HIV and the material factor variables were entered in the final step of the regression equation. These interaction terms together did not account for a significant amount of additional variance,  $F(4, 209) = 0.92, p > .05$ , and none of the individual interaction terms significantly predicted depression.

**Personal Factors:** The variables entered in steps 1 and 2 are the same as described in the material factors section and as such, the statistics will not be repeated in the text. However,

because the statistics change slightly (e.g., the association between age and depression is now significant, instead of approaching significance) as a result of the small change in sample size. A summary of these statistics can be found in Table 5. In the third step of the regression equation the problem-focused coping, emotion-focused coping, spirituality, and life stressors variables were entered. This step of the equation accounted for a significant amount of variance, above and beyond that already accounted for by the control variables and HIV,  $F(4, 207) = 4.94, p \leq .01$ . These variables together accounted for an additional eight percent of the variance in depression scores. The unstandardized coefficients revealed that the life stressors variable was the only significant predictor of depression scores ( $b = 4.02, p \leq .01$ ). As the number of life stressors increase, there was an associated increase in depression symptoms. In the fourth step of the regression equation, the four interaction terms between HIV and personal factors were entered. These variables together significantly predicted depression scores,  $F(4, 203) = 2.35, p \leq .05$ , and accounted for an additional four percent of the variance above and beyond that already accounted for by the variables entered in steps one through three. The coefficients showed that the interaction between HIV-status and emotion-focused coping approached significance ( $b = 3.46, p = .08$ ). To explicate this interaction effect, a correlation between emotion-focused coping and depression was generated for both HIV-infected and non-infected groups. Because this variable was reflected, the correlation coefficients must be interpreted inversely. These correlations indicated that there is significant positive association between emotion-focused coping and depression,  $r(118) = -0.20, p \leq .05$ , for non-infected women. In contrast, there was a significant negative association between emotion-focused coping and depression,  $r(104) = 0.21, p \leq .05$ , for HIV-infected women.



Table 5

## Results of Regression with Personal Factors Predicting Psychological Functioning

|            |                      | Change Statistics |        | Unstandardized Coefficients |         |
|------------|----------------------|-------------------|--------|-----------------------------|---------|
| Outcome    | Predictor Variables  | R <sup>2</sup>    | F-test | b                           | SE of b |
| Depression | 1. Age               | 0.03              | 2.71+  | 0.21*                       | 0.10    |
|            | Marital Status       |                   |        | -0.54                       | 0.42    |
|            | 2. HIV Status        | 0.02              | 4.69*  | 2.99*                       | 1.38    |
|            | 3. Prob.-Fc. Coping  | 0.08              | 4.94** | -1.12                       | 1.10    |
|            | Emo.-Fc. Coping      |                   |        | 0.17                        | 0.98    |
|            | Spirituality         |                   |        | 0.00                        | 0.00    |
|            | Life Stressors       |                   |        | 4.02**                      | 0.99    |
|            | 4. HIV*Prob. Fc. Cp. | 0.04              | 2.35*  | 2.22                        | 2.17    |
|            | HIV*Emo. Fc. Cp.     |                   |        | 3.46+                       | 1.96    |
|            | HIV*Spirituality     |                   |        | -0.01                       | .00     |
|            | HIV*Life Stressors   |                   |        | -0.96                       | 2.00    |
| Anxiety    | 1. Marital Status    | 0.01              | 1.44   | -0.20                       | 0.17    |
|            | 2. HIV Status        | 0.01              | 1.10   | 0.59                        | 0.56    |
|            | 3. Prob.-Fc. Coping  | 0.04              | 2.02+  | -0.47                       | 0.46    |
|            | Emo.-Fc. Coping      |                   |        | -0.18                       | 0.41    |
|            | Spirituality         |                   |        | 0.00                        | 0.00    |
|            | Life Stressors       |                   |        | 0.96*                       | 0.41    |
|            | 4. HIV*Prob. Fc. Cp. | 0.07              | 3.99** | 2.12*                       | 0.90    |
|            | HIV*Emo. Fc. Cp.     |                   |        | 0.58                        | 0.79    |
|            | HIV*Spirituality     |                   |        | -0.00                       | 0.00    |
|            | HIV*Life Stressors   |                   |        | 1.63*                       | 0.82    |

Note: \*\* $p < .01$ ; \*  $p < .05$ ; + $p < .10$ .

**Family Factors:** The results for steps 1 and 2 of this analysis can be found in Table 6 and will not be discussed in the text since they are the same to those previously outlined in the material factors section of this paper. In the third step of this regression equation the variables for power in the family and for family social support were entered. This step of the equation accounted a significant amount of additional variance beyond that already accounted for by steps one and two,  $F(2, 230) = 17.26, p \leq .01$ . Together these two family variables accounted for an additional 12% of the variance in depression scores. The coefficients revealed that power in the family was a significant predictor of depression ( $b = 23.76, p \leq .01$ ), and that high levels of powerlessness were associated with higher levels of depression. In addition, family social support was a significant predictor of depression ( $b = .01, p \leq .01$ ). This coefficient should be interpreted inversely because it was reflected during transformation. Therefore, more family social support was associated with less depression. The two interaction terms between HIV and the family factors were entered in the final step of the regression equation. This step of the equation is significant,  $F(2, 228) = 3.97, p \leq .05$ , and accounted for an additional three percent of the variance above and beyond that already accounted for by the variables in steps one through three. The only significant coefficient was the one associated with the interaction between HIV and family social support ( $b = 0.01, p \leq .01$ ). A follow-up analysis revealed that the relationship between family social support and depression was significant among women with HIV,  $r(103) = 0.33, p \leq .01$ , but was not significant for non-infected women,  $r(143) = 0.04, p \leq .05$ . Among HIV-infected women higher levels of family social support were associated with lower levels of depression.

**Social Factors:** The results for steps 1 and 2 of this analysis can be found in Table 7 and will not be discussed in the text since they are the similar to those previously outlined. In the

Table 6

Results of Regression with Family Factors Predicting Psychological Functioning

|            |                     | Change Statistics |         | Unstandardized Coefficients |         |
|------------|---------------------|-------------------|---------|-----------------------------|---------|
| Outcome    | Predictor Variables | R <sup>2</sup>    | F-test  | b                           | SE of b |
| Depression | 1. Age              | 0.04              | 4.92**  | 0.22*                       | 0.09    |
|            | Marital Status      |                   |         | -0.93*                      | 0.39    |
|            | 2. HIV Status       | 0.03              | 6.87**  | 3.45**                      | 1.33    |
|            | 3. Power in Family  | 0.12              | 17.26** | 23.76**                     | 4.59    |
|            | Fam. Social Supp.   |                   |         | 0.01**                      | 0.00    |
|            | 4. HIV*Power        | 0.03              | 3.97*   | 3.72                        | 9.25    |
|            | HIV*Fam. SS         |                   |         | 0.01**                      | 0.00    |
| Anxiety    | 1. Marital Status   | 0.02              | 4.57*   | -0.34*                      | 0.16    |
|            | 2. HIV Status       | 0.01              | 2.98+   | 0.95+                       | 0.55    |
|            | 3. Power in Family  | 0.11              | 14.01** | 6.52**                      | 1.92    |
|            | Fam. Social Supp.   |                   |         | 0.01**                      | 0.00    |
|            | 4. HIV*Power        | 0.00              | 0.54    | -0.00                       | 0.00    |
|            | HIV*Fam. SS         |                   |         | 2.49                        | 3.93    |

Note: \*\* $p < .01$ ; \* $p < .05$ ; + $p < .10$ .

Table 7

## Results of Regression with Social Factors Predicting Psychological Functioning

|            |                     | Change Statistics |        | Unstandardized Coefficients |         |
|------------|---------------------|-------------------|--------|-----------------------------|---------|
| Outcome    | Predictor Variables | R <sup>2</sup>    | F-test | b                           | SE of b |
| Depression | 1. Age              | 0.04              | 4.47** | 0.21*                       | 0.09    |
|            | Marital Status      |                   |        | -0.86*                      | 0.38    |
|            | 2. HIV Status       | 0.03              | 6.98** | 3.45**                      | 1.30    |
|            | 3. HIV Stigma       | 0.07              | 5.84** | 0.23**                      | 0.07    |
|            | Non-Fam. Soc. Sup.  |                   |        | 0.30                        | 1.28    |
|            | Community Agencies  |                   |        | 0.01**                      | 0.00    |
|            | 4. HIV*HIV Stigma   | 0.02              | 2.10+  | 0.02                        | 0.15    |
|            | HIV*Non.-Fam. SS    |                   |        | 5.76*                       | 2.54    |
|            | HIV*Comm. Agencies  |                   |        | -0.01                       | 0.01    |
| Anxiety    | 1. Marital Status   | 0.02              | 4.47*  | -0.33*                      | 0.16    |
|            | 2. HIV Status       | 0.01              | 3.07+  | 0.95+                       | 0.54    |
|            | 3. HIV Stigma       | 0.05              | 4.59** | 0.05                        | 0.03    |
|            | Non-Fam. Soc. Sup.  |                   |        | -0.64                       | 0.53    |
|            | Community Agencies  |                   |        | 0.01**                      | 0.00    |
|            | 4. HIV*HIV Stigma   | 0.01              | 0.86   | 0.07                        | 0.06    |
|            | HIV*Non.-Fam. SS    |                   |        | 0.94                        | 1.07    |
|            | HIV*Comm. Agencies  |                   |        | -0.00                       | 0.00    |

Note: \*\* $p < .01$ ; \*  $p < .05$ ; + $p < .10$ .

third step of this regression equation the community stigma, non-family social support, and community agencies variables were entered. This step of the regression was significant,  $F(3, 235) = 5.84, p \leq .01$ , and accounted for an additional seven percent of the variance above that already accounted for by the control and the HIV-status variables. The coefficients at this step revealed a significant association between HIV stigma and depression ( $b = 0.23, p \leq .01$ ). An increase in community stigma was associated with an increase in depressive symptoms. Additionally, the community agencies variable was a significant predictor of depression ( $b = 0.01, p \leq .01$ ). This variable was also reflected during transformation and therefore, coefficients should be interpreted inversely. Consequently, more access to community agencies was associated with less depression. In the last step of the regression equation, the three interaction terms between HIV and community variables were entered. Although this step did not significantly predict depression scores,  $F(3, 232) = 2.10, p > .05$ , the coefficient associated with the interaction between HIV-status and non-family social support was significant ( $b = 5.76, p \leq .05$ ). A follow-up analysis indicated that there was no significant relationship between non-family social support and depression for either group of women, but that it was closer to approaching significance for HIV-infected women,  $r(104) = 0.13, p = .18$ , than for non-infected women,  $r(144) = -0.07, p = .41$ . Therefore, although there is a statistically significant interaction (i.e., the relationship is different for each group of women), this interaction is not meaningful.

