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THE PSYCHOSOCIAL ADJUSTMENT OF BLACK SOUTH AFRICAN CHILDREN
OF HIV-INFECTED MOTHERS

by

FRANCES L. PALIN

Under the Direction of Lisa Armistead

ABSTRACT

Research from the U.S. suggests that maternal HIV-infection negatively impacts children's psychosocial functioning and that resources (e.g., the parent-child relationship) positively influence their adjustment to maternal HIV-infection. Although HIV-infection in South Africa is most prevalent among Black South African women, there is limited research examining its impact on their children. In addition, as these children are exposed to numerous socio-cultural stressors beyond those associated with HIV-infection, they are at particular risk for psychosocial difficulties.

This study had two aims: 1) to evaluate whether maternal HIV-infection confers risk for psychosocial difficulties (i.e., internalizing and externalizing behaviors) among Black South African children; and, 2) to examine potential protective resources for children of HIV-infected mothers that could ideally be addressed through appropriate community-level interventions. Three categories of resources were considered: material (familial economic stability); maternal (maternal psychological functioning; maternal social support); and, caregiving (the parent-child relationship; quality of the caregiver – co-caregiver relationship). Participants included women who self-identified as HIV-infected or non-infected and who were the biological mother of a child aged 11-16.

Results indicated that there were no psychosocial adjustment differences between the two groups of children. The lack of differences suggests that in the context of the constellation of stressors Black South African children face, maternal HIV-infection may not serve as a unique stressor for psychosocial adjustment difficulties. However, the lack of differences should not be construed to mean that a child whose mother is HIV-infected is not affected his/her mother's diagnosis. Maternal HIV-infection is a complex phenomenon that warrants further study among Black South African children.

The results did not illuminate any resources that were particularly salient to the children of HIV-infected mothers; rather, variables salient to all children were identified, notably economic stability, maternal depression, family social support, the parent-child relationship, and conflict in the mother- co-caregiver relationship. Given the overall risk present in the lives of Black South African children beyond maternal HIV-infection, it appears important to address the needs of all children. This study provides important information about individual and family-level variables that could be emphasized in family interventions with the population as a whole.

INDEX WORDS: HIV-Infection, South Africa, Children's Psychosocial Adjustment

THE PSYCHOSOCIAL ADJUSTMENT OF BLACK SOUTH AFRICAN CHILDREN
OF HIV-INFECTED MOTHERS

by

FRANCES L. PALIN

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Doctor of Philosophy

in the College of Arts and Sciences

Georgia State University

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by

FRANCES L. PALIN

Major Professor: Lisa Armistead
Committee: Lindsey Cohen
Chris Henrich
Nadine Kaslow

Electronic Version Approved:

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College of Arts and Sciences
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The Psychosocial Adjustment of Black South African Children of HIV-Infected Mothers

PURPOSE OF THE STUDY

South Africa has one of the highest HIV-infection rates in the world (UNAIDS/WHO, 2005). Many of those infected are Black women (Fassin & Schneider, 2003). Investigations conducted in the U.S. (Dutra et al., 2000; Forehand et al., 1998; McBride, Paikoff, & Holmbeck, 2003) and African countries other than South Africa (Foster & Williamson, 2000; Wild, 2001) suggest that maternal HIV-infection has a negative impact on children's psychosocial adjustment. Moreover, given South Africa's unique sociocultural and political contexts, Black South African children are a particularly vulnerable population. Specifically, in addition to the challenges associated with maternal HIV-infection, these children face a number of stressors, such as poverty and crime (Barbarin & Richter, 2001a), which also place them at risk for psychosocial adjustment difficulties and vulnerability to HIV-infection. Research conducted in the U.S. suggests that resources, such as the quality of the parent-child relationship, positively influence children's psychosocial adjustment to living with an HIV-infected mother (Hough, Brumitt, Templin, Saltz, & Mood, 2003). Despite the prevalence of maternal HIV-infection in South Africa, and the current research elucidating the impact of HIV-infection on U.S. children, there is a lack of empirical examination with South African children. In particular, there is a need to identify protective factors for children of HIV-infected mothers.

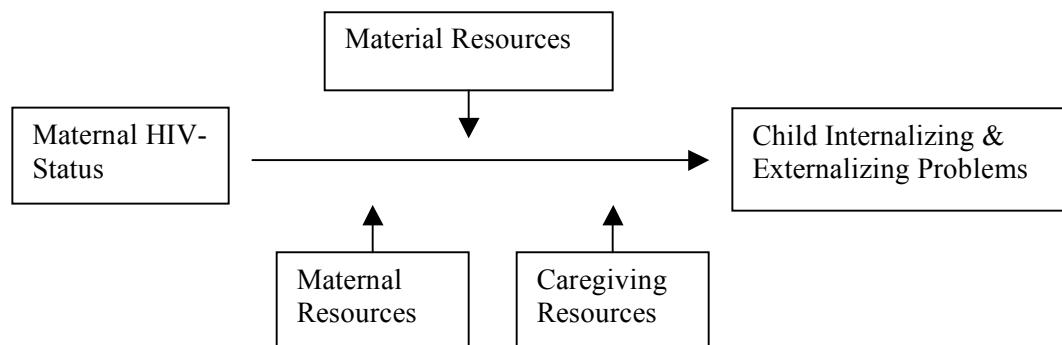
In this study, the psychosocial functioning of the children of a group of HIV-infected Black South African mothers and a demographically similar community control

sample were examined. The first aim was to investigate the impact of maternal HIV-infection on the psychosocial adjustment of children aged 11-16. Two domains of child functioning were assessed: internalizing problems (i.e., anxiety, depression, and withdrawal) and externalizing problems (i.e., delinquent and aggressive behavior). The second aim was to examine potential moderators as resources of the proposed relationship between maternal HIV-infection and children's psychosocial adjustment. Specifically, three categories of resources were addressed: material (familial economic resources); maternal (maternal psychological functioning and maternal social support); and caregiving (the parent-child relationship and the quality of the caregiver – co-caregiver relationship). Refer to Figure 1 below. The overall goal of this study was to identify protective resources for 11-16 year old children of HIV-infected mothers. Ideally, these resources can be directly addressed through appropriate interventions.

The 11-16 age range was chosen for several reasons. Given considerable developmental differences between children of various ages, it is important to focus on children who fall within a relatively constrained age range. Moreover, significant changes in children's behavior often occur during the transition to adolescence, and family stress (e.g., maternal HIV-infection) may have differential effects on pre-adolescent children as compared to adolescents (Compas et al., 1994; Links, Boyle, & Offrod, 1989). Furthermore, early adolescence is a stage during which children appear more vulnerable to stressors (Wierson & Forehand, 1992). Lastly, it is during this age range that children begin to experiment with their sexuality (Armistead, Kotchick, & Forehand, in press), which could be associated with the risk of engaging in unsafe sexual behaviors and

exposure to HIV. Although careful consideration was made in the selection of the age range of the children in the study, it is possible that the impact of the various study variables on children's psychosocial adjustment will differ as a function of children's age. As such, child age was considered in two- and three-way interactions in the study hypotheses. This strategy allows for a better understanding of how protective functions may differ as a function of child age. The rationale for focusing on mothers exclusively was based on the higher HIV-infection rates among Black South African women as compared to their male counterparts (Center for the Study of AIDS, 2003), and information indicating that Black South African women are more often the primary caregivers of children (Barbarin & Richter, 2001a).

Figure 1.
Proposed Model



HIV IN THE SOUTH AFRICAN CONTEXT

Prevalence

It is estimated that approximately 6.29 million South Africans were infected with HIV by the end of 2004 (Department of Health, 2004). Based on data collected from antenatal clinic attendees, in 2004 HIV prevalence rates ranged from 15.4 to 40.7, depending on the geographical location surveyed (Department of Health, 2005). The impact of mortality has been significant. Specifically, the Medical Research Council of South Africa estimates that in 2004, 70% of all deaths among South Africans, ranging in age from 15-49, were due to AIDS (South African Medical Research Council & Actuarial Society of South Africa, 2004). As a result of AIDS, the population growth rate in South Africa is projected to decrease in excess of 75%. In addition, South Africa's life expectancy is projected to decrease from approximately 56 years to 48 years (UNAIDS, 1999). HIV is most prevalent among Black South Africans and is spreading most rapidly among Black women (Douglas, 2000). Prevalence rates among women vary by age, with the highest prevalence among 25-29 year olds [38.5%] and the lowest among those under 20 [16.1%] (Department of Health, 2005). Black South African women have higher prevalence rates than their male counterparts for various reasons. Women's biological systems make them more vulnerable to HIV-infection; men have more control over the use of condoms; and women's socioeconomic status make them dependent on men (Center for the Study of AIDS, 2003).

Social and Environmental Stressors

When addressing the effects of HIV-infection on Black South African children, it is important to consider the South African sociocultural context. Black South Africans constitute the majority of the South African population (i.e., approximately 80%) (Outwater, Abrahams, & Campbell, 2005). In addition, Black South Africans face the long-term effects of the apartheid system. Apartheid or “separate development” was “a system of selective development through which Whites became entitled to all the benefits and protections the state could provide, and Blacks were tolerated only to the extent that they served the economic interests of the White minority” (Barbarin & Richter, 2001a, p. 25). 1994 marked the end of apartheid system, yet undeniably not the end of the social, psychological, and economic effects of the system (Barbarin & Richter, 2001a). For instance, many Black South Africans continue to experience poverty, overcrowding, limited access to healthcare services, poor housing quality, unemployment, health threats (e.g., Tuberculosis), inadequate facilities (e.g., running water, sanitation, and electricity), and inadequate nutrition (Barbarin & Richter, 2001a). In addition, in the region of 41% of the adult population is illiterate (van Niekerk, 2001).

Approximately 40% of South’s Africa’s total population is under the age of 18, and as many as 60% of these children live in poverty (Smart, 2003). A recent estimate of unemployment among Black South Africans is 37%, and more than 50% of the South African population lives below the poverty line, most of whom are Black South Africans (USAID, 2005). Black South African women, in particular, are the poorest, least educated, and most economically marginalized of all racial groups in South Africa

(Barbarin & Richter, 2001a). Social and environmental stressors make these women particularly vulnerable to HIV-infection, as well as compromise their ability to cope with the disease. As a result, their children often face cumulative and multiple stressors above and beyond those related to maternal HIV-infection. In addition, the relations between the various stressors faced by children of HIV-infected women could be construed as interdependent and synergistic.

A recent longitudinal study (Birth-to-Ten: BTT) was conducted in South Africa to obtain systematic observations of the physical and psychosocial development of more than 3,000 non-White children from infancy through age 10 (Barbarin & Richter, 2001a). These children are representative of the first generation of children born after the demise of the apartheid system (Barbarin & Richter). In addition, an important long-term objective of this investigation is to look at ways in which Black children living in urban townships in South Africa and African American children living in urban areas of the U.S. are similar and different (Barbarin & Khomo, 1997).

The BTT study suggests that the typical Black South African child is mildly to moderately under-nourished (Barbarin & Richter, 2001a). Furthermore, between 30 and 60% of non-White children under the age of 14 are underweight and stunted in growth (Barbarin & Richter, 2001a). Stunted growth is not only implicated in children's health status, but also in their psychological and social development (Barbarin & Richter, 2001a). As part of the BTT study, the Child Behavior Checklist (CBCL: Achenbach & Edelbrock, 1991) was administered to the cohort. Fourteen percent of the children scored above the clinical cutoff range on the anxious-depressed scale, and 28% on the aggressive

behavior scale. These findings are significant as less than 10 to 12% of a non-clinical sample of children in the U.S. usually obtain clinically elevated scores (Jouriles, Spiller, Stephens, McDonald, & Swank, 2000), and suggest that a large proportion of Black South African children demonstrate psychosocial difficulties as early as age 5. Given evidence for the continuity of early onset aggression and oppositional difficulties among children, these psychosocial difficulties have the potential to worsen (Barbarin & Richter, 2001a).

Poverty and unstable community environments have been related to the CBCL findings (Barbarin & Richter, 2001a). Indeed, poverty has been associated with increased rates of internalizing and externalizing problems among children in the U.S. (e.g. Capaldi & Patterson, 1994; Felner et al., 1995; Gore, Aseltine, & Coldon, 1993; McLoyd, 1998; Valez, Johnson, & Cohen, 1989). In addition, poverty that is chronic and /or occurs early in children's development exerts worse and more pervasive effects on their functioning (Barbarin, 1999) than poverty that is intermittent or occurs later in development. Furthermore, poverty and HIV-infection often go hand-in-hand. Specifically, the loss of income of an ill parent, together with additional expenses incurred as a result of the illness, often increase the level of poverty in the home (Wild, 2001). Economic deprivation, in turn, directly affects factors such as access to food, schooling, and health care (Wild, 2001). Moreover, poverty leads to increased vulnerability to HIV-infection among children as a result of sexual exploitation and commercial sex work (Foster, 1998).

Exposure to violence (e.g. war and political strife, perceptions of neighborhoods as dangerous, witnessing family conflict) is also associated with increased rates of internalizing and externalizing problems among children (e.g. Cairns & Dawes, 1996; Osofsky, Wewers, Hann, & Fick, 1993; Reinherz et al., 1993). Exposure to violence is an important aspect of Black South African children's social context. Indeed, South Africa is described as one of the most violent countries in the world, with widespread crime and interpersonal violence (Outwater et al., 2005). Many factors are related to the high rates of violence (e.g., the aftermath of apartheid, high rates of unemployment, and the use of violence as a conflict resolution strategy), and authors suggest that violence has become normative and culturally accepted in South Africa (Outwater et al., 2005). Barbarin et al. (2001) found associations between violence (i.e., being a victim of, or indirectly experiencing, violent events such as robbery, sexual assault, murder, shooting, stabbing) and adverse child outcomes (attention problems, aggression, and anxiety-depression) among 6-year-old Black South African children from the BTT study.

Stigma

HIV-related stigma is another important stressor faced by HIV-infected mothers, as well as their children. In South Africa, as in the U.S., HIV is a highly stigmatized disease. In South Africa, stigma is particularly salient given its magnitude and the collectivist culture of many Black South Africans. According to the South African Department of Health (2002), HIV-infected women are stigmatized more than infected men. Specifically, HIV-infection among Black women has been associated with partner rejection, loss of social status, and reduced access to family economic resources (Jewkes,

Levin, & Penn-Kekana, 2003; Lawson, 1999). Mothers often are blamed by family members for their husband's HIV-infection and may be penalized by the removal of emotional and financial support (Ndlela, 2002). According to the South African National Council for Child and Family Welfare, due to HIV-infection, women have been abandoned by their families, labeled as witches, and killed (1999). Moreover, in Africa, the nuclear and extended family have traditionally served as a crucial social security system, whereby family members care for their sick and poor relatives (Foster, 2000). Abandonment by family members significantly compromises the care and support, as well as the assistance with childcare responsibilities, that HIV-infected women could receive (Ntozi, 1997).

RESEARCH WITHIN THE SOUTH AFRICAN CONTEXT

Protective Factors

In the process of understanding HIV-infection and its impact on South African children, it is important to identify factors that may protect children. Protective factors are conceptualized as variables that moderate the negative consequences of risk on individuals (Masten, 2001). Moreover, when examining protective factors it is important to address multiple contexts in children's lives (Luthar et al., 2000). Specifically, protective factors can be conceptualized as community-level influences (e.g. community-based interventions), family-level influences (e.g. the parent-child relationship), and child-level influences (e.g. social skills). Another important perspective to consider when addressing protective factors is the ecological-transactional model (Luthar et al., 2000). According to this model, individuals are nested in a number of contexts or levels, such as

family or culture (Cicchetti & Lynch, 1993), and the contexts most proximal to the child (e.g. family) likely exert the most significant effects on the outcomes in question (Cicchetti, Toth, Maughan, 2000). Aspects of these theoretical perspectives have been used to guide the hypotheses generated for this study.

In terms of risk, it can be argued that HIV-infection and the current sociocultural milieu in South Africa represent a context of significant adversity for Black mothers and their children. In this study, maternal HIV-infection will be considered a risk for children if they experience compromised psychosocial adjustment (i.e., increased levels of internalizing and externalizing symptoms) in the context of maternal HIV-infection. Given that Black South African children are exposed to numerous risks beyond maternal HIV-infection (e.g., poverty and violence), it is important to assess whether maternal HIV-infection serves as a risk for these children given their current socioeconomic context.

In this study, the various resource categories (i.e., material, maternal, and caregiving) will be construed as main effects if they are associated with lower levels of internalizing and externalizing symptoms for all children, regardless of maternal HIV-infection. In other words, these variables will not serve to moderate the association between maternal HIV-infection and children's psychosocial adjustment, but rather have a direct positive effect on child functioning regardless of mothers' HIV status. In contrast, the various resource categories will be conceptualized as protective factors (i.e. moderators) if children's psychosocial adjustment is better at higher levels of the respective resource only in the context of maternal HIV-infection. Given the overall risk

present in the lives of Black South African children, it is possible that the various resource categories may be beneficial for all children, regardless of maternal HIV-infection. However, it is also possible that the resource categories may have differential impacts on children of HIV-infected and non-infected mothers respectively.

Focusing on protective factors in this study is considered important for two main reasons. First, the current sample hails from a population with limited access to resources, and is one that could be construed as vulnerable based on a significant cycle of risk. Through the identification of protective factors for children of HIV-infected mothers, community-based organizations can implement interventions that aim to enhance child functioning in the context of maternal HIV-infection. By means of such interventions, children of HIV-infected mothers may experience more positive outcomes and less risk for HIV-infection, thereby decreasing the number of new HIV-infections in South Africa. In addition, although Black South African children are seen as vulnerable to developing psychosocial difficulties as a result of their context and specific risk factors such as poverty, research suggests that not all children living in these conditions develop psychosocial difficulties (Barbarin et al., 2001b), which speaks to the role of protective factors.

IMPACT OF MATERNAL HIV-INFECTION ON CHILDREN

The Psychosocial Functioning of Black South African Children

With the aim of identifying what Black South African parents view as “disordered emotional and behavioral processes in children”, the BTT study developed prototypes of child dysfunction by means of focus groups with parents (Barbarin & Richter, 2001a, p.

123). Four prototypes were generated from the focus groups: the disobedient child; the impulsive/aggressive child; the emotionally fragile/withdrawn child; and, the immature child. This study will address behaviors that overlap with the first three prototypes.

The disobedient prototype is similar to the DSM-IV's oppositional defiant disorder (Barbarin & Richter, 2001a). For this prototype, parents emphasized the importance of compliant, self-controlled, and quiet children, and viewed disobedience not only as behavior that could place children at risk for harm in their communities; but also emphasized its association with the "shame of violating cultural expectations" (Barbarin & Richter, 2001a, p. 124). More than 10% of the BTT children were rated as oppositional (Barbarin & Richter, 2001a). The impulsive/aggressive prototype can be seen as compatible with elements of the DSM-IV's attention deficit hyperactivity disorder and conduct disorder. A core element of this prototype is loss of control. These children display angry outbursts, temper tantrums, and are aggressive towards others (Barbarin & Richter, 2001a). Other elements include impulsivity, irritability, explosiveness, and low frustration tolerance. By age 5, one in five children demonstrated aggression, and about one in twenty children displayed both aggression and impulsivity (Barbarin & Richter, 2001a).

The emotionally fragile/withdrawn prototype includes children who are unsure of themselves, hypersensitive to criticism, and in frequent need of reassurance. Other elements included excessive emotionality, social isolation and crying and whining easily. This prototype can be seen as compatible with elements of the DSM-IV's generalized anxiety disorder and major depressive disorder. Parents endorsed the emotionally

fragile/withdrawn prototype much less frequently (i.e., less than one in fifty children).