#### HIV and Anxiety

**Material Factors:** Marital status was entered into the first step of the analysis assessing the relationship between HIV, material factors, and anxiety. This variable was significant in predicting depression,  $F(1, 215) = 3.78, p \leq .05$ , and accounted for two percent of the variance in anxiety scores (Table 4). HIV-status was entered in the second step of the equation and did not

account for a significant amount of additional variance,  $F(1, 214) = 1.80, p > .05$ . The centered economic stability, housing, nutrition, and healthcare variables were entered together in the third step of the regression equation and together were significant predictors of anxiety,  $F(4, 210) = 4.65, p \leq .01$ . These variables together accounted for an additional eight percent of the variance in anxiety scores, above and beyond that accounted for by the previous two steps. The only significant individual predictor was nutrition ( $b = .68, p \leq .01$ ), and an increase in malnutrition risk factors was associated with an increase in anxiety symptoms. Last, the four interaction terms between HIV and the material factor variables were entered. These interaction terms did not account for a significant amount of additional variance,  $F(4, 206) = 1.01, p > .05$ , and none of the individual interaction terms significantly predicted anxiety scores.

**Personal Factors:** The variables entered in step 1 and 2 are the same as described in the material factors section and as such, the statistics will not be repeated in the text. However, because the statistics change slightly as a result of the small change in sample size, a summary of these statistics can be found in Table 5. In the third step of the regression equation the problem-focused coping, emotion-focused coping, spirituality, and life stressors variables were entered. Although this step of the regression equation only approached significance,  $F(4, 206) = 2.02, p = .09$ , it did account for an additional four percent of the variance in anxiety scores. In addition, the life stressor variable was a significant predictor of anxiety ( $b = .96, p \leq .05$ ), such that higher numbers of life stressors was associated with more anxiety. In the final step of the regression equation the four interaction terms between HIV and personal factors were entered. These variables together were significant predictors of anxiety scores,  $F(4, 202) = 3.99, p \leq .01$ , and accounted for an additional seven percent of the variance in anxiety, above and beyond that already accounted for by the first three steps. The coefficients revealed that there is a significant

interaction between HIV and problem-focused coping ( $b = 2.12, p \leq .05$ ). A follow-up analysis showed that among HIV-infected women there was not a significant relationship between problem-focused coping and anxiety,  $r(100) = 0.11, p > .05$ , but that there was a significant relationship between these two variables among non-infected women,  $r(118) = -0.31, p \leq .01$ . This variable was reflected during transformation and so coefficients should be interpreted inversely. Therefore, among non-infected women, a higher level of reported problem-focused coping was associated with more anxious symptoms. In addition, the coefficient for the interaction effect between HIV and life stressors was significant ( $b = 1.63, p \leq .05$ ). A follow-up analysis showed that there was a significant association between life stressors and anxiety for HIV-infected women,  $r(100) = 0.31, p \leq .01$ , but that among non-infected women this relationship only approached significance,  $r(138) = 0.15, p = .08$ . Higher numbers of stressful experiences were associated with higher levels of anxiety in both groups, but this relationship was significantly stronger for women with HIV-infection.

**Family Factors:** The results for steps 1 and 2 of this analysis can be found in Table 6 and will not be discussed in the text since they are similar to those previously outlined in the material factors section of this paper. In the third step of this regression equation, the variables for maternal power and for family social support were entered. This step of the equation was a significant predictor of anxiety,  $F(2, 230) = 14.01, p \leq .01$ , and accounted for an additional 14% of the variance above that already accounted for by steps one and two. More specifically, maternal power significantly predicted anxiety ( $b = 6.52, p \leq .01$ ), such that higher levels of powerlessness were associated with higher levels of anxiety. In addition, family social support was inversely related to anxiety ( $b = 0.01, p \leq .01$ ). Because this variable was reflected, it can be interpreted that higher levels of social support were associated with lower levels of anxiety. The

two interaction terms between HIV and the family factors were entered in the final step. This step of the equation did not account for a significant amount of variance in the anxiety scores,  $F(2, 228) = 0.12, p > .05$ .

**Social Factors:** The results for steps 1 and 2 of this analysis can be found in Table 7 and will not be discussed in the text since they are the similar to those previously outlined. In the third step of this regression equation the community stigma, non-family social support, and community agencies variables were entered. This step of the equation significantly predicted anxiety,  $F(3, 234) = 4.59, p \leq .01$ , and accounted five percent of the variance above and beyond that already accounted for in the previous steps. The community agency variable was the only one that was significantly associated with anxiety ( $b = 0.01, p \leq .01$ ). This variable was reflected and this means that more access to community agencies was associated with less anxiety. In the last step of the regression equation, the three interaction terms between HIV and community resource variables were entered. This step did not significantly predict anxiety scores,  $F(3, 231) = 0.86, p > .05$ .



## CHAPTER 4

### Discussion

There is a limited number of quantitative studies in South Africa examining psychological distress and access to resources among HIV-infected and non-infected women and as such, the descriptive data gathered through this research study are very informative. First, it is interesting to examine the level of depressive symptoms among this group of South African women. The average depression score on the CESD for the total sample was 31. Given that the possible range of scores on this measure was 16 to 64, this score indicates that women were, on average, endorsing approximately half of the depressive symptoms. Because this measure had to be adjusted based on focus group feedback and on the factor analysis results, a direct comparison to normed CESD data cannot be made; however, it can be inferred that this mean score indicates an overall moderate to high level of depression symptoms. Similarly, the mean score on the anxiety measure (IPAT) indicated that, on average, women endorsed approximately half of the anxiety symptoms. The women's mean IPAT score was 10, on a scale with a possible range from zero to 22. Because of the changes made to this measure based on focus group feedback, piloting, and factor analyses, the norms for this measure may not be utilized. Although it is not possible to infer diagnoses based solely on the women's responses to these measures, it is clear that the women endorsed a large number of symptoms of both depression and anxiety. This suggests the need to continue enhancing our understanding of factors that influence psychological distress among South African women, including the material, personal, family, and social factors examined in this research.

Descriptive statistics indicated that there was an overall lack of economic stability among this sample of women. The potential range of scores on this scale was one to 20; however, the highest score achieved by any woman in this sample was 13, and the average score was 6. This shows that the women overall were not experiencing economic stability, which was possible to achieve by having multiple sources of income, multiple assets, multiple forms of material goods, or through participation in life insurance/funeral policies. Although previous qualitative research suggested that HIV-infected women may be more economically disadvantaged than non-infected women (e.g., UNAIDS, 1999), these quantitative data revealed no significant differences in economic stability based on HIV-status. This suggests that in our sample all women were significantly economically challenged, and that this lack of economic stability was present regardless of HIV-status. The average housing score indicated that women had moderate housing accommodation and that the quality of housing did not differ by HIV-status. This again suggests that all women in our sample had multiple unmet needs, regardless of HIV-infection.

The average nutritional rating was indicative of a high level of malnutrition risk. Moreover, both the HIV-infected and non-infected women's scores indicated significant malnutrition risk; however, the HIV-infected women's scores indicated even more risk than the non-infected women's scores. This finding is consistent with literature in South Africa suggesting that HIV-infection negatively impacts nutrition (Department of Health, 2001). The average healthcare access score indicated that women in this sample, overall, were satisfied with their healthcare services. Interestingly, HIV-infected women reported that they were more satisfied with their healthcare services than non-infected women. This is contrary to the very limited amount of qualitative data in South Africa which indicated that HIV-infected women are reluctant about healthcare because of the fear of lack of confidentiality (Russell & Schneider,

2000). However, it may be that women with HIV were more satisfied because they were more likely to utilize the healthcare services as a result of their illness and as such, have more experiences on which to base their ratings. In addition, this sample was recruited from hospitals and other community-based organizations. Consequently, the recruited women may have had increased rates of utilization and satisfaction with healthcare services when compared to the women we did not access through our recruitment methods.

There were also very interesting descriptive statistics for the personal resources variables. For example, women endorsed utilizing the problem-focused and emotion-focused coping techniques at average rates, based on the range of possible scores. Interestingly, the amount of problem-focused coping did not differ based on HIV-status, but the amount of emotion-focused coping was larger among HIV-infected women than non-infected women. Women with HIV may be relying heavily on emotion-focused techniques to help with their HIV-infection because, given the current lack of resources for treating HIV in South Africa, getting support around one's emotional reaction to HIV-related stressors may be much more beneficial than trying to solve the problems (i.e., problem-focused coping). In contrast, for the identified stressors in the non-infected women's lives, it may not be as necessary to rely more heavily on emotion-focused coping.

The mean score on the spirituality scale indicated that the level of religiosity/spirituality among this group of women was extremely high, which one would predict based on the importance of religion in this culture (van Dyk, 2001). Although there was limited variance in this measure, the difference in the mean scores between HIV-positive and non-infected groups approaches significance, where by women with HIV-infection endorsed higher levels of spirituality. This difference may be a result of women with HIV turning to their religion as a

way of helping them to cope with their illness. This finding is consistent with the previous one addressing the use of emotion-focused coping, as reliance on one's spirituality is one form of emotion-focused coping.

It is also important to note that women in this sample reported high levels of stressful life experiences, with an average of six stressful experiences. The percent of woman who experienced potentially traumatic life events, such as emotional abuse (53%), family violence (35%), non-family violence (64%), and being attacked by a stranger (27%), are comparable to those reported in a previous study with HIV-infected South African women (Dunkle et al., 2004). However, this is the first South African study identified that compares rates of stressful life experiences in HIV-infected women with rates in a non-infected control group of women. This study found that women with HIV reported a higher number of stressful life events than women without HIV, which is consistent with findings reported in the United States (e.g., Kimberling et al., 1999; Zierler et al., 1996).