The core element of the immature prototype is an underlying problem that is biological or neuropsychological in nature. This prototype occurred in about 4% of the BTT sample at age 5 (Barbarin & Richter, 2001a), and will not be considered in the current study.

The four prototypes developed appear compatible with Western frameworks of child problem behaviors (Barbarin & Richter, 2001a). Contrary to the Western world, however, Africans are more likely to consider failing to honor their ancestors, or being unable to meet expectations of family or society, as explanations for adjustment problems among children (Barbarin & Richter, 2001a). According to the BTT authors, differences may exist in the ways in which Black South African parents interpret disorders among children, and the emphasis they place on specific problem behaviors (Barbarin & Richter, 2001a). Specifically, Black South African parents appear to place more importance on behavioral self-regulation, as opposed to emotional self-regulation. Specifically, they described behaviors such as impulsivity, aggression, disobedience, shy-withdrawn behavior, and immaturity as problematic, and tended to underemphasize internal emotional states such as anxiety and sadness (Barbarin & Richter, 2001a).

Prior to addressing the psychosocial functioning of Black South African children in the context of maternal HIV-infection, it is important to compare their psychological functioning in the context of social risks, such as poverty and family structure, to that of African American children for two main reasons. First, there is a dearth of empirical literature on the psychosocial functioning of Black South African children. Thus, for this study, literature from the U.S. is utilized to generate hypotheses for the South African

context. Comparative studies will provide important information on differences and similarities between African American children and Black South African children (Barbarin, 1999), and will provide a better understanding of the “quality and normalcy of their behavioral, emotional, or social development” (Barbarin & Richter, 2001a, p. 222). Second, given the cultural trends highlighted above, locating comparative studies of African American children and Black South African children could facilitate culturally competent research with the latter (Barbarin, 1999).

As part of the BTT study, cross-national data were obtained from 6-year-old South African, Ugandan, and African American children in order to examine whether children who share social risks (e.g., poverty) show similar developmental effects (Barbarin & Richter, 2001a). Findings suggest that South African children are more likely than African American children to come from larger households and have a grandmother in the home. In addition, the socioeconomic status of African American children was somewhat better than South African children.

Findings related to psychosocial adjustment (i.e., anxiety/depression; immaturity; oppositional behavior; hyperactivity; and social problems) indicated that the African American children scored higher than the South African children for most symptoms (i.e., anxiety, nervousness, sadness, disobedience at home and school, temper tantrums, concentration problems, being confused, complaining about love, dependence, clinging to an adult, and crying for no reason), with African American boys at highest risk for emotional and behavioral problems. South African children, on the other hand, were rated significantly higher on individual symptoms related to social and behavioral adjustment

(i.e., breaking the rules, bullying, destroying others' possessions, not being liked, and demanding attention). South African boys scored slightly higher than South African girls for anxiety, hyperactivity, and social problems. Larger gender differences were evident for oppositional behavior, with South African boys scoring higher than girls. These findings led to the conclusion that young African American children appear more at risk for psychosocial adjustment difficulties than South African children. Specifically, in early childhood, African American children seem more at risk for internalizing problems, whereas South African children appear to be at greater risk for socially disruptive behavior (Barbarin & Richter, 2001a). Barbarin (1999) postulates that these trends may, in part, relate to the culture of violence in South Africa, which provides children with a message that "violence and coercion are socially acceptable and sanctioned strategies for resolving interpersonal difficulties" (p. 1356).

Another conclusion from the BTT study is that poverty does not appear to have the same adverse effects on South African children as it does on African American children (Barbarin & Richter, 2001a). According to Barbarin (1999), one hypothesis for South African children's apparent resilience, with respect to poverty, is the role of extended family. Indeed, grandmothers reside with mothers and children in 1 out of 3 households in South Africa, and only 1 in 5 households among African American families. It is possible that high rates of multigenerational households among South Africans create an environment in which South African children have more access to consistent adult guidance and nurturing than African American children (Barbarin). Another hypothesis relates to differences in the way in which South African parents rate

their children's behavior as opposed to African American parents. Specifically, South African parents are less likely than African American parents to endorse symptoms related to anxiety and sadness, and more likely to endorse symptoms related to observable and disruptive behaviors. Barbarin postulates that the differences in ratings may reflect the value Black South African parents place on compliance and obedience.

Because these studies were conducted with children in early childhood, they provide only limited information about the psychological functioning of adolescent children. However, they do provide valuable information about young Black South African children's psychosocial vulnerabilities within their sociocultural context, as well as culturally competent prototypes of disordered emotional and behavioral processes in Black South African children. In addition, these findings are considered salient given the continuity of early onset aggression and oppositional difficulties among children (Barbarin & Richter, 2001a).

Internalizing and Externalizing Problems

Associations between Gender and Children's Psychosocial Adjustment

Taking into account the transactional nature of the relations between child gender and internalizing and externalizing problems, many studies conducted in the U.S. have demonstrated gender differences in child psychopathology (Hoffmann, Powlishta, & White, 2004). Specifically, boys tend to exhibit more externalizing behavior problems, such as conduct disorder, aggression, and delinquency, whereas girls tend to demonstrate more internalizing behavior problems, such as anxiety, depression, and somatic complaints (e.g., Allgood-Merten, Lewinsohn, & Hops, 1990; Horwitz & White, 1987;

Huselid & Cooper, 1994). In addition, research also suggests that gender and age interact, with pre-pubertal boys, as compared to girls, displaying somewhat higher rates of depressive symptoms. This trend then shifts in puberty for both boys and girls, with girls showing evidence of higher rates of depressive symptoms as compared to both younger girls and same-age boys, and boys' scores dropping slightly as compared to younger boys and same-age girls (Angold, Erkanli, Silberg, Eaves, & Costello, 2002). Similar to patterns in the U.S., research in South Africa suggests that boys tend to display more disruptive and oppositional behaviors. However, in early childhood, no differences are evident between boys and girls in terms of internalizing problems (Barbarin & Richter, 2001a), perhaps because depression and anxiety are less likely to be perceived by parents.

Maternal HIV-Infection and Children's Psychosocial Adjustment

Studies conducted in the U.S. and other African countries indicate that maternal HIV-infection has a negative impact on child psychosocial functioning. Specifically, empirical data from the U.S. suggests that children of mothers who are HIV-infected demonstrate higher levels of both internalizing (i.e., anxiety and depression) and externalizing (i.e., aggression and delinquency) problems compared to children of non-infected mothers. Specifically, Forehand et al. (1998) conducted a study looking at the psychosocial adjustment of inner-city African American children (6-11 years old) and their HIV-infected mothers, as compared to a control group. Results from this study indicated that, compared to national averages, both groups of children had elevated levels of behavior problems. However, children with HIV-infected mothers demonstrated more internalizing and externalizing problems than children in the control group. These

findings indicate that for 6-11 year-old inner-city African American children, maternal HIV-infection is significant stressor above and beyond other stressors faced by this population (Forehand et al., 1998).

Another study conducted with a similar sample examined the psychosocial functioning of children, also aged 6-11 years, with HIV-infected mothers who were either asymptomatic, symptomatic, or diagnosed with AIDS (Dorsey et al., 1999a). Child reports of internalizing and externalizing difficulties demonstrated that difficulties increased as a function of the mothers' stage of illness. Mothers' reports, on the other hand, indicated increases in both types of problems in the symptomatic phase, and decreases of these problems in the AIDS stage. Researchers have also reported serious behavior problems among adolescents of HIV-infected parents (e.g., acting out, fighting, insubordination, concentration difficulties) (Draimin, Hudis, & Segura, 1992). No specific gender differences were noted in any of the above U.S. studies.

With respect to Africa, there are limited data that examine associations between maternal HIV-infection and children's psychosocial adjustment. One study conducted in Uganda revealed that most children with HIV-infected parents felt hopeless and angry when their parents became ill, and reported being scared that their parents would die (Foster & Williamson, 2000). In another study conducted in Zambia, 82% of caregivers of children noted changes in the children's behavior. It is not clear whether the caregivers themselves were HIV-infected or whether another caregiver in the child's life was HIV-infected. However, this study indicated that in response to an HIV-infected caregiver, children became worried, sad, no longer played outside, instead trying to help in the

home. In addition, as compared to controls, children were more likely to appear miserable or distressed, be fearful of new situations, and become solitary. No differences in externalizing behaviors were noted (Poulter, 1997).

Summary

Although there is a lack of research in South Africa, existing research indicates the likelihood of similar associations between maternal HIV-infection and child psychosocial adjustment difficulties among Black South African children. As such, it is possible that HIV-infection among Black South African mothers will affect their children in the domains of both internalizing and externalizing problems.

POTENTIAL PROTECTIVE RESOURCES FOR CHILDREN OF HIV-INFECTED MOTHERS

Material Resources

Familial Economic Resources

Impact of HIV on Familial Economic Resources

There is a lack of empirical research in South Africa on the role of HIV-infection in restricting familial economic resources. However, studies do indicate that HIV-infection impacts various kinds of material resources, and culminates in, for example, loss of assets, and decreased income and productive capacity (Center for AIDS Development, 2002). Research also suggests that women and children, in rural and poor households, suffer the most from the socioeconomic effects of HIV/AIDS, especially in terms of decreased nutrition and loss of assets (Center for AIDS Development, Research and Evaluation, 2002). A recent report regarding community-based HIV/AIDS care and

support programs in South Africa was developed by means of a focus group and individual interviews with 21 individuals living with HIV/AIDS in an urban township near Pretoria, South Africa's capital city (Russell & Schneider, 2000). Issues raised by the participants included living in desperate poverty, having no financial resources, as well as no opportunities for employment given their recurrent illness, and lack of food. In addition, reports from Southern Africa indicate that HIV-infection impacts the ability of individuals to obtain food, as they may be too weak to walk to markets, work, or farm their fields (UNAIDS, 2003). A qualitative study in Africa also indicated that HIV-infected women were concerned about poverty and its effects on their ability to provide their children with food (Brouwer, Lok, Wolffers, & Sebgalls, 2000). Moreover, research suggests that the loss of income of an ill parent, together with additional expenses incurred as a result of the illness, are associated with an increase in the level of poverty in the home (Wild, 2001).

Impact of Reduced Familial Resources on Children's Psychosocial Adjustment

Research in the U.S. indicates that poverty is associated with increased rates of both internalizing and externalizing problems among children (Achenbach & Rescorla, 2001). Specifically, both emotional and conduct problems are more common among poor versus non-poor children (Siegel & Gorey, 1994), with more evidence linking poverty to conduct problems than emotional problems (e.g., McLoyd, 1998). In addition, the recent longitudinal study in South Africa suggests that children who experience hunger also experience higher levels of anxiety and depression (Barbarin & Richter, 2001a).

HIV-infection and its impact on familial economic resources also influences children's psychosocial adjustment by means of its impact on access to developmentally appropriate tasks, such as attending school, as well restructuring of family roles. Indeed, reports from Southern Africa indicate that as a result of HIV/AIDS, young people (especially girls) are withdrawn from school in order to care for the sick or work for extra income (UNAIDS, 2003), with children as young as 10 having been known to work in an attempt to cope with a parent's illness (UNAIDS, 1999). Research conducted in the U.S. suggests that changes in family roles as a result of living with an HIV-infected individual are potentially the most stressful aspects for children (Roth, Siegel, & Black, 1994).

Summary

Although there are no data specifically looking at the impact of familial economic resources on Black South African children's psychosocial adjustment in the context of HIV, given the data cited, it seems possible that children living with an HIV-infected mother who have access to higher levels of material resources will fare better than children in families with fewer material resources.

Maternal Resources

There is evidence that HIV-infection impacts maternal resources, such as psychological functioning and social support (e.g., Clesla, & Roberts, 2001; Hough et al., 2003). In addition, research indicates that a mother's psychological functioning and level of social support influence the psychosocial adjustment of her child(ren) (e.g., Hough et al.). Two aspects of maternal resources will be addressed in this study: maternal depression and social support.

Maternal Psychological Functioning

HIV-Infection and Depression

Research findings reveal that depression is very prevalent in high density, township areas of Southern Africa (Jelsma et al., 2001; Jelsma et al., 2002). In addition, findings from the BTT study indicate high rates of maternal depression among single-adult female-headed South African households, which are related, in part, to high levels of poverty (Barbarin & Richter, 2001a).

Meta-analyses of studies in the U.S. indicate that depression is a common psychiatric sequelae of HIV/AIDS (Clesla & Roberts, 2001). In addition, research on depression in the context of HIV also highlights that infected women who are depressed are significantly less likely to use ARVs and to adhere to ARV treatment regimes (Cook et al., 2004). Depression has also been associated with poorer self-reported health among HIV-infected women (Jones, Beach, Forehand, & the Family Health Project Research Group, 2001), and predicts mortality and CD4 decline (Ickovicks et al., 2001). On the whole, these findings suggest that depression has the potential to significantly compromise an HIV-infected mother's emotional and physical functioning.

Several studies conducted in Africa, or with individuals born in Africa and currently living abroad, reveal significant relationships between HIV-infection and depressive symptoms. For instance, Wilk and Bolton (2002) conducted interviews in Uganda and found that participants described two depression-like syndromes resulting from the HIV epidemic. The authors concluded that the local people recognized depression and also considered it a relevant outcome of the HIV epidemic. Another study

conducted with HIV-infected women in Zimbabwe highlighted the importance of access to counseling given that periods of depression return frequently (Krabbendam, Kuijper, Wolffers, & Drew, 1998). In addition, a study conducted in London indicated that Black African HIV-infected individuals were more likely to suffer from major depression than controls (Malanda, Meadows, & Catalan, 2001).

Two recent studies conducted in South Africa also demonstrate associations between HIV-infection and depression. One study conducted among HIV-infected individuals (58% of whom were of African descent) illuminated several factors that increased risk for depression among recently diagnosed HIV/AIDS patients. Specifically, being female, experiencing a greater degree of distress from negative life events (e.g., unemployment and poverty), and having higher rates of functional disability (in the domains of work, family, and social life) increased the risk for a diagnosis of major depressive disorder (Olley, Seedat, Nei, & Stein, 2004). Another study conducted with Black South Africans found high prevalence rates of depression among the participants, all of whom were in advanced stages of AIDS, not receiving ARVs, and living in a resource poor area (Hughes, Jelsma, Maclean, Darder, & Tinise, 2004).

Given the existing empirical support for associations between HIV-infection and depression in Africa, specific studies from the U.S. will not be drawn on. However, one study from the U.S. seems important to emphasize given the socioeconomic context of South African women. Specifically, this prospective study followed 350 African American, Latina, and European American women over a 6-month period to assess, among other variables, the relation of HIV-status and chronic burden (e.g., financial

problems, housing problems, caregiving difficulties, and exposure to crime) to depression (Gurung, Taylor, Kemeny, & Myers, 2004). Results reveal that HIV-infected women were significantly more depressed than HIV-negative women. However, chronic burden was a better predictor of changes in depression over the 6-month period than HIV-status. In addition, HIV-status and chronic burden interacted, such that HIV-infected women who also reported higher levels of chronic burden demonstrated the highest increases in depressed mood. Given the socioeconomic environment of Black South African women, it is possible that the high levels of socioeconomic stressors these women experience may enhance associations between HIV-infection and depression.

Impact of Maternal Depression on Children's Psychosocial Adjustment

There is extensive research in the U.S. highlighting the negative impact of maternal depression on children's adjustment, from infancy through adolescence (Goodman & Gotlib, 1999). Specifically, children of depressed mothers are at increased risk for major depression, anxiety disorders, conduct disorders, and attention deficit disorders (Beardslee, Bemporad, Keller, & Klerman, 1983; Billings & Moos, 1983; Conners, Himmelhock, Goyette, Ulrich, & Neil, 1979). Moreover, there is evidence that parental depression is a more important predictor of later child psychopathology than other risk factors, such as low family cohesion and parent-child discord (Fendrich, Warner, & Weissman, 1990). A few studies suggest that maternal depression may have differential effects on children as a function of their gender; specifically, pre-adolescent boys may be more at risk for behavioral problems, whereas adolescent girls are more at risk for depression (Cummings & Davies, 1994).

Although no research looking at associations between maternal depression and child functioning in South Africa could be located, research conducted in the U.S. has shown that a mothers' emotional distress in the context of HIV-infection negatively impacts her child(ren). For instance, a study conducted with HIV-infected mothers and their 6 to 11-year-old children found that maternal depression negatively influences family cohesion and sociability, decreases mothers' abilities to engage in typical daily tasks, and increases children's responsibilities for household tasks (Murphy, Marelich, Dello Stritto, Swendeman, & Witkin, 2002), indicating that parenting skills may be affected by maternal depression in the context of HIV-infection.

Another study, conducted by Hough et al. (2003) explored a model of mother-child coping and adjustment to HIV focused on urban, low-income, HIV-infected African American women and one of their seronegative children between the ages of 7 and 14. In this study, maternal levels of emotional distress - which included depression - directly predicted children's problem behaviors (i.e., internalizing and externalizing problems) based on both child and mother reports. In addition, the mean scores for the internalizing and externalizing problem scales on the CBCL were compared to normative means. The children in this sample had significantly more internalizing and externalizing problems than a normative non-clinical group, but less than a clinical sample. Furthermore, both the boys and girls in this sample had higher scores on the externalizing versus the internalizing scale.

Summary

HIV-infection and maternal depression have been associated with children's adjustment. As such, it seems plausible that Black South African children with HIV-infected mothers who are less depressed will fare better than those children whose mothers have higher rates of depression.

Maternal Social Support

HIV-Infection and Social Support

Social support is defined as instrumental, informational, and/or emotional assistance from other individuals (Dunkel-Schetter & Bennett, 1990), and is an indication of social resources individuals can access in times of need (McCarty & McMahon, 2003).

The U.S. based literature consistently demonstrates the beneficial effects of social support on HIV-infected women's emotional distress (Hough et al., 2003). For instance, it is well established in the literature that increased social support predicts lower levels of depression (e.g., Demi, Bakeman, Moneyham, & Sowell, 1997). In addition, studies indicate that higher levels of social support in the context of HIV-infection are associated with increased positive states of mind (Turner-Cobb et al., 2002), which refers to positive mood, focused attention, productivity, responsible caretaking, and sharing (Gonzalez et al., 2004). Social support has also been associated with improved health status among HIV-infected individuals. Specifically, some researchers have found associations between increased social support and improved immune system functioning and fewer physical symptoms (e.g., Burgoyne, 2005; Namir, Alumbaugh, Fawzy, & Wolcott, 1989; Turner, Hays, & Coates, 1993). Moreover, others have found positive associations

between the quality of perceived social support and adherence to ARV treatments (e.g., Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000). Klein et al. (2000b) conducted a study with low-income HIV-infected African American mothers and their 6 to 11-year-old children. Results indicated that HIV-infected mothers reported receiving less support from neighbors and friends than controls. In addition, lower levels of social support from neighbors and friends were associated with higher levels of psychological distress among mothers.

Research conducted in African countries indicates that HIV-infection leads to a breakdown in non-family social support and withdrawal from existing social networks. For instance, one study revealed that as a result of the shame and guilt associated with AIDS, families isolated themselves from social support (Osei-hwedie, 1994). Another study undertaken in Zimbabwe that assessed the quality and impact of a counseling program for HIV-infected women found that most women did not disclose their HIV-status to relatives. Moreover, these women reported that the support groups were important for overcoming isolation and providing a place to share experiences and feelings (Krabbendam et al., 1998).