Women in this sample reported moderate levels of power in the family, with the average scores on the Sexual Relationship Power Control Scale being 24 out of a possible range of 13 to 52. HIV-infected women reported more powerlessness in their relationships than did the non-infected women. This finding is consistent with theoretical papers published in South Africa which defined South Africa as a society with power inequities between men and women which lead to less power in women and subsequently, more vulnerability to HIV-infection (e.g., Jobson, 2003; Lewis, 2003). This is the first identified quantitative examination exploring the relationship between HIV and relationship power among women in South Africa, and the results highlight the potential need for interventions that empower HIV-infected women. The ratings on the family social support measure indicated that, on average, women were satisfied with the level

of support they received from their family members. Interestingly, these ratings did not differ between infected and non-infected women, showing that HIV-infection was not associated with less family social support. This is contrary to anecdotal evidence collected in South Africa (e.g., Jennings et al., 2002), which suggested that family social support may decrease in response to the stigma associated with HIV. However, it is important to note that this measure assessed the satisfaction with family social support and not the amount of social support. Therefore, it is possible that women may have lost some forms of family social support, but that their needs remain satisfied through the maintained relationships.

The level of reported HIV-related community stigma in this sample can be considered moderate, based on the range of possible scores on this measure. The average score was 25 on a scale ranging from 12 to 48. This is consistent with research in South Africa which indicated that HIV stigma persists throughout the country (Jennings et al., 2002). In addition, HIV-infected women in this sample reported higher rates of perceived stigma than did the non-infected women. This is the first identified study in South Africa to directly test the differences in perceived stigma between people with and without HIV-infection; however, it is intuitive that if there are high levels of HIV-stigma in a society, individuals with HIV-infection would be more sensitive to this stigma. Similar to family social support, the reported rates of non-family social support were average and did not differ by group. Women with HIV-infection did not report less satisfaction in their non-family social support than non-infected women. Last, overall women reported being satisfied with the services that they receive from community agencies and there were no differences between HIV-infected and non-infected women's ratings. This indicates that HIV-infection is not associated with less access to resources, as was suggested by the small number of qualitative studies addressing access to community resources (e.g., Russell &

Schneider, 2000). It is important to note, however, that this measure assessed for satisfaction with community resources and did not account for the number of community resources accessed. As such, it may be that HIV-infected women experienced an overall decrease in the total number of accessible resources, but that they were extremely satisfied with a small number of very helpful resources.

There were mixed results in answering the first major research question: is there a relationship between HIV-status and psychological distress? There was a significant relationship between HIV-status and depression, such that HIV-infected women, on average, reported more depressive symptoms than non-infected women. This finding is consistent with research findings among African-American women in the United States (e.g., Jones et al., 2001). The research in South Africa thus far has been mixed with respect to the HIV – depression relationship (Olley et al., 2003; Mfusi & Mahabeer, 2000), and as such, this study provides additional support for the hypothesis that HIV-infection is associated with more depressive symptoms among women in South Africa.

In contrast to these findings with depressive symptomatology, the results for the relationship between HIV-status and anxiety were mixed. When assessing the direct relationship between HIV and anxiety, without controlling for other variables, the relationship approached significance. However, when HIV was used as a predictor, after controlling for significant demographic variables, the relationship dropped to become non-significant. These data suggest a lack of a strong, significant relationship between HIV-status and anxiety. In the United States there has been much less research on this relationship than on the HIV – depression relationship. The existing research suggested that among HIV-infected women there may be higher rates of anxious symptoms, but not of anxiety disorders (e.g., Morrison et al., 2002). In South Africa,

there have been very few studies examining this relationship. One study found lower rates of anxiety, than of depression among HIV-infected individuals (Olley et al., 2003), while others did find group differences between HIV-infected and non-infected women with respect to anxiety (Mfusi & Mahabeer, 2000). Therefore, these findings are mostly inconsistent with existing, but limited research.

The investigator hypothesizes that the lack of a significant relationship between HIV-status and anxiety in this sample may be due to both measurement and conceptualization issues. First, it is clear from the factor analyses of the IPAT that the items on this scale were not loading together in a way consistent with the test's design. Thus, the researcher was unable to create a 40-item total score. In addition, the items did not load together for any of the previously defined subscales of this test. Results of the factor analytic analyses suggest that the participants may have had difficulty understanding the questionnaire and as such, may not have answered the questions in consistent ways. In addition, it is also likely that anxiety does not manifest the same way cross-culturally (Guarnaccia, 1997), and as such, this measure may not be a valid indicator of anxiety among Black South African women. Although focus groups were conducted and the IPAT was piloted, it may be beneficial to conduct more extensive focus group discussions to understand the way that anxiety is expressed in South African women. Finally, given that the relationship between HIV-status and anxiety has been mixed in the previous literature and that existing research suggests differences only in symptoms of anxiety and not diagnosable disorders, it may be necessary to have a very psychometrically and conceptually solid measure of anxiety in order to pick up these more subtle differences. The problems faced during the creation of this anxiety measure make it unlikely that this particular anxiety scale would pick up subtle differences in levels of anxiety between HIV-infected and non-infected groups.

The second major research goal was to assess which factors (e.g., material, personal, family, and social) have a mitigating effect on the relationship between HIV and psychological distress. The purpose of these exploratory analyses was to identify variables that may improve the quality of life among South African women with HIV-infection. Once mitigating variables are identified, more informed interventions can be created to help decrease the impact of HIV on women's psychological functioning. Given that the goal of this research is to understand which factors are influential in women's lives, the answers to the second research question will be discussed according to resource group (e.g., material), rather than by outcome variable (e.g., depression, anxiety). This will allow for a clearer identification of the important material, personal, family, and social factors that may be amenable to intervention.

Among the material resource variables, the only variable to significantly predict both depression and anxiety was nutrition. There was a positive association between malnutrition risk and psychological distress, indicating that higher levels of malnutrition risk may lead to higher levels of depression and anxiety symptoms. Although some South African reports demonstrated that HIV-infection impacts nutritional intake (Kelly et al., 2002), there are no identified research studies in South Africa that established a relationship between malnutrition and psychological distress. The strong link between nutritional risk and both anxiety and depression in this study suggests the importance of addressing nutritional needs when trying to improve psychological functioning. In addition, there was a trend toward an inverse relationship between healthcare access and depression, such that as levels of satisfaction with healthcare increased there was an associated decrease in depression. No previous study was identified which assessed for this relationship in South Africa and as such, these data are particularly useful in understanding the link between healthcare access and psychological distress.



In contrast to the above significant findings, there was no relationship between either economic stability or housing and depression or anxiety. This is contrary to the hypotheses and to previous qualitative research in South Africa (e.g., UNAIDS, 1999). The lack of significant results with economic stability may be due to the lack of meaningful variance in the scores. As previously discussed, the entire sample had very low levels of economic stability, making it difficult to make predictions to other variables. With respect to the housing variable, the absence of significant findings may be due to measurement issues. More specifically, the housing measure consisted of four questions on the HESSI which may not have been thorough enough in their scope to predict psychological distress scores. For example, this measure assessed for the quality of the current housing (e.g., toilet facilities, number of rooms), rather than for the stability of housing (e.g., number of moves, perceived longevity of current housing situation). The existing qualitative studies suggest that it is the stability of housing which is often threatened among women (e.g., Russell & Schneider, 2000) and which therefore may lead to more distress. Last, none of the interactions between HIV-status and material variables were significant, which indicates that the relationship between the material factor variables and psychological distress was not different for HIV-infected and non-infected women. Given that the level of these resources is low for all women, whether HIV-infected or not, it is not surprising that these variables are no more protective for one group than for another. The lack of significant findings here suggests that in the context of low material resources, HIV-infection may not be the primary burden.

Out of the four personal resources variables, the stressful life events variable was the only one associated with both depression and anxiety. Consistent with research findings on this relationship in the United States (Jones et al., 2003), the data indicated that as the number of

stressful life events increases, there was an associated increase in both depression and anxiety symptoms. In addition to these main effects, there was also an interaction between HIV and stressful life events when predicting anxiety. For HIV-infected women there was a clear positive relationship between stressful life events and anxiety, while for non-infected women this relationship only approached significance. Therefore, particularly among HIV-infected women, an increase in the number of stressful life events was associated with an increase in anxiety. These findings highlight the importance of considering stressful life experiences when trying to understand psychological distress among South African women. In addition, they point to the importance of developing interventions which aim at helping women to address the impact of their stressful life experiences. The data fill a gap in the South African literature, as this is the first study to address the relationship between stressful life events and psychological distress in a study with both HIV-infected women and a non-infected control sample.

Although there was not a significant main effect for either the problem-focused coping or the emotion-focused coping variables when predicting depression or anxiety, there were significant interaction effects. More specifically, problem-focused coping and HIV interacted when predicting anxiety. For non-infected women there was a positive association between problem-focused coping and anxiety, such that more problem-focused coping was associated with more anxiety. In contrast, problem-focused coping was not significantly associated with anxiety among HIV-infected women. Additionally, the interaction between emotion-focused coping and HIV in predicting depression approached significance. Among HIV-positive women, higher levels of emotion-focused coping were associated with lower levels of depression. Among non-infected women, higher levels of emotion-focused coping were associated with higher levels of depression. As such, these data suggest that when women are coping with HIV-

related problems it may be most beneficial for them to take an emotion-focused approach, rather than a problem-focused approach, especially as it relates to depression. As previously mentioned, there are limits to the quantity and quality of psychosocial and medical treatment of HIV-infection in women in South Africa (Sidley, 2003). Thus, emotion focused coping, relative to problem-focused coping, may be the most appropriate strategy for these women. The positive relationship between both coping styles and psychological distress in non-infected women may be explained by the fact that the data are cross-sectional. It may be the case that non-infected women who utilize high levels of problem-focused coping, do so because of their increased anxiety and that non-infected women who utilize high levels of emotion-focused coping do so to manage their depressive symptoms. Longitudinal data would be helpful in further elucidating this relationship. Although this is the first identified study to examine these coping styles among South Africans, data from the United States have identified that both problem-focused coping strategies and emotion-focused coping strategies can be beneficial for women with HIV-infection (e.g., Ball et al., 2002). As such, the findings among HIV-infected women in this sample are consistent with previous research, but are more specific in identifying emotion-focused coping as particularly helpful for HIV-infected women in South Africa.

There was no association between spirituality and depression or anxiety in this sample. In addition, the spirituality variable did not significantly interact with HIV in predicting psychological distress. This lack of association between spirituality and distress was likely due to the lack of variance in spirituality scores. Approximately 50% of the sample reported the highest possible score on the measure and the majority of the sample reported very high levels of spirituality. Consequently, the lack of statistical significance between these variables is likely an indication of the statistical problems associated with using a predictor with limited variance,

rather than a true indication of no relationship between spirituality and psychological distress. Because of the very important role of spirituality in South African culture (van Dyk, 2001), the researchers were aware of the potential problem of a ceiling effect for this variable. Many attempts were made to create a measure that would elicit varied responses, including extensive focus group discussions, careful wording of the questions, and piloting multiple versions of the measure. However, despite attempts to correct this methodological issue, the measure was not successful in differentiating the subtle differences in spirituality between the women.