Focus groups conducted with people living with HIV/AIDS in South Africa reveal several important themes related to social support. Specifically, participants reported experiencing isolation from others, lack of close friends, rejection and loss of family support, self-exclusion from services (e.g., support groups) because of fear of stigmatization, and social withdrawal in order to protect themselves and their families from stigmatization and discrimination (POLICY, Center for the Study of AIDS, USAID,

& Department of Health, 2003). In addition, a recent study conducted with a rural sample of HIV reactive patients examined, among other variables, self-disclosure and social support. At the 5-month follow-up after post-test counseling, only 36% of participants had disclosed their HIV status. In addition, in this study, social support was significantly related to disclosure of HIV-status, with those who had disclosed reporting more social support than those who had not (Sethosa, & Peltzer, 2005). Furthermore, in the recent report looking at community-based HIV/AIDS care and support programs in South Africa, individuals living with HIV/AIDS expressed their reluctance to disclose their HIV-status outside the confines of the support groups. The participants also reported how being involved in support groups having given them a “new lease on life” (Russell & Schneider, 2000, p. 16). They noted the importance of being able to interact with others, know that they are not alone, and share with individuals also affected by the illness.

Impact of Maternal Social Support on Children’s Psychosocial Adjustment

Research conducted in the U.S. suggests that an important way in which maternal social support impacts children’s psychosocial adjustment is through its association with mothers’ psychological functioning. Specifically, McCarty and McMahon (2003) looked at maternal social support as a potential mediator of the relation between maternal depressive symptoms in early childhood and child psychological outcomes in preadolescence. The authors found that less maternal social support mediated the relationship between maternal depressive symptoms and internalizing disorders among children, with no differences between boys and girls. Hough and colleagues (2003) found that higher levels of maternal social support, in the context of maternal HIV-infection,

were associated with less maternal emotional distress. In addition, lower levels of maternal emotional distress were, in turn, associated with lower levels of both internalizing and externalizing symptoms among children.

Summary

Although no studies could be located that specifically address the potential protective role of maternal social support for the psychosocial adjustment of Black South African children, the research presented above suggests the likelihood that children whose mothers have higher levels of social support will fare better than children whose mothers have lower levels of social support. It is likely that higher levels of maternal social support will be protective for both children of HIV-infected and non-infected mothers. However, given the associations between maternal HIV-infection, depression, and social support, it is possible that maternal social support will be more protective for children living with an HIV-infected mother.

Caregiving Resources

Maternal HIV-infection occurs within the context of a family structure (Dorsey et al., 1999b), and can contribute to family dysfunction and stress (e.g., Forehand, Klein, Kotchick, & Watts Chance, 1996). According to Mann and colleagues (1992, p. 196), “AIDS threatens more than the capability of a household to function as an economic unit, the entire social fabric of the family is potentially disrupted or dissolved.” There is empirical evidence that children with better caregiving resources may be buffered from the negative effects of HIV (e.g., Hough et al., 2003). As such, two caregiving resources

are examined in this study: the parent-child relationship and the quality of the mother- co-caregiver relationship.

Parent-Child Relationship

HIV-Infection and the Parent-Child Relationship

The study of parenting in the context of HIV-infection must take into account challenges unique to HIV/AIDS, such as fulfilling day-to-day tasks while suffering from a terminal illness, and loss of social and family support (Armistead & Forehand, 1995). Research in the U.S. suggests that one important way in which HIV-infection impacts parenting is an HIV-infected mother's ability to maintain a good relationship with her children. Specifically, HIV-infected mothers, as compared to non-infected mothers, are less likely to have positive parent-child relationships. For example, Kotchick and colleagues (1997) found that low-income African American HIV-infected mothers reported poorer mother-child relationship quality than non-infected mothers. Other empirical studies have found that HIV-infected mothers report more resentment towards their children (Semple, Patterson, Nannis, Grant, & the HNRC Group, 1995), as well as increased conflict with them (Andrews, Williams, & Neil, 1993; Rotheram-Borus, Robin, Reid, & Draimin, 1998). A study conducted with inner-city African American children between the ages of 11 and 16 found that maternal HIV-infection was associated with a poorer parent-child relationship, which was characterized by more indifference and hostility (Reyland, McMahon, Higgins-Delessandro, & Luthar, 2002).

Although there is a dearth of empirical studies in South Africa related to HIV-infection and parenting, focus groups conducted with Black South African mothers during the formative research for this study revealed the importance mothers place on demonstrating love to their children through actions and modeling, as well communication between mothers and children (Armistead, 2003). These mothers conveyed that their parenting is compromised in numerous ways when they are ill. Specifically, they noted that they are more likely to avoid their parenting responsibilities, shout and be irritable, and feel less able to love their children (Armistead). Information from these focus groups suggests that maternal HIV-infection negatively impacts the parent-child relationship and warrants empirical research.

Impact of the Parent-Child Relationship on Children's Psychosocial Adjustment

A positive parent-child relationship has been shown to moderate the negative effects of a wide range of family stressors on children's psychosocial functioning (e.g., Klein, Forehand, Armistead, & Brody, 1994), and has been studied as a family process that contributes to resiliency among high-risk children (Klein et al., 2000a). A recent study conducted with low-income African American families exposed to a combination of socioeconomic risk factors (e.g., stressful life events, maternal HIV-status, mother's psychological distress, and perceived economic stress) found significant associations between a positive parent-child relationship and lower levels of depressive mood and disruptive behavior among the children (Klein et al., 2000a). In addition, the findings indicated that the parent-child relationship is beneficial for all children exposed to a combination of socioeconomic risk factors, and not just for those children at the highest

levels of risk, suggesting that this family process serves more as a resource than a protective factor.

Research suggests that one way children cope with stressful events is to seek social support from their parents (Rossman, 1992). Authors suggest that children who do not view their mothers as supportive may develop feelings of inadequacy and insecurity, which put them at risk for developing internalizing problems (McCarty & McMahon, 2003). In addition, it is postulated that children who feel less close to their mothers may be more likely to exhibit externalizing behavior problems. Specifically, as these children may be less likely to internalize their mother's standards of behavior, they may be less able to control their own behavior (Stice, Barrera, & Chassin, 1993).

Many empirical studies in the U.S. have demonstrated that a poor mother-child relationship is associated with internalizing and other problem behaviors in children with HIV-infected parents (e.g., Dutra et al., 2000; Kotchick et al., 1997). For instance, Kotchick et al. (1997) studied low-income African American HIV-infected mothers and found that the quality of the mother-child relationship was associated with both internalizing and externalizing problems. A recent study with low-income African American children and their HIV-infected mothers highlighted that children's psychosocial adjustment is affected by the quality of their relationships with their parents (Hough et al., 2003). Children who felt more supported by their mothers were better able to cope with maternal HIV-infection and its associated stressors and to maintain a positive relationship with their mother. No studies could be identified looking at

associations between compromised parenting and children's psychosocial adjustment among Black South African children.

Many mechanisms have been proposed to explain the impact of HIV on parenting, most of which are yet to be studied. For instance, Kotchick et al. (1997) proposed that mothers who are HIV-infected may be parenting less effectively as a direct result of their physical condition. In addition, parenting may be affected by other factors such as maternal depression, loss of social support, and stigma. These authors suggest that multiple pathways are likely involved in the association between compromised parenting and children's psychosocial adjustment.

Summary

The parent-child relationship is associated with both maternal HIV-infection and children's psychosocial functioning. Although there is no research among Black South Africans examining the impact of HIV-infection on parenting and children's functioning, research from the U.S. indicates that a good parent-child relationship may serve to buffer the negative effect of maternal HIV-infection on these children. As such, it is possible that children who have a better relationship with their mothers will fare better than those children who have a poor relationship with their mothers.

Quality of the Caregiver – Co-Caregiver Relationship

Role of Extended Family in the African Culture

In most African cultures, traditional life is characterized by patrilineal kinship systems whereby family members depend on each other for economic purposes and in times of crisis (Foster, 2000). Indeed, according to Okediji (1975, p. 93) “an institution at

the core of African cultural patterns is the extended family, which subsumes the total of how an African man relates to himself, his immediate family, his relatives, and other social beings and things in his environment.” Moreover, in traditional African culture, “there is no such thing as an orphan” given the sense of responsibility and duty of extended family members towards each other (Foster, 2000, p. 55). Although factors such as Westernization have led to changes in the traditional African extended family network, extended family networks remain an important aspect of Black South African children’s lives (Barbarin & Richter, 2001a). For instance, according to the BTT study, grandmothers reside in one out of every 3 BTT households (Barbarin & Richter, 2001a).

Maternal HIV-Infection and Co-Caregivers

Maternal HIV-infection affects children’s functioning within the context of families in two important ways. First, it is suggested that HIV-infection may compromise a mother’s ability to meet the physical and emotional needs of her children (Fair, Spencer, Wiener, & Riekert, 1995). This is particularly salient during the advanced stages of the illness, which are associated with an increase in physical symptoms, depression, and cognitive difficulties (e.g., Lyketsos et al., 1996). Thus, additional caregivers are important as they may mitigate the effects of HIV-infection on children’s functioning through their ability to assist with child-care responsibilities (Pequenay & Bray, 1997). Second, in order to respond to terminal illness among caregivers, roles among family members often need to be reorganized (Fair et al., 1995). For instance, as a result of HIV-infection, children in Africa often assume the responsibility of taking care of adults and siblings, which interferes with their ability to engage in developmentally appropriate

tasks, such as attending school (Mullins, 2000; Muminovic, 2000). In the U.S., authors suggest that changes in family roles as a result of living with an HIV-infected individual are potentially the most stressful aspects for children (Roth, Siegel, & Black, 1994). Additional caregivers may serve as resources for children living with an HIV-infected mother as they may allow children to maintain their respective family roles, and continue their involvement in developmentally appropriate tasks, such as schooling. However, given that some co-caregiving relationships can be conflictual rather than supportive (e.g. Jones, Beach, Forehand, & Foster, 2003), it is critical to consider not just whether a co-caregiver is present but the nature of the parent-co-parent relationship.

Co-Caregivers and Children's Psychosocial Adjustment

According to Garmezy (1983), support from family members and adults outside of the family serve as important protective factors for children by decreasing the potentially detrimental effects of chronic stressors on them. An important component of children's resilience in the face of adversity is the number of adults who provide them with stable and long-term commitments, with a high ratio of nurturing adults being particularly important to children's behavioral and emotional functioning (Barbarin & Richter, 2001a). Research from the BTT cohort suggests that high rates of multigenerational households among South Africans create an environment in which South African children have more access to consistent adult guidance and nurturing than African American children, which could account for their increased resilience in the face of social risks such as poverty (Barbarin, 1999, p. 1353). In addition, the BTT study indicates that the presence of grandmothers in the home protects against aggression in

children, and children who live in extended households are less likely than children living in single-adult households to display temper tantrums (Barbarin & Richter).

Although no empirical work in South Africa related to other significant caregivers in the context of maternal HIV-infection was identified, one group of researchers in the U.S. have addressed whether or not having other caregivers in the home may mitigate the effects of maternal HIV-infection on children's adjustment. This study indicated that among African American families (living in conditions of high rates of poverty and crime), children of women in advanced stages of HIV did not display more adaptive psychosocial adjustment with additional adults residing in the home (Dorsey et al., 1999b). In other words, the presence of another adult / the parent-co-parent relationship did not moderate the illness-child functioning relationship. The authors suggested that the lack of significant findings could relate to the emphasis they placed on co-residence. Specifically, assistance from other adults who did not reside in the home was not considered. In addition, they indicated that additional adults in the home could be associated with added problems, such as economic or health problems. This finding makes sense in the light of the BTT study that suggests that Black South African children living with their mothers and male partners were more likely to experience hunger than children living with their single mothers and grandparents (Barbarin & Richter, 2001a). In addition, a prospective study examining the role of family stress and depressive symptoms among HIV-infected African American women concluded that although extended family may serve as an important source of support for some women, it may also be a "significant and often overlooked source of stress" (Jones et al., 2003, p. 594).

Summary

The findings from South Africa suggest that grandmothers in the home serve a protective function for South African children. In addition, the U.S. findings highlight the role of extended family caregiving as both positive and negative. Given these findings, it seems feasible that supportive co-caregivers, whose presence does not result in additional stress to the family, could mitigate the negative effects of maternal HIV-infection on children's psychosocial functioning. In addition, these results highlight the importance of assessing both the support and conflict that co-caregivers may bring to children and their mothers.

SPECIFIC AIMS AND HYPOTHESES

Given the lack of empirical research on the impact of maternal HIV-infection in South Africa, this study was considered exploratory in nature. Based on existing research conducted in the U.S. and African countries the following aims and hypotheses were proposed.

Aim 1 and Hypothesis 1

The first aim was to investigate the impact of maternal HIV-infection on the psychosocial adjustment of children aged 11-16. Two domains of child functioning were considered: internalizing problems (i.e., anxiety, depression, and withdrawal) and externalizing problems (i.e., delinquent and aggressive behavior). Specifically, for Aim 1, it was proposed that maternal HIV-infection serves as a significant *risk* for psychosocial adjustment problems in these children (i.e., results in increased levels of both internalizing and externalizing problems).

Aim 2 and Hypothesis 2

The second aim was to examine the variables of the resource categories as potential protective factors (i.e. moderators) of the proposed relationship between maternal HIV-infection and children's psychosocial adjustment. Specifically, three categories of resources were considered: 1) material: familial economic resources; 2) maternal: maternal psychological functioning and maternal social support; and, 3) caregiving: the parent-child relationship and the quality of the caregiver- co-caregiver relationship.

For Aim 2, it was hypothesized that the various resource categories would serve as protective factors (i.e. moderators) of the proposed relationship between maternal HIV-infection and children's psychosocial adjustment. Specifically, it was hypothesized that:

- 1) material resources: higher levels of familial economic resources would be associated with lower levels of internalizing and externalizing problems in the context of maternal HIV-infection;
- 2) maternal resources: lower levels of maternal depression and higher levels of family and non-family social support would be associated with lower levels of internalizing and externalizing problems in the context of maternal HIV-infection;
- 3) caregiving resources: a better parent-child relationship and more support, and less conflict in the caregiver- co-caregiver relationship would be associated with lower levels of internalizing and externalizing problems in the context of maternal HIV-infection.

Furthermore, according to the ecological-transactional model, the contexts most proximal to the child (e.g. family) would exert the most significant effects on the outcomes in question. As such, of the resource categories addressed in this study, those most proximal to the children (e.g., the parent-child relationship) could be more likely to exhibit main effects (i.e., be beneficial to all children, regardless of maternal HIV-status) as opposed to protective effects (i.e., benefit only children of HIV-infected mothers). However, given the exploratory nature of this study and the lack of research in this domain, no specific hypotheses related to this model were made.

Statistical Analyses for Aims 1 and 2

In order to address Aims 1 and 2, six hierarchical multiple regression analyses were conducted, one for each resource category (i.e., material, maternal, and caregiving) for both outcome variables (internalizing and externalizing symptoms) with maternal HIV-infection as the independent variable. Specifically, the blocks of the regression analyses were as follows:

- block 1: relevant demographic variables and child age;
- block 2: maternal HIV status;
- block 3: centered terms of each variable of the relevant resource category (i.e., material, maternal, or caregiving);
- block 4: two-way interactions between child age and centered terms of each variable of the relevant resource category (i.e., material, maternal, or caregiving) and maternal HIV status;

- block 5: two-way interactions between maternal HIV status and the centered terms of each variable of the relevant resource category (i.e., material, maternal, or caregiving);
- block 6: three-way interactions between child age, maternal HIV status and the centered terms of each variable of the relevant resource category (i.e., material, maternal, or caregiving).

Although careful consideration was made in the selection of the age range of the children in the study, it is possible that the impact of the various study variables on children's psychosocial adjustment differ as a function of children's age. As such, child age was considered in two- and three-way interactions in the study hypotheses. This strategy would allow for a better understanding of how the effects of the proposed protective factors may differ as a function of child age.

If the hypotheses of Aim 1 were supported, there would be a direct effect for maternal HIV status on children's psychosocial adjustment (i.e., levels of internalizing and externalizing problems). If there were no direct effects, the analyses would suggest that maternal HIV-infection does not serve as a *risk* for this sample's psychosocial adjustment.

If the hypotheses of Aim 2 were supported, there would be significant interactions between maternal HIV status and the various variables of the three resource categories. These results would suggest that the relevant variables of the resource categories serve as protective factors (i.e. moderators) for children in the context of maternal HIV-infection,

and are associated with lower levels of internalizing and externalizing symptoms. In addition, for the resource categories that have more than one variable, the standardized regression coefficients were examined to determine: 1) which variables are significantly related to the outcome variables; and, 2) which of these variables has the strongest relationship to the outcome variables.

Significant interaction effects were explicated at the mean and 1 standard deviation above and below the mean for the HIV-infected and non-infected groups. In addition, simple slope analyses were performed for each level of the moderator in question in order to evaluate whether the simple slope differs from zero. If no significant interactions were revealed, but significant main effects for the various variables of the resource categories were found, this would imply that the various resource category variables are helpful for all children, regardless of whether their mother has been diagnosed with HIV.

METHOD

Participants

The participants for this study are part of a larger investigation of HIV-infection and parenting in South African mothers. The larger project is funded by the National Institute of Child Health and Human Development (NICHD) and the National Institute of Mental Health (NIMH) and was conducted by Georgia State University and the University of Pretoria in South Africa. Participants for this larger study consist of two groups: a) women who self-identified as HIV-infected (HIV-infected caregivers), and b) women who self-identified as HIV-negative (non-infected caregivers). The caregivers are

not necessarily the child's biological mother and can be, for example, a stepmother, grandmother, or aunt. Only the caregivers who self-identified as the child's biological mother were included in the current study

Selection Criteria

For the larger study, the selection criteria for both HIV-infected and non-infected caregivers were: a) caregiver of at least one child between the ages of 11 and 16; and, b) the child had to reside with the caregiver. If a caregiver had more than one child who fell in the appropriate age range, the caregiver reported on the oldest child in the age range of 11-16.

Exclusion Criteria

Participants were excluded from this study if they reported any non-HIV-related potentially terminal illness (e.g., cancer). Participants reporting medical conditions such as hypertension and tuberculosis were not excluded.

Assessment of HIV-Infection Status

Women's HIV-status was established through their self-report during the interview. Given this strategy, it is possible that women who are HIV-infected, yet unaware of their status, or women who denied a known HIV diagnosis, will fall into the control group. It is also possible that women with other non-HIV-related illnesses will be in the control group. In order to address this potential confound, women in the control group who obtained z-scores greater than 2.0 (indicating a significant amount of physical symptoms) on the measure of physical symptomatology (PSI) were excluded from analyses. Target children were not selected for the study based on their HIV-status;

however, mothers were asked whether or not their children had any significant medical conditions.

Sample Descriptives

Mothers in the total sample ($N = 225$) ranged in age from 24 to 53 years, with the mean age being 35.97 ($SD = 6.28$). Forty-six percent of the total sample endorsed never having been married and not living with a partner, and 40% had completed high school. The average number of people living in the home for the total sample was 5.5 ($SD = 2.19$). The average age for children in the total sample ($N = 225$) was 13.24 ($SD = 1.75$). Forty-nine percent of all children were male, and 51% were female. Based on mothers' report, 88% of the children had no significant health conditions, and 1.3% were HIV-infected. Refer to Tables 1 and 2 for sample descriptive information.