Significant relationships were established for both of the family resources variables. First, the power in the family variable was significantly associated with both depression and anxiety. An increase in feelings of powerlessness was associated with an increase in depression and anxiety scores. Interestingly, there was no interaction effect between this variable and HIV-status, indicating that power was an influential variable for both HIV-infected and non-infected women. Given the pervasive nature of a patriarchal system and the associated potential loss of power for women (Travers & Bennett, 1996), it is not surprising that the amount of power that a woman feels is significantly related to psychological distress for both groups of women. This study is the first identified empirical research to explore the direct relationship between power and psychological distress among HIV-infected and non-infected women in South Africa. The results point to the importance of addressing interpersonal power when designing interventions to decrease depression or anxiety in this population.

A significant relationship was also established between family social support and both depression and anxiety. In both cases, an increase in family social support was associated with a decrease in psychological distress. In addition, there was a significant interaction between HIV and family social support when predicting depression, such that the relationship between family

social support and depression was only significant for HIV-infected women. These findings are consistent with previous literature in South Africa which established that the nuclear and extended family plays a hugely important, supportive role in women's lives (Foster, 2000). Additionally, research in the United States established an inverse relationship between social support and depression (e.g., Kalichman et al., 2003). These findings are important because this is the first identified study to link family social support to psychological functioning in South African women. In addition, they highlight the protectiveness of family social support for HIV-infected women, especially in regards to decreasing depression symptoms.

With respect to the social resources variables, the only variable that was associated with both depression and anxiety was the community agency variable. There was an inverse relationship between women's access to community agencies and both depression and anxiety; however, there was no interaction between the HIV-status and community agencies variable. Thus, access to resources in the community may be conceptualized as a protective factor for both HIV-infected and non-infected women alike. It is possible that the lack of an interaction effect is due, in part, to the lack of economic stability across the entire sample, thereby making access to resources very important and influential for all women in this sample. Although researchers in South Africa have discussed the potential importance of community agencies (e.g., Sewpaul, 2001), this is the first identified quantitative study to establish a direct relationship between access to community resources and psychological distress. These findings indicate that it may be beneficial for mental health interventions to help women become connected to their communities and knowledgeable about accessible resources.

HIV-related community stigma was found to be positively associated with depression, but not with anxiety. In addition, HIV stigma and HIV-status did not interact in predicting

psychological distress. These results indicate that perceiving a more HIV stigma in one's community is associated with an increase in depressive symptoms, regardless of whether one is HIV-infected or non-infected. This is in contrast to research in the United States, which found differences in perceived stigma between HIV-infected and non-infected groups (e.g., Clark et al., 2003); however, the results are consistent with U.S. research establishing a link between HIV stigma and psychological distress (e.g., Berger et al., 2001). The lack of group differences may speak to the overwhelming nature of HIV stigma in the South African context. Because the HIV-infection rate is so high (22% according to UNAIDS/WHO, 2004), it is very likely that most women know at least one person who is HIV-infected and/or may worry about HIV-infection themselves. Therefore, it may be distressing for all women, regardless of HIV-status, to perceive high levels of HIV stigma in their communities.

Last, there was no significant relationship between non-family social support and either anxiety or depression. Although no study was identified in South Africa assessing the non-family social support – psychological distress relationship, researchers in the United States have consistently found a significant inverse relationship between these two variables (e.g., Blaney et al., 2004). Specifically, research in the United States has found that both family and non-family social support are linked to psychological functioning. These results suggest that within the South African context, it may be that only family social support is linked to psychological functioning and that non-family social support is less influential. This finding is consistent with the multiple theoretical articles that have discussed the importance of South African family as a primary means of support (Foster, 2000). However, these findings are preliminary and additional research is needed to help understand these linkages.

This was one of the first research studies in South Africa to assess the relationship between numerous resource variables and psychological distress in both HIV-infected and non-infected women. As such, this study fills many gaps in the South African research literature. For example, very important descriptive data were gathered about women's access to material, personal, family, and social resources, thereby increasing the amount of knowledge about Black South African women's resources in the post-apartheid era. In addition, this research was the first to assess for the impact of HIV-infection on women's access to resources, identifying important group differences in factors such as nutrition, healthcare, emotion-focused coping, spirituality, number of life stressors, power in the family, and perceived HIV stigma. Furthermore, this study provided additional evidence that HIV-infection in South African women is associated with increase psychological distress, especially depression, highlighting the importance of interventions aimed at helping women with their HIV-status and the associated depression symptoms. Last, this study was successful in identifying factors that are associated with psychological distress, providing a quantitative foundation for organizations as they attempt to provide focused and potentially beneficial mental health interventions to women with HIV-infection. In summary, the results indicated that among all women, regardless of HIV-status, nutrition, stressful life events, power, family social support, community agencies, and HIV stigma are directly associated with depression (Figure 2). Similarly, among all women, nutrition, stressful life events, power, family social support, and community agencies are directly associated with anxiety (Figure 3). In contrast, healthcare access, emotion-focused coping, and family social support were particularly important for HIV-infected women in predicting depression (Figure 4). Likewise, stressful life events were particularly important in predicting anxiety among HIV-infected women (Figure 5).