Measures

As Black South Africans have not often been the focus of quantitative research, there is a dearth of culturally relevant measures for this population. In order to utilize culturally relevant measures in this study, several steps were taken. First, meetings were held with key informants in South Africa to review each proposed measure for cultural competence and comprehensibility. As a result of these meetings, numerous changes were made to existing measures. Second, focus groups were conducted with individuals representative of our research participants in order to address the suitability of the study constructs. As a result of these focus groups, the constructs and measures were better conceptualized for the South African context. Third, the revised measures, as well as newly created ones, were piloted with women who were representative of the research

population of interest. The piloting also resulted in changes to the measures. Given the extent to which all measures were modified, where appropriate, measures were subjected to factor analyses and Cronbach's alphas were obtained.

In addition, in order for all measures to be available in three commonly spoken languages by the target population (i.e., English, Afrikaans, and Sotho), all measures were translated into Afrikaans and Sotho and subsequently back translated. In the back-translation technique (Brislin, 1970), the measure is translated from its source language (English) to the target language (Afrikaans and Sotho), and then translated back to the source language. The two versions are then compared to assess for equivalency. Two independent translators were used for both segments of the translation.

Demographic and Illness Measures

Demographic Information

The Household Economic and Social Status Index (HESSI: Barbarin & Khomo, 1997), created in South Africa, was used to provide demographic information for both mothers and children. This measure is composed of 21 items and assesses for information such as: a) maternal age, marital status, and educational level; and b) child age, gender, and health status. Additional information about this measure will be provided in the discussion of proposed moderators.

Medical Information

Women reported on their health status on the HESSI by identifying any major medical problems they were currently experiencing (e.g., HIV, diabetes, tuberculosis). Given the scope of the larger study, information about stage of illness (e.g. CD4 count)

was not obtained from the HIV-infected participants. All participants in the study reported on the physical symptoms they had experienced in the past year using the Physical Symptoms Inventory (PSI: Wahler, 1968). The PSI is a self-report measure of physical symptomatology, demonstrates adequate internal consistency and test-retest reliability (Wahler, 1973), and has been used in research with HIV-infected women (Family Health Project Research Group, 1998). This measure was modified to improve its assessment of symptoms associated with HIV-infection (e.g., vaginal discharge) by deleting 7 items and adding 4 items (Family Health Project Research Group, 1998). The modified version of the PSI was used in this study. Women were asked to rate how often each physical symptom has bothered them over the past year. Each item was rated on a 5-point scale; 1 = never; 2 = a few times a year, 3 = about once a month, 4 = about once a week, 5 = nearly every day. The 37-item measure was subjected to factor analysis. Given that 11 of the 37 items did not load at levels of 0.40 and above, 26 items were retained for the final measure. The total score for the measure is a combination of the 26 items. Possible scores range from 26 to 130, and higher scores indicate higher levels of physical problems. The co-efficient alpha for the current sample was 0.90.

Child Outcome Variables

Internalizing and Externalizing Symptoms

The Child Behavior Checklist (CBCL: Achenbach & Edelbrock, 1991) is a parent-report 113-item questionnaire that measures behavioral problems of children aged 4-18 over the preceding six months. This measure provides a total behavior problem score, two broad band dimensions (internalizing and externalizing), and several narrow

band dimensions. The internalizing scale is the sum of symptoms from the anxious-depressed, shy-withdrawn, and somatic complaints factors, and the externalizing scale from the delinquent and aggressive behavior factors. Each item is rated on a 3-point scale, 0 = not true, 1 = sometimes true, 2 = very often/often true. The reliability of the composite behavior problem scores (total problems, internalizing and externalizing) is high in U.S. samples, with internal consistency and one-week test-retest coefficients of $> .89$. In addition, this instrument demonstrates high concurrent correlations with related instruments and strong discriminant validity in U.S. samples (Achenbach & Edelbrock, 1991). Importantly, the CBCL was used in a large longitudinal study of Black South African children, and base rates of the prevalence of problematic child outcomes for these children have been established (Barbarin & Richter, 2001a). These base rates provide important preliminary guidelines for interpreting the data obtained in this sample. For this study, items from the internalizing and externalizing scales were used, and factor analyses were conducted separately for the two scales.

For the internalizing scale, the somatic complaints items were eliminated for analyses. Specifically, they did not load adequately (at 0.40 and above), and they overlap conceptually with symptoms associated with living in resource-poor areas. In addition, five of the items on the internalizing scale were eliminated due to translation errors during the back-translation process. The remaining eighteen internalizing items were subjected to a confirmatory factor analysis. Thirteen items loaded at 0.40 and above. A total score for the internalizing scale was created by summing these items. The total possible score for the internalizing scale ranges from 0 to 26, with higher levels

indicating higher levels of internalizing problems. The alpha co-efficient for this sample was 0.77.

For the externalizing scale, a confirmatory factor analysis was conducted with thirty-two of the thirty-three externalizing items. One item (i.e., sets fires) was excluded given feedback received from focus groups and piloting. Twenty-three of the thirty-two items loaded at 0.40 and above. A total score for the externalizing scale was created by summing these items. The total possible score for the externalizing scale ranges from 0 to 46, with higher scores indicating higher levels of externalizing problems. The co-efficient alpha for this sample was 0.87.

Proposed Protective Factors

Material Resources

In this study, a modified version of the HESSI was used to assess familial economic stability and the quality of a family's housing. The original HESSI combines multiple indicators of material resources available to South African households (Barbarin & Khomo, 1997). In developing this measure, the authors aimed to select indices that are relevant to families living in South African black townships, as well as develop an instrument that would be sensitive to important differences between the urban poor (Barbarin & Khomo, 1997). The authors collected their data for this instrument in cooperation with the Birth to Ten Study (BTT) (Barbarin & Richter, 1997). Most of the participants in the BTT sample live in Soweto and speak Zulu or Sotho. In addition, for the BTT sample, distributions of scores for variables such as social status, occupational status, housing, and consumption were consistent with those for representative samples of

urban Black South Africans (Barbarin & Richter, 2001a). The HESSI combines multiple indicators of material resources available to South African households, and assesses factors such as housing quality, number of consumer goods (e.g., refrigerator), financial assets, and adequacy of food supply (Barbarin & Khomo, 1997).

In this study, familial economic stability was composed of a number of factors such as the number of sources of income in the home, participation in a savings plan and/or funeral policy, and number of consumer goods (e.g., stove, refrigerator). A summary score was created by summing 20 dichotomously coded items. Scores for familial economic stability could range from 0 to 20, with higher scores indicating better economic stability.

Maternal Resources

Psychological functioning. The Center for Epidemiologic Studies Depression Scale (CES-D: Radloff, 1997) was used to assess symptoms of depression among caregivers. This measure consists of 20 items that address the presence and frequency of symptoms of depression during the past week. Each item is rated on a scale of 0 (rarely) to 3 (most of the time), with total scores ranging from 0-60. Higher scores indicate higher rates of depressive symptoms. The CES-D was developed by The National Institute of Mental Health to screen for clinical depression in community samples, and this measure is suggested for use with medically-ill populations (Derogatis, Fleming, Sudler, & DellaPietra, 1995). Many studies have demonstrated its validity and high internal consistency, as well as its test-retest reliability among ethnically diverse populations in the U.S., e.g., African Americans, Chinese, and Hispanics (Bromberger et al., 2004).

Moreover, this measure has been used with Black South Africans (Hughes et al., 2004). Four of the items were not used in this study, one due to its conceptual overlap with HIV-infection, and three others as they did not load at 0.40 and above during factor analysis. For this study, each item was rated on a scale of 1 (rarely) to 4 (most of the time) and the total score for the final measure was based on 16 items. Total scores could range from 16 to 64, with higher scores indicating higher levels of depression. The co-efficient alpha for the sample was 0.89.

Social support. Family and non-family social support was assessed using a modified version of the Social Resources and Social Supports Questionnaire (SRSQ: Myers, 1996). The original SRSQ consists of 3 subscales: social network, social supports, and social relationship stress. This measure was developed for use in research on the health and psychological wellbeing of African-Americans living in the U.S., and preliminary analyses indicate its reliability and validity (Myers, 1996). For the purposes of the larger study, this measure was modified substantially, and only the social network and social support scales were used. The social network scale assesses the number of people seen as significant by the respondent. The social supports scale assesses the degree of perceived satisfaction with the amount and quality of support provided to the respondent. In this measure, social support assesses five types of support: emotional, informational (advice), tangible aid, social/recreational support, and social feedback/guidance. For the present study, an index score was created from the social supports scale questions that assesses the respondent's degree of satisfaction with the quality of the five types of social support. Each item is rated on a 4-point scale, 1 = not at

all; 2 = a little; 3 = somewhat; 4 = very. Scores can range from 5 to 20, with higher levels indicating greater satisfaction with the quality of social support. The respondent was given two identical measures, one for family and one for non-family social support, the only difference being that for family social support, respondents only reported on family members, and for non-family social support, respondents only reported on non-family members. The alpha co-efficient for the family social support measure for this sample was 0.94, and for the non-family support measure 0.97.

Caregiving Resources

Parent-child relationship. The parent-child relationship was assessed using the Interaction Behavior Questionnaire (IBQ). This measure consists of 19 items that assess communication-conflict behavior between a mother and her child. Mothers are requested to think back over the past few weeks at home and respond to the various items by answering *yes* or *no*. Examples of items on this measure include: *most of the time, your child likes to talk to you; your child doesn't listen to what you say; and, your child is easy to get along with.* The IBQ demonstrates good internal consistency and discriminant validity in U.S. samples (Prinz, Foster, Kent, & O'Leary, 1979; Robin & Weis, 1980), and has been used in research with HIV-infected African American women in the U.S. (Kotchick et al., 1997). In this study, all 19 items were subjected to a confirmatory factor analysis. Twelve of the items loaded at 0.40 and above and were summed in order to create a total score for the measure. Total scores could range from 0 to 12, with higher scores indicating a better parent-child relationship. The co-efficient alpha for this sample was 0.74.