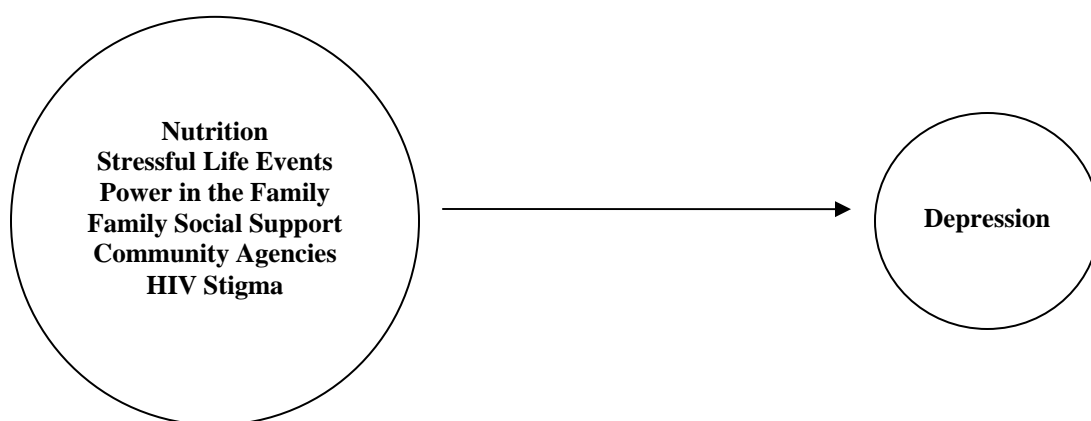


Figure 2

Significant Direct Effects between Resources and Depression

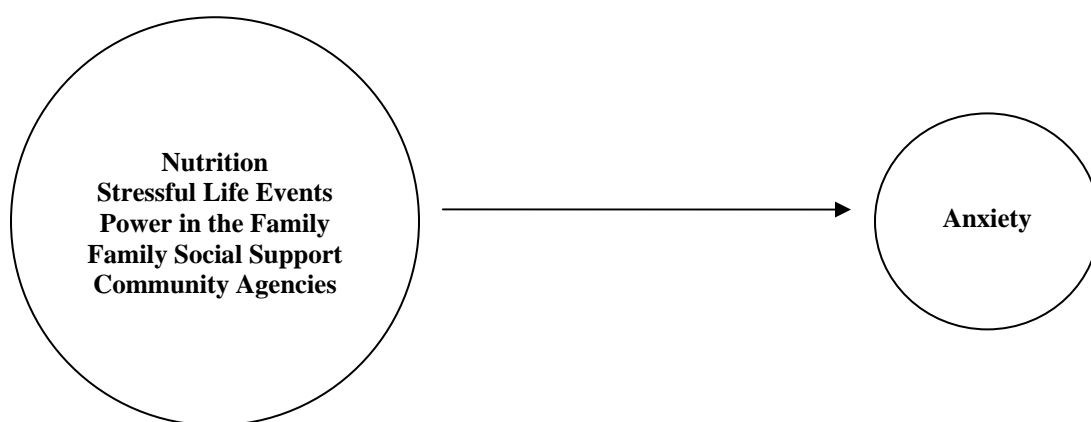


Figure 3

Significant Direct Effects between Resources and Anxiety



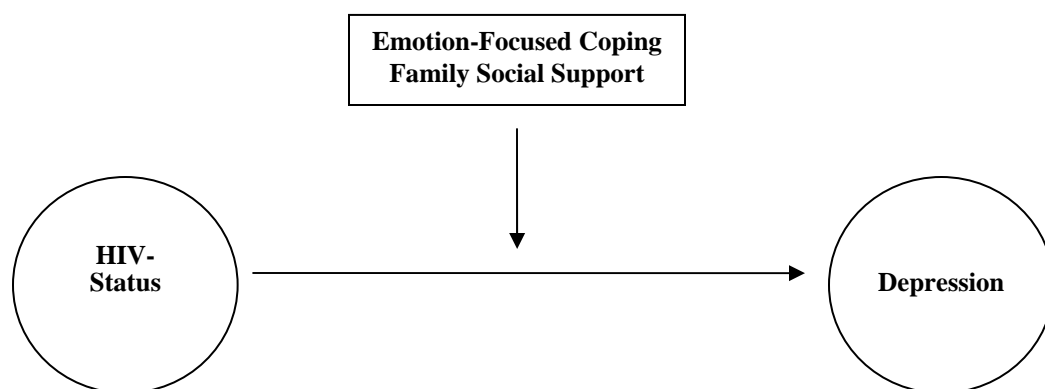


Figure 4

Variables that Moderate the Relationship between HIV-Status and Depression

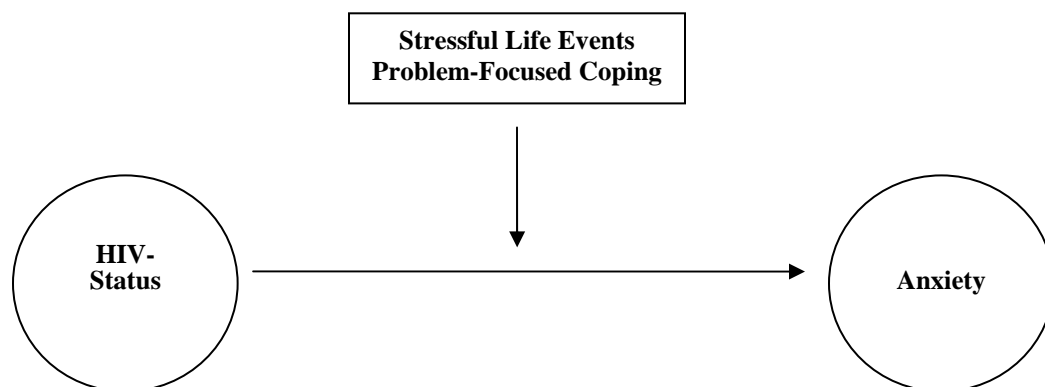


Figure 5

Variables that Moderate the Relationship between HIV-Status and Anxiety

Although this study increases the knowledge about the relationship between HIV-status, access to resources, and psychological distress among Black South African women, there are several limitations that should be addressed. First, this study used a cross-sectional design, which prevents the inference of causal relationships between the variables. The lack of active manipulation of the independent variables or of a longitudinal design does not allow for knowledge about the directionality of these relationships. Second, the data were all collected via self-report, which makes problems associated with common reporter method variance a possibility. In addition, some of the information collected was sensitive in nature (e.g., HIV-status) and as such, some participants may not have been comfortable disclosing the information. This limitation highlights the importance of study replication using varied methodological approaches. Third, this study only included Black South African women and as such, generalizations to other populations should be made with caution. It is quite possible that the relationships established in this population would be different if examined with males, white South Africans, or individuals from other nations. Fourth, for a majority of the constructs measured in this study, there were no existing measures or the existing measures had never been utilized in South Africa. Consequently, the researcher created numerous measures (e.g., spirituality, healthcare access, community organizations) or significantly modified existing measures (e.g., IPAT) in order to make them more culturally appropriate. Because this was the first use of many of these newly created measures, there was no established reliability and validity statistics or norms for this sample.

This study illuminated directions in which future research might go to further explicate the preliminary findings of this study. First, there is a significant amount of measure development and associated research which needs to be conducted in order to create measures

that are conceptually and culturally appropriate for use with Black South African populations. This study specifically highlighted the need for more information to be gathered on the manifestation of anxiety in this population and the subsequent valid measurement of anxiety. In addition, it would be beneficial for researchers to create a more exhaustive and sensitive measure of spirituality which captures the subtle differences in spirituality among South Africans. Second, it would be interesting for researchers to further explore the mechanisms through which the identified influential variables impact psychological distress. For example, further research could be conducted on understanding how and why it is that interpersonal powerlessness leads to depression and anxiety. Third, perhaps one of the most striking findings of this research was the high levels of stressful life events among all women and the subsequent link of these events to psychological distress. It would be valuable to engage in a more thorough investigation of the level of traumatic experiences, as well as of the prevalence of Post-Traumatic Stress Disorders among these women. In addition, a longitudinal study examining the relationship between HIV-status, access to resources, and psychological functioning would be beneficial in establishing causality in these relationships. Last, and perhaps most importantly, it would be beneficial to create mental health interventions which are informed by this research and to assess for their effectiveness. For example, it may be interesting to design an intervention which aims to help women feel more empowered in their relationships or one which helps women process their traumatic life experiences. This investigator's results suggest that in so doing, one may help decrease the women's levels of depression and anxiety. These types of intervention studies would not only address the problem of causality, but would also add knowledge to the literature about how to enact positive change in HIV-infected women's lives.

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## APPENDIX

**HOUSEHOLD ECONOMIC AND SOCIAL STATUS INDEX (HESSI) - Part I**

Directions: I am going to start of by asking you question about you and your family.

1. Name? \_\_\_\_\_
2. What year were you born? \_\_\_\_\_
3. How many people currently live in the house/home? \_\_\_\_
  - a. Number 18 yrs and older \_\_\_\_\_
  - b. Number 6-17 yrs old \_\_\_\_\_
  - c. Number 5 yrs old and under \_\_\_\_\_
4. What are the first names of each of your children (not necessarily biological)?
  - a. How old is each child?
  - b. Are they male or female?
  - c. Does he/she live with you?  
If **NO**, are they alive?  
If **YES**, where are they living and with who?
  - d. Do they have a major health problem?

| <u>Child's Name</u> | <u>Age</u> | <u>Male /<br/>Female</u> | <u>Resides: Where and<br/>With Whom</u> | <u>Health Problems: Yes/No and<br/>Describe</u> |
|---------------------|------------|--------------------------|---|---|
|                     |            |                          |   |   |
|                     |            |                          |   |   |
|                     |            |                          |   |   |
|                     |            |                          |   |   |
|                     |            |                          |   |   |
|                     |            |                          |   |   |

*\*\*Circle the target child. The target child should be the oldest child who is still in primary school*

DURING THIS INTERVIEW I WILL BE ASKING YOU QUESTIONS ABOUT YOUR CHILDREN. FROM NOW ON WE'LL JUST BE FOCUSING ON ONE CHILD. SO WHEN I ASK YOU QUESTIONS PLEASE THINK ABOUT "TARGET CHILD"

5. 1. Are there adults in your home that help with childcare?

YES NO

If **YES**, how much do they help with the childcare:

a) VERY LITTLE SOME A LOT

b) How are they related to *target child*? \_\_\_\_\_

2. Are there adults in your home that help with cooking and cleaning?

YES NO

If **YES**, how much do they help with the cooking and cleaning?

a) VERY LITTLE SOME A LOT

b) How are they related to *target child*? \_\_\_\_\_

**HOUSEHOLD ECONOMIC AND SOCIAL STATUS INDEX (HESSI) - Part II**

Directions: I am going to be asking you questions about you and your education, living, and health.

1. Which ethnic group do you best identify with?
  - a. Zulu
  - b. Xhosa
  - c. Sotho
  - d. Tswana
  - e. Pedi
  - f. Ndebele
  - g. Swati
  - h. Tsonga
  - i. Venda
  - j. Other \_\_\_\_\_
  
2. What is your current marital status?
  - a. Never married and not living with a partner
  - b. Married but and not living with a partner (e.g. divorced, separated)
  - c. Widowed
  - d. Never married and living with partner
  - e. Married and currently living with partner
  
3. How far did you go in school?
  - a. Less than grade 5 or Standard 3
  - b. Grades 5-7 or Standard 3-5
  - c. Grades 8-11 or Standard 6-9 or N-1
  - d. Matric or N-3
  - e. Post Matric or N-5/6
  - f. Tertiary education or Technikon or University



4. How far did your husband/boyfriend go in school?
- Less than grade 5 or Standard 3
  - Grades 5-7 or Standard 3-5
  - Grades 8-11 or Standard 6-9 or N-1
  - Matric or N-3
  - Post Matric or N-5/6
  - Tertiary education or Technikon or University
5. Who in the family earns money and what is their job? Check all that apply

| In Relation to <i>Target Child</i>                | <u>Job</u> |
|---|------------|
| <input type="checkbox"/> Mother                   | _____      |
| <input type="checkbox"/> Partner                  | _____      |
| <input type="checkbox"/> Other Parent/Father      | _____      |
| <input type="checkbox"/> Parent Pension           | _____      |
| <input type="checkbox"/> Child Support Grant      | _____      |
| <input type="checkbox"/> Sibling/Aunt/Uncle       | _____      |
| <input type="checkbox"/> Government Grant for PWA | _____      |
| <input type="checkbox"/> Other(s)                 | _____      |

6. In what type of house/home do you live?
- None, homeless
  - Shack
  - Hostel
  - Room, garage
  - Flat, cottage
  - Home shared with other family(ies)
  - Home that is not shared with other families

7. Does your home have
- |    |                      |    |     |
|----|----------------------|----|-----|
| a. | A Separate Kitchen?  | No | Yes |
| b. | A Separate Bathroom? | No | Yes |
8. In your home how many separate rooms are there just for sleeping?
- 0      1      2      3      4 or more
9. What type of toilet facilities does your home have?
- |    |                      |
|----|----------------------|
| a. | None                 |
| b. | Pit or Bucket        |
| c. | Outside flush toilet |
| d. | Inside flush toilet  |
10. Do you own or rent a home?
- |    |                    |
|----|--------------------|
| a. | Neither            |
| b. | Rent               |
| c. | Purchasing on Bond |
| d. | Own                |
11. Does the place you live in have a:
- |    |                         |    |     |
|----|-------------------------|----|-----|
| a. | Fridge                  | No | Yes |
| b. | TV                      | No | Yes |
| c. | Telephone or Cell phone | No | Yes |
| d. | Car                     | No | Yes |
| e. | Video recorder          | No | Yes |
| f. | Washing machine         | No | Yes |
| g. | Microwave oven          | No | Yes |
| h. | Oven or stove           | No | Yes |
12. How often have your children gone hungry because you did not have food?
- (1) No, never      (2) Sometimes      (3) Often      (4) All the time

13. Do you have savings or participate in a savings plan?      No      Yes
14. Do you have life insurance and/or a funeral policy?      No      Yes
15. What major health problems do you have, e.g. cancer, asthma, diabetes, HIV, hypertension, TB etc?  
\_\_\_\_\_
16. Of those adults 18 and older living with you, what major health problems do they have?  
\_\_\_\_\_

### **PHYSICAL SYMPTOM INVENTORY**

I am going to read a list of physical troubles. Please tell me how often each of these has bothered you.

- (1) Never**  
**(2) A few times a year**  
**(3) About once a month**  
**(4) About once a week**  
**(5) Nearly every day.**

|   |    |    |    |    |    |
|---|----|----|----|----|----|
| 1. Nausea (feeling like vomiting)                   | 1) | 2) | 3) | 4) | 5) |
| 2. Headaches  | 1) | 2) | 3) | 4) | 5) |
| 3. Trouble with ears or hearing                     | 1) | 2) | 3) | 4) | 5) |
| 4. Neck aches or pains                              | 1) | 2) | 3) | 4) | 5) |
| 5. Arm or leg aches or pains                        | 1) | 2) | 3) | 4) | 5) |
| 6. Shakiness  | 1) | 2) | 3) | 4) | 5) |
| 7. Swelling of arms, hands, legs, or feet           | 1) | 2) | 3) | 4) | 5) |
| 8. Troubling sleeping                               | 1) | 2) | 3) | 4) | 5) |
| 9. Losing weight                                    | 1) | 2) | 3) | 4) | 5) |
| 10. Back aches                                      | 1) | 2) | 3) | 4) | 5) |
| 11. Irregular or loss of menstruation/periods       | 1) | 2) | 3) | 4) | 5) |
| 12. Difficulty with urination (passing water)       | 1) | 2) | 3) | 4) | 5) |
| 13. Heart trouble                                   | 1) | 2) | 3) | 4) | 5) |
| 14. Numbness or lack of feeling in any part of body | 1) | 2) | 3) | 4) | 5) |
| 15. Aches or pains in hands or feet                 | 1) | 2) | 3) | 4) | 5) |
| 16. Fainting spells                                 | 1) | 2) | 3) | 4) | 5) |
| 17. Excessive sweating                              | 1) | 2) | 3) | 4) | 5) |
| 18. Abnormal blood pressure                         | 1) | 2) | 3) | 4) | 5) |

|  |    |    |    |    |    |
|--|----|----|----|----|----|
| 19. Trouble with eyes or vision                            | 1) | 2) | 3) | 4) | 5) |
| 20. Skin trouble (rashes, boils, or itching)               | 1) | 2) | 3) | 4) | 5) |
| 21. Feeling tired  | 1) | 2) | 3) | 4) | 5) |
| 22. Weakness in your muscles                               | 1) | 2) | 3) | 4) | 5) |
| 23. Dizzy spells   | 1) | 2) | 3) | 4) | 5) |
| 24. Tension or tightness in your muscles                   | 1) | 2) | 3) | 4) | 5) |
| 25. Difficulty breathing (short of breath, asthma, etc.)   | 1) | 2) | 3) | 4) | 5) |
| 26. Poor health in general                                 | 1) | 2) | 3) | 4) | 5) |
| 27. Passing gas a lot                                      | 1) | 2) | 3) | 4) | 5) |
| 28. More severe menstrual cramps than usual                | 1) | 2) | 3) | 4) | 5) |
| 29. Seizures (fits)  | 1) | 2) | 3) | 4) | 5) |
| 30. Gaining weight   | 1) | 2) | 3) | 4) | 5) |
| 31. Trouble with not feeling hungry                        | 1) | 2) | 3) | 4) | 5) |
| 32. Trouble going to the toilet (constipation or diarrhea) | 1) | 2) | 3) | 4) | 5) |
| 33. Vomiting   | 1) | 2) | 3) | 4) | 5) |
| 34. Chest pains  | 1) | 2) | 3) | 4) | 5) |
| 35. Sinus problems   | 1) | 2) | 3) | 4) | 5) |
| 36. Vaginal itching  | 1) | 2) | 3) | 4) | 5) |
| 37. Vaginal discharge                                      | 1) | 2) | 3) | 4) | 5) |

### **CESD**

Instructions: I will am going to read you a list of some of the ways that you may have been feeling or have behaved recently. Please tell me how often you have felt this way during the past week.

- (1) ALMOST NEVER (less than 1 day)**
- (2) A LITTLE (1-2 days)**
- (3) A LOT (3-4 days)**
- (4) ALMOST ALWAYS (5-7 days)**

1. I was bothered by things that usually don't bother me. \_\_\_\_\_
2. I did not feel like eating; my appetite was poor. \_\_\_\_\_
3. I felt that I could not stop feeling sad even with help  
from my family or friends. \_\_\_\_\_
4. I felt that I was just as good as other people. \_\_\_\_\_
5. It was hard for me to keep my mind on what I was doing. \_\_\_\_\_
6. I felt depressed. \_\_\_\_\_
7. I felt that everything I did was an effort. \_\_\_\_\_
8. I felt hopeful about the future. \_\_\_\_\_
9. I thought my life had been a failure. \_\_\_\_\_
10. I felt afraid. \_\_\_\_\_
11. My sleep was restless. \_\_\_\_\_
12. I was happy. \_\_\_\_\_
13. I talked less than usual. \_\_\_\_\_
14. I felt lonely. \_\_\_\_\_
15. People were unfriendly. \_\_\_\_\_
16. I enjoyed life. \_\_\_\_\_
17. I had crying spells. \_\_\_\_\_
18. I felt sad. \_\_\_\_\_
19. I felt that people disliked me. \_\_\_\_\_
20. I could not get things done. \_\_\_\_\_

### IPAT

Now I will read you statements about how most people feel or think at one time or another. There are no right or wrong answers. Just pick the one that is really true for you.

- 1) My interests in people and ways to enjoy myself seem to change quickly.  
 a. Always True                      b. Sometimes True                      c. Never True
- 2) Even if people think badly of me I still go on feeling OK about myself.  
 a. Always True                      b. Sometimes True                      c. Never True
- 3) I like to be sure that what I am saying is right before I join in an argument.  
 a. Always True                      b. Sometimes True                      c. Never True
- 4) My feelings of jealousy influence my actions.  
 a. Always True                      b. Sometimes True                      c. Never True
- 5) If I could live my life over again I'd do things very differently.  
 a. Always True                      b. Sometimes True                      c. Never True
- 6) I admire my parents in everything they do.  
 a. Always True                      b. Sometimes True                      c. Never True
- 7) It's hard for me to take "no" for an answer even when I'm asking for something impossible.  
 a. Always True                      b. Sometimes True                      c. Never True
- 8) I doubt the honesty of people who are very friendly to me.  
 a. Always True                      b. Sometimes True                      c. Never True
- 9) In getting the children to obey them, my parents were very reasonable.  
 a. Always True                      b. Sometimes True                      c. Never True
- 10) My friends need me as much as I need them.  
 a. Always True                      b. Sometimes True                      c. Never True
- 11) If there was an emergency, I could deal with it.  
 a. Always True                      b. Sometimes True                      c. Never True
- 12) As a child I was afraid of the dark.  
 a. Always True                      b. Sometimes True                      c. Never True
- 13) People tell me that when I get excited, it shows in my voice and manner too obviously.  
 a. Always True                      b. Sometimes True                      c. Never True

- 14) If people take advantage of my friendliness I soon forgive and forget.  
a. Always True                      b. Sometimes True                      c. Never True
- 15) I get upset when people criticize me even if they really mean to help me.  
a. Always True                      b. Sometimes True                      c. Never True
- 16) I get angry with people too quickly.  
a. Always True                      b. Sometimes True                      c. Never True
- 17) I am calm and focused.  
a. Always True                      b. Sometimes True                      c. Never True
- 18) I feel as though people I'm talking to are not interested in what I'm saying.  
a. Always True                      b. Sometimes True                      c. Never True
- 19) I'm not troubled by tense muscles, upset stomach, or pains in my chest.  
a. Always True                      b. Sometimes True                      c. Never True
- 20) In discussions with some people, I get so annoyed I can hardly trust myself to speak.  
a. Always True                      b. Sometimes True                      c. Never True
- 21) I use up more energy than most people in getting things done because I get tense and nervous.  
a. Always True                      b. Sometimes True                      c. Never True
- 22) I make a point of not being absent-minded or forgetful of details.  
a. Always True                      b. Sometimes True                      c. Never True
- 23) No matter how difficult and unpleasant it is, I stick to my original plan or intentions.  
a. Always True                      b. Sometimes True                      c. Never True
- 24) I get over-excited and too easily hurt in upsetting situations.  
a. Always True                      b. Sometimes True                      c. Never True
- 25) I have dreams that seem very real that disturb my sleep.  
a. Always True                      b. Sometimes True                      c. Never True
- 26) I have enough energy to deal with problems.  
a. Always True                      b. Sometimes True                      c. Never True
- 27) I have a habit of counting things for no reason (e.g. steps, bricks in a wall).  
a. Always True                      b. Sometimes True                      c. Never True
- 28) I think that most people are a little strange in their heads, but they don't like to admit it.  
a. Always True                      b. Sometimes True                      c. Never True



- 29) It's easy for me to forget an embarrassing mistake that I made.  
a. Always True                      b. Sometimes True                      c. Never True
- 30) I feel happy/ in a good mood and want to see people.  
a. Always True                      b. Sometimes True                      c. Never True
- 31) When things go wrong, I don't feel tearful.  
a. Always True                      b. Sometimes True                      c. Never True
- 32) I feel lonely and worthless in the middle of social groups.  
a. Always True                      b. Sometimes True                      c. Never True
- 33) I wake up in the night and have trouble sleeping because I'm worrying about things.  
a. Always True                      b. Sometimes True                      c. Never True
- 34) My spirits stay high no matter how many troubles I have.  
a. Always True                      b. Sometimes True                      c. Never True
- 35) I get feelings of guilt or regret over unimportant, small matters.  
a. Always True                      b. Sometimes True                      c. Never True
- 36) My nerves are disturbed so that certain sounds are unbearable and freak me out (e.g. a door that bangs).  
a. Always True                      b. Sometimes True                      c. Never True
- 37) I can calm down quickly after something upsets me a lot.  
a. Always True                      b. Sometimes True                      c. Never True
- 38) I seem to tremble or sweat when I think of a difficult task ahead.  
a. Always True                      b. Sometimes True                      c. Never True
- 39) I fall asleep quickly when I go to bed.  
a. Always True                      b. Sometimes True                      c. Never True
- 40) I get tense and confused when I think about things I'm concerned about.  
a. Always True                      b. Sometimes True                      c. Never True

### **HEALTHCARE ACCESS**

Now I am going to ask you what you do when you're sick.

1. Have you needed to see a doctor/specialist (e.g. gynecologist)/clinic/nurse/traditional healer in the past 3 months? YES NO

If **YES**:

Did you actually see the doctor/clinic/nurse/traditional healer? YES NO

If **YES**

Who did you see? \_\_\_\_\_

How many times? \_\_\_\_\_

If **NO**:

Why not (Check all that Apply):

- Availability of services: \_\_\_\_\_
- Money problems: \_\_\_\_\_
- Transport problems: \_\_\_\_\_
- Time needed to wait for services (e.g. waiting rooms): \_\_\_\_\_
- You thought you could take care of yourself? \_\_\_\_\_
- Unsure about place of medical services: \_\_\_\_\_
- Work problems (e.g. couldn't get time off): \_\_\_\_\_
- Childcare problems: \_\_\_\_\_
- Not welcomed: \_\_\_\_\_

2. How much do you feel your own health needs have been satisfied?

(1) Not at all      (2) A little      (3) Somewhat      (4) Very

3. How much do you feel your family's health needs have been satisfied?

(1) Not at all      (2) A little      (3) Somewhat      (4) Very

4. If you did see a doctor/specialist/clinic/nurse/traditional healer in the last 3 months, how happy were you with the quality of service you received?

(1) Not at all                      (2) A little                      (3) Somewhat                      (4) Very

5. Do you feel like you need any type of medicine to manage illness/disease for yourself or your family members? YES                      NO

If **YES**, how often could you get this medicine?

(1) Never                      (2) Rarely                      (3) Sometimes                      (4) Always

6. How do you get to your doctor/specialist/clinic/nurse/traditional healer?

*(Circle relevant answer(s))*

(1) by walking                      (2) by taxi                      (3) by bus                      (4) by train

7. How long does it take to get to a doctor/specialist/clinic/nurse/traditional healer from home?

(1) Less than 1 hour                      (2) 1 – 2 hours                      (3) more than 2 hours

8. When you arrive at the doctor/specialist/clinic/nurse/traditional healer, how long do you usually have to wait?

(1) Between 0 - 3 hours                      (2) about half a day                      (3) a whole day

9. How much do you trust your doctor/healer/nurse?

(1) Not at all                      (2) A little                      (3) Somewhat                      (4) Very

10. How safe do you feel talking to the doctor/healer/nurse about your illness?

(1) Not at all                      (2) A little                      (3) Somewhat                      (4) Very

**DETERMINING YOUR NUTRITIONAL HEALTH**

Now I am going to ask you about your health and what you eat.

1. Do you have an illness or condition that makes you change what and/or how much food you eat?  
YES                      NO
2. Do you eat less than 2 meals per day?  
YES                      NO
3. Do you eat few fruits or vegetables or milk products?  
YES                      NO
4. Do you have 3 or more drinks of beer, liquor, or wine almost every day?  
YES                      NO
5. Do you have tooth or mouth problems that make it hard for you to eat (e.g. thrush)?  
YES                      NO
6. Do you always have enough money to buy the food you need?  
YES                      NO
7. Do you eat alone most of the time?  
YES                      NO
8. Do you take 3 or more different prescribed medicines a day?  
YES                      NO
9. Have you have noticed that your clothes fit differently, e.g. they are smaller or bigger than usual? Are you losing/gaining weight?  
YES                      NO
10. Are you sometimes not physically able to shop, cook, and/or feed yourself?  
YES                      NO
11. Are you usually full after a meal?  
YES                      NO
12. How many meals do you eat per day? \_\_\_\_\_
13. How many cups/glasses of water, tea, juices or coffee do you have per day? \_\_\_\_\_
14. Do you regularly take multi-vitamins?  
YES                      NO

### **COPE QUESTIONNAIRE**

*Directions for individuals who disclosed HIV:* The next items are about ways that you have been dealing with your HIV and other problems related to this illness. Think about some of the problems that you have had related to your HIV since Easter. Each of these items says something about some way of coping or dealing with a problem. I want to know how often you've been doing each of the following things to deal with HIV-related problems.

### **OR**

*Directions for individuals who did not disclose HIV:* The next items are about ways that you deal with problems in your life. Think about some of the worst problems that you have been dealing since Easter. Each of these items says something about some way of coping or dealing with a problem. I want to know how often you've doing each of the following things to deal with the problems you've just thought of. I don't need to know if these things help you or not. I just want to know how often you've been doing these things.

Response options for both:    **1) NEVER    (2) SOMETIMES    (3) OFTEN    (4) ALWAYS**

1. You've been concentrating your efforts on doing something about the situation that you are in. \_\_\_\_\_
2. You've been getting comfort and understanding from someone (other than God/Ancestors) \_\_\_\_\_
3. You've been saying to yourself that the problem isn't real. \_\_\_\_\_
4. You've been turning to work or other activities to take your mind off of the problem. \_\_\_\_\_
5. You've been using alcohol or other drugs to make yourself feel better. \_\_\_\_\_
6. You've been trying to come up with a plan about what to do. \_\_\_\_\_
7. You've been giving up trying to deal with the problem. \_\_\_\_\_
8. You've been saying things to let your unpleasant feelings out. \_\_\_\_\_
9. You've been thinking hard about what steps to take. \_\_\_\_\_
10. You've been getting emotional support from other people. \_\_\_\_\_
11. You've been trying to see it in a different light, to make it seem more positive. \_\_\_\_\_
12. You've been refusing to believe that the problem happened. \_\_\_\_\_
13. You've been making fun of the situation. \_\_\_\_\_

14. You've been looking for something good in what's happening. \_\_\_\_\_
15. You've been doing something to think about it less (e.g., watching TV, sleeping, reading). \_\_\_\_\_
16. You've been accepting the reality of the fact that it has happened. \_\_\_\_\_
17. You've been doing something to try and make the situation better. \_\_\_\_\_
18. You've been learning to live with it. \_\_\_\_\_
19. You've been expressing your negative feelings. \_\_\_\_\_
20. You've been making jokes about it. \_\_\_\_\_
21. You've been trying to find comfort in your religious or spiritual beliefs. \_\_\_\_\_
22. You've been giving up trying to cope. \_\_\_\_\_
23. You've been praying or talking to ancestors. \_\_\_\_\_
24. You've been trying to keep your feelings to yourself and not let others know  
how difficult things are. \_\_\_\_\_
25. You've been trying to ignore your emotions about the stressful situation. \_\_\_\_\_

### **RELIGIOUS/SPIRITUAL BELIEFS**

1. Do you have religious/spiritual beliefs?  
 1) YES                      2) NO  
  
 b. If yes, what are your beliefs? (e.g. Christianity, ancestors, Sangomas, witches)
  
2. Think about other people in your community. Compared to them, how religious/spiritual are you?  
  
 1) Not at all              2) A little              3) Somewhat              4) Very
  
3. Think about other people in your community. Compared to them, how much does religion/spirituality help you in your life?  
  
 1) Not at all              2) A little              3) Somewhat              4) Very
  
4. How often do you participate in religious activities alone/by yourself? (e.g. prayer, meditation, talking to ancestors)  
  
 1) About once a Year    2) About once a Month    3) About once a week    4) About every day
  
5. How often do you participate in religious activities with other people? (e.g. prayer group, Church, bible study, religious ceremonies)  
  
 1) About once a Year    2) About once a Month    3) About once a week    4) About every day
  
6. In what ways does religion/spirituality help in your life? *Don't read list, but circle all that apply.*  
  
 Social Support (e.g. companionship)  
  
 Practical Support (e.g. food, clothing, money)  
  
 Problem Solving (e.g. advice, counseling)  
  
 Emotional Soothing (e.g. comfort, hope, strength, chanting/dancing to feel better, feel loved)  
  
 Personal Growth (e.g. makes me a better person- patient, moral, kind)  
  
 Other (*please describe*)

### **ADULT LIFE STRESSOR CHECKLIST**

Some people experience things in life that do not happen to most people. These things can be very upsetting and would make nearly everyone feel afraid or upset (for example: being raped or seeing someone die). We would like to ask you whether any of these kinds of things have happened to you and how upset you were by them. Tell me **YES** if the thing happened to you or **NO** if it did not happen to you. Then, if it did happen to you, tell me how much it upset you.

**1 = NOT AT ALL; 2 = A LITTLE; 3 = SOMEWHAT; 4 = VERY**

|  | <i>Happened</i> |     | <i>How upset were you</i> |     |     |     |
|--|-----------------|-----|---------------------------|-----|-----|-----|
|  | NO              | YES | (1)                       | (2) | (3) | (4) |
| 1. You told the police to take one of your family members to jail  |                 |     |                           |     |     |     |
| 2. You saw a serious accident or injury and felt helpless or afraid (e.g. a bus/car/taxi accident)                 |                 |     |                           |     |     |     |
| 3. You were in a serious accident and felt helpless or afraid  |                 |     |                           |     |     |     |
| 4. You were adopted or put up for adoption   |                 |     |                           |     |     |     |
| 5. Your parents separated or divorced while you lived with them  |                 |     |                           |     |     |     |
| 6. You were separated or divorced  |                 |     |                           |     |     |     |
| 7. You went to jail  |                 |     |                           |     |     |     |
| 8. You were physically sick  |                 |     |                           |     |     |     |
| 9. You had emotional problems (e.g., thought about killing yourself)   |                 |     |                           |     |     |     |
| 10. You were emotionally abused/hurt (e.g., teased, told you were useless, punished unfairly, shouted/screamed at) |                 |     |                           |     |     |     |
| 11. You were physically neglected (e.g., not given food or clothes, left alone when sick)                          |                 |     |                           |     |     |     |



|   |    |     |     |     |     |     |
|---|----|-----|-----|-----|-----|-----|
| 12. You had an abortion or lost your baby   | NO | YES | (1) | (2) | (3) | (4) |
| 13. You were separated from your child for a long time when you did not want to be  | NO | YES | (1) | (2) | (3) | (4) |
| 14. You had or have a child with physical or emotional problems or a child who is different from other children (e.g. hard for them to understand things) | NO | YES | (1) | (2) | (3) | (4) |
| 15. Your child died   | NO | YES | (1) | (2) | (3) | (4) |
| 16. Someone you loved/were close to (but not your child) died suddenly/unexpectedly (e.g., murder, heart attack)  | NO | YES | (1) | (2) | (3) | (4) |
| 17. You saw family violence (e.g., hitting, punching, kicking)  | NO | YES | (1) | (2) | (3) | (4) |
| 18. You saw someone not in your family get beaten up, shot, or stabbed and felt helpless or scared  | NO | YES | (1) | (2) | (3) | (4) |
| 19. You've been mugged, robbed, or attacked (not raped) by someone you did not know   | NO | YES | (1) | (2) | (3) | (4) |
| 20. You've been attacked (hit, kicked, beaten up) by someone you knew (boyfriend, husband, parent)  | NO | YES | (1) | (2) | (3) | (4) |
| 21. Someone physically forced you to have sex but you did not want to   | NO | YES | (1) | (2) | (3) | (4) |
| 22. Someone made you/forced you to have sex by threatening or bribing you (e.g. giving or taking away a job)  | NO | YES | (1) | (2) | (3) | (4) |
| 23. You were forced to live with in laws and they treated you badly   | NO | YES | (1) | (2) | (3) | (4) |

### **SEXUAL RELATIONSHIP POWER SCALE**

1. Are you currently in a relationship? YES NO

**IF YES**

- a. What is your current relationship status? (*Circle One*)

Married and living with husband  
 Married and not living with husband  
 Living with a boyfriend  
 Have a boyfriend but not living with him

- b. How long have you been in this relationship? \_\_\_\_\_

**IF NO**

- a. Think about your most important relationship. What kind of relationship was it? (*Circle One*)

Married and living with husband  
 Married and not living with husband  
 Living with a boyfriend  
 Have a boyfriend but not living with him

- b. How long have you been in this relationship? \_\_\_\_\_

Now I am going to ask you some questions about how things go at home and about you and the person you identified above. *\*Read as past tense if referring to past relationship.*

Response choices:    (1) NEVER    (2) SOMETIMES    (3) OFTEN    (4) ALWAYS

1. If I asked my husband/boyfriend to use a condom, he would hurt me.  
       (1)      (2)      (3)      (4)
2. If I asked my husband/boyfriend to use a condom, he would get angry.  
       (1)      (2)      (3)      (4)
3. Most of the time, we do what my husband/boyfriend wants to do.  
       (1)      (2)      (3)      (4)
4. My husband/boyfriend won't let me wear certain things.  
       (1)      (2)      (3)      (4)
5. When my husband/boyfriend and I are together, I keep quiet.  
       (1)      (2)      (3)      (4)

6. My husband/boyfriend decides how we use the money.  
(1) (2) (3) (4)
7. My husband/boyfriend tells me who I can see or who can come to the house.  
(1) (2) (3) (4)
8. If I asked my husband/boyfriend to use a condom, he would think I'm having sex with other people.  
(1) (2) (3) (4)
9. I want to leave my husband/boyfriend, but I can't.  
(1) (2) (3) (4)
10. My husband/boyfriend does what he wants, even if I do not want him to.  
(1) (2) (3) (4)
11. This relationship is more important to me than to my husband/boyfriend.  
(1) (2) (3) (4)
12. When my husband/boyfriend and I fight, he usually gets his way.  
(1) (2) (3) (4)
13. My husband/boyfriend gets more out of our relationship than I do.  
(1) (2) (3) (4)
14. My husband/boyfriend always wants to know where I am.  
(1) (2) (3) (4)
15. My husband/boyfriend might be having sex with someone else.  
(1) (2) (3) (4)

**Response choices:**

(1) YOUR HUSBAND/BOYFRIEND; (2) BOTH OF YOU TOGETHER; (3) YOU

16. Who usually decides when you have sex? (1) (2) (3)
17. Who usually decides what you do together? (1) (2) (3)
18. Who usually decides how often you see each other? (1) (2) (3)
19. Who usually decides when you talk about serious things? (1) (2) (3)
20. In general, who do you think has more power in your relationship? (1) (2) (3)
21. Who usually decides if you use condoms? (1) (2) (3)
22. Who usually decides what you do in bed? (1) (2) (3)

**SOCIAL RESOURCES AND SUPPORT QUESTIONNAIRE**  
**(FAMILY)**

Now we are going to talk about family members in your life who are helpful to you.

- (1) Never**
- (2) A few times a year**
- (3) About once a month**
- (4) About once a week**
- (5) Nearly every day.**

1. How many people in your family are you close to? \_\_\_\_\_
2. How often do you usually see them?  
(1) (2) (3) (4) (5)
3. How often are you usually able to get advice from them?  
(1) (2) (3) (4) (5)
4. How often are you usually able to get criticism or praise from them about things in your life?  
(1) (2) (3) (4) (5)
5. How often are you usually able to have fun and visit with these family members?  
(1) (2) (3) (4) (5)
6. How often are you usually able to get help from them about specific problems in your life?  
(1) (2) (3) (4) (5)
7. How often do you feel that your family members understand your problems?  
(1) (2) (3) (4) (5)

**The response options are changing to:**

- (1) Not at all**
- (2) A little**
- (3) Somewhat**
- (4) Very**

8. How satisfied are you with the advice that you get from them?  
(1) (2) (3) (4)

9. How satisfied are you with the criticism or praise that you get from them about things in your life?  
(1) (2) (3) (4)
10. How satisfied are you with the amount of fun and visiting that you have with these family members?  
(1) (2) (3) (4)
11. How satisfied are you with the help that you receive from family members about specific problems in your life?  
(1) (2) (3) (4)
12. Do you think your family members understand your problems?  
(1) (2) (3) (4)

### **HIV STIGMA SCALE-COMMUNITY**

This questionnaire asks about how people with HIV are viewed and treated by people in your community. We are not asking about your own beliefs, but about what people in your community believe and do.

|       |           |       |        |
|-------|-----------|-------|--------|
| Never | Sometimes | Often | Always |
| 1     | 2         | 3     | 4      |

In your community....

1. most people with HIV/AIDS are rejected when others know they are infected.
2. people will touch people with HIV/AIDS. (e.g. shake hands, hug)
3. people with HIV/AIDS are isolated or shunned.
4. people tell individuals with HIV/AIDS that they deserve it because of how they lived.
5. people with HIV/AIDS are physically tortured (e.g., pulling out nails, whipped, beaten).
6. people with HIV/AIDS avoid friendships, rather than tell people that they are infected.
7. most people think that a person with HIV/AIDS is disgusting.
8. people would not drink from the same tap as someone with HIV/AIDS.
9. people with HIV/AIDS are treated like outcasts and outsiders.
10. people can see the good things about people with HIV/AIDS.
11. if an employer is choosing between someone who has HIV/AIDS or doesn't have HIV/AIDS, the person without HIV/AIDS gets the job.
12. people with HIV/AIDS lose their jobs when their boss finds out about their disease.
13. people with HIV/AIDS are branded or marked so everyone knows that they have HIV/AIDS.
14. people with HIV/AIDS should not touch/hold other peoples' babies.
15. people on public or private transport would not sit next to someone with HIV/AIDS.
16. people would be upset if someone with HIV/AIDS moved in next door to them.
17. people with HIV/AIDS are killed and murdered.
18. people feel that people with HIV/AIDS are bewitched.
19. people would not buy things from a street vendor with HIV/AIDS.
20. it's safe for people to tell others that they have HIV/AIDS.

**SOCIAL RESOURCES AND SUPPORT QUESTIONNAIRE**  
**(NON-FAMILY)**

Now we are going to talk about people in your life who are helpful to you.

- (1) Never**
- (2) A few times a year**
- (3) About once a month**
- (4) About once a week**
- (5) Nearly every day**

1. How many special friends do you have, who are not family? \_\_\_\_\_
2. How often do you usually see them?  
 (1)            (2)            (3)            (4)            (5)
3. How often are you usually able to get advice from them?  
 (1)            (2)            (3)            (4)            (5)
4. How often are you usually able to get criticism or praise from them about things in your life?  
 (1)            (2)            (3)            (4)            (5)
5. How often are you usually able to have fun and visit with these friends?  
 (1)            (2)            (3)            (4)            (5)
6. How often are you usually able to get help from them about specific problems in your life?  
 (1)            (2)            (3)            (4)            (5)
7. How often do you feel that your friends understand your problems?  
 (1)            (2)            (3)            (4)            (5)

**The response options are changing to:**

- (1) Not at all**
- (2) A little**
- (3) Somewhat**
- (4) Very**

8. How satisfied are you with the advice that you get from them?  
 (1)            (2)            (3)            (4)
9. How satisfied are you with the criticism or praise that you get from them about things in your life?  
 (1)            (2)            (3)            (4)

10. How satisfied are you with the amount of fun and visiting that you have with these friends?  
(1)            (2)        (3)        (4)

11. How satisfied are you with the help that you receive from friends about specific problems in your life?  
(1)            (2)        (3)        (4)

12. Do you think your friends understand your problems?  
(1)            (2)        (3)        (4)



## COMMUNITY RESOURCES

Directions: I'm going to ask you about some services and activities that communities sometimes provide for people.

1. What Government Offices or Organizations provide assistance in your community? (e.g. police, department of social welfare)

| <u>Service</u> | <u>How often Used?</u><br>(Never, A few times a year,<br>About once a month, About once<br>a week) | <u>How helpful was it?</u><br>(Not at All, A Little,<br>Somewhat, Very) | <u>If not used, why not</u><br>(No Need, Transport, Money<br>Childcare, Not Welcome) |
|----------------|--|---|--|
|----------------|--|---|--|

2. What Religious Offices or Organizations provide assistance in your community? (e.g. church, choir, prayer group, bible study)

| <u>Service</u> | <u>How often Used?</u><br>(Never, A few times a year,<br>About once a month, About once<br>a week) | <u>How helpful was it?</u><br>(Not at All, A Little,<br>Somewhat, Very) | <u>If not used, why not</u><br>(No Need, Transport, Money<br>Childcare, Not Welcome) |
|----------------|--|---|--|
|----------------|--|---|--|

3. What Clinics or NGOs provide healthcare assistance in your community? (e.g. home care/hospice, health centers, HIV/AIDS programs)

| <u>Service</u> | <u>How often Used?</u><br>(Never, A few times a year,<br>About once a month, About once<br>a week) | <u>How helpful was it?</u><br>(Not at All, A Little,<br>Somewhat, Very) | <u>If not used, why not</u><br>(No Need, Transport, Money<br>Childcare, Not Welcome) |
|----------------|--|---|--|
|----------------|--|---|--|

4. What Mental Health Offices or Organizations provide assistance in your community?  
(e.g. counseling center, support groups, trauma centers)

| <u>Service</u> | <u>How often Used?</u>   | <u>How helpful was it?</u>                | <u>If not used, why not</u>                           |
|----------------|--|---|---|
|                | (Never, A few times a year,<br>About once a month, About once<br>a week) | (Not at All, A Little,<br>Somewhat, Very) | (No Need, Transport, Money<br>Childcare, Not Welcome) |

5. What Social Services/Activities provide assistance in your community (e.g. community recreation/centers, social clubs, youth centers, YMCA, athletic fields/activities, library, adult education programs)

| <u>Service</u> | <u>How often Used?</u>   | <u>How helpful was it?</u>                | <u>If not used, why not</u>                           |
|----------------|--|---|---|
|                | (Never, A few times a year,<br>About once a month, About once<br>a week) | (Not at All, A Little,<br>Somewhat, Very) | (No Need, Transport, Money<br>Childcare, Not Welcome) |

6. Are there any other offices or organizations that provide assistance in your community?

| <u>Service</u> | <u>How often Used?</u>   | <u>How helpful was it?</u>                | <u>If not used, why not</u>                           |
|----------------|--|---|---|
|                | (Never, A few times a year,<br>About once a month, About once<br>a week) | (Not at All, A Little,<br>Somewhat, Very) | (No Need, Transport, Money<br>Childcare, Not Welcome) |

7. Of all the services we talked about, which would you say are the most helpful?

8. Overall, how satisfied are you with these services?  
(1) Not at All                      (2) A Little                      (3) Somewhat                      (4) Very

9. Overall, how involved are you with the services in your community?  
(1) Not at All                      (2) A Little                      (3) Somewhat                      (4) Very