Quality of the caregiver – co-caregiver relationship. The Parenting Convergence scale (PC: Ahrons, 1979) was used to assess the quality of the relationship between the child's principal caregiver and co-caregiver. The PC scale is comprised of 11 items that assess three areas of the parent-co-parent relationship: communication, support, and conflict. In the current study, the mother is considered the primary caregiver of the child, and is asked to identify the second most important caregiver in the child's life (e.g., father, grandmother). Each item is rated on a 4-point scale: 1 = never, 2 = a little, 3 = a lot, and 4 = always. Examples of items include: *how often do you and ___ make important decisions together about your child's life; when you and ___ talk about how to raise your child, how often do you and ___ fight; and, how often would you say that ___ helps you raising your child.* Ahrons (1981) reports internal consistency estimates of .81 for the communication items, .75 for the support items, and .88 for the conflict items with U.S. samples. For this study, exploratory factor analyses were conducted with all of the items of the measure. All items loaded at 0.40 and above, and the analyses revealed two distinct factors, (i.e., communication/support, and conflict). A total score was created for each factor. The total score for the communication/support subscale was created by summing the 8 items that loaded on this factor, and the total scores on this subscale could range from 0 to 32. The total score for the conflict subscale was created by summing the 3 items that loaded on this factor, and the total score could range from 0 to 12. The co-efficient alpha for the sample for the communication/support subscale was 0.87, and for the conflict subscale, 0.60.

Procedure

Interviewer training

Three graduate students in Clinical Psychology conducted interviews in English or Afrikaans. For women preferring to be interviewed in a native language, two interviewers from South Africa who are proficient in both English and Sotho were recruited. All interviewers had experience working with HIV-infected individuals and were trained prior to data collection. The training comprised familiarizing the interviewers with the measures, preparing them for potential problems during data collection (e.g., a distressed participant), and practicing the interviews.

Recruitment

Participants were recruited from three communities in South Africa. Recruiters did not need to know the HIV-status of potential participants in order to schedule appointments for interviews. Women who expressed an interest in participating in the project were briefly screened for eligibility (e.g., child's age) by recruiters, and then scheduled for an appointment.

Recruitment began in Hammanskraal, a rural community located approximately 60 miles north of Pretoria (the capital city of South Africa). Recruitment efforts for both HIV-infected and non-infected women took place through the Hammanskraal satellite office of the Center of the Study of AIDS (CSA) and their sister organizations. The staff person at this office served as an outreach worker for the project. This individual made contact with several other community agencies in the Hammanskraal community (e.g., Hospice, caregivers who provide home-based care), in addition to broadcasting

information about the project on the local radio station. Participants were also recruited by word-of-mouth. This recruitment strategy allowed for the recruitment of a diverse sample of HIV-infected and non-infected women (i.e., those who are accessing community resources and those who are not). In Hammanskraal, interviews were conducted at the University of Pretoria's satellite campus.

Recruitment next extended to Mamelodi, an urban community located approximately 30 miles east of Pretoria. Participants in this community were recruited by a community liaison for an organization known as ATICC (AIDS Training, Information and Counselling Centre). ATICC provides HIV testing and counseling, and has important contacts with other organizations in the greater Mamelodi area. Recruitment also took place at a community organization known as SOS children's village. Interviews in Mamelodi were conducted at ATICC as well as Vista University.

The last phase of recruitment took place at the HIV clinic of Kalafong hospital. This hospital is located in Atteridgeville, an urban community located on the outskirts of Pretoria's central business district. Due to its provision of ARVs, this hospital's clientele comes from Atteridgeville, in addition to other outlying areas such as Mamelodi. The clinic's director undertook recruitment efforts, and the interviews were conducted in rooms at the HIV-clinic in the hospital.

Assessment

Women who arrived for appointments were screened for eligibility by one of the interviewers. Women were also asked which language they preferred for the interview (i.e., English, Afrikaans, or Sotho), and the interviews were conducted one-on-one in a

private setting. During the interviews, all efforts were made to make the participants feel welcome and comfortable. For instance, participants were provided with healthy snacks and drinks during the interview, and the interviews were held in locations where the participants would feel comfortable (e.g., outside when weather permitted). The interviewer started the interview by obtaining informed consent in the participant's chosen language, explaining the purpose and design of the project. Each participant was given a copy of the consent form. The participants were told that they would be completing a number of verbally administered self-report measures. They were informed that their answers would be kept confidential, with the exception of any reports of child abuse or neglect, or suicidal or homicidal behavior. The interviewers encouraged participants to ask questions at any point during the interview, and informed them that they could terminate the interview at any time. The participants were also encouraged to take short breaks as needed.

Once informed consent was obtained, the interviewers administered each measure verbally due to low overall rates of literacy. The measures used for interviews with HIV-infected and non-infected women were identical, and women were asked about their HIV-status towards the end of the interview once rapport had been established. Due to language issues and low literacy levels, relevant measures in the interview were conducted using cue cards. These cards consisted of: 1) pictorial representations of Likert scale response choices such as *never*, *sometimes*, *often*, *always*, and 2) the response choices in verbal format in both English and Sotho. These cards allowed participants to choose their responses by pointing. The total time for the interviews and informed

consent process ranged from approximately 1 to 3 hours, depending on breaks taken and participant characteristics (e.g., talkativeness).

At the end of the interview, participants were provided with a small gift (hand lotion) and \$10 for their participation and effort. If a participant became distressed at any point during the interview, interviewers were trained to spend time debriefing her and ensuring that she received an appropriate list of referrals. In addition, if necessary, the interviewer would ensure that the distressed participant make contact with the appropriate agency. At the end of the interviews, each participant in the study was provided with a list of resources available in their respective community (e.g., child care, hospice, and counseling services).

RESULTS

Using the guidelines of Bakeman (1992), a power analysis was performed in order to estimate a sample size that would allow for adequate power in detecting both main and interaction effects in hierarchical regression analyses. The following parameters were used: alpha was set at .05 (two-tailed), beta at .10, which allowed for a power of .90. In addition, a medium effect size of .09 was estimated. Based on these parameters, a sample size of 176 provides adequate power to detect effects. Given the potential of false negatives due to the HIV-diagnosis grouping strategy, 225 mothers were assessed.

Preliminary Analyses

All data were entered into SPSS and checked for accuracy. In addition, all data were screened for outliers and violations of the assumptions of the relevant statistical tests. Correlation matrixes were generated using demographic variables (maternal age,

maternal education, maternal marital status, child age, child gender, child HIV-status, and number of children in the home), internalizing and externalizing scores, and the potential moderators. Refer to Tables 4 and 5. The demographic variables that were significantly correlated with the two outcome variables were entered as covariates in relevant analyses. In addition, the HIV-infected and non-infected groups were compared on important variables in order to determine which variables needed to be controlled in subsequent analyses. Refer to Tables 1 and 2. Results indicated that when both internalizing and externalizing symptoms were the outcome variables, marital status, mothers' education, and ethnic group should be entered as control variables. Means and standard deviations were calculated for all potential protective factor variables in the study for the sample as a whole, as well as the HIV-infected and non-infected mothers separately. Refer to Table 3.

Table 1
Demographic Data for the Entire Sample and HIV-Infected and Non-Infected Mothers

	All Children	Non-Infected Mothers	HIV- Infected Mothers
Number of People in the Home			
Mean	5.50	5.36	5.70
SD	2.19	1.92	2.51
Total Number of Children			
Mean	2.34	2.43	2.22
SD	1.40	1.47	1.30
Target Child – Age			
Mean	13.24	13.17	13.32
SD	1.75	1.77	1.72
Mother – Age			
Mean	35.97	36.15	35.72
SD	6.28	6.41	6.12

Table 2
Demographic Data (Percentages) for the Entire Sample and HIV-Infected and Non-Infected Mothers

	All Children	Non-Infected Mothers	HIV-Infected Mothers
Target Child – Gender			
Male	49.1	49.6	48.4
Female	50.9	50.4	51.6
Target Child – Health Condition			
None	87.9	89.1	86.3
HIV	1.3	0.0	3.2
Other	10.7	10.9	10.5
Ethnic Group*			
Zulu	9.4	7.0	12.5
Xhosa	2.7	1.6	4.2
Sotho	8.9	7.8	10.4
Tswana	33.5	43.0	20.8
Pedi	23.2	20.3	27.1
Ndebele	8.9	6.3	12.5
Swati	0.9	1.6	0.0
Tsonga	10.7	10.2	11.5
Venda	1.8	2.3	1.0
Marital Status**			
Never married; not living w/ a partner	45.7	41.4	51.6
Married; not living w/ partner	10.3	10.2	10.5
Widowed	7.6	3.1	13.7
Never married; living w/ a partner	12.6	12.5	12.6
Married & living w/ partner	23.8	32.8	11.6
Mother – Education			
> Grade 5	5.4	6.3	4.2
Grades 5-7	12.5	8.6	17.7
Grades 8-11	42.9	40.6	45.8
Matric/N3	31.7	35.9	26.0
Post-matric/N5/6	2.7	2.3	3.1
Tertiary education	4.9	6.3	3.1

Significant differences between groups based on chi-square analyses: * = $p < .05$, ** = $p < .01$

Table 3
Descriptive Statistics for the Entire Sample and HIV-Infected and Non-Infected Mothers for Potential Moderators

	All Children	Non-Infected Mothers	HIV-Infected Mothers
Internalizing Total (0-26)			
Mean	7.56	7.85	7.18
SD	4.74	4.65	4.85
Externalizing Total (0-48)			
Mean	9.15	8.70	9.77
SD	7.25	6.76	7.86
Economic Stability (0-20)			
Mean	6.64	6.66	6.62
SD	2.68	2.66	2.72
Maternal Depression (16-64)*			
Mean	31.42	29.77	33.64
SD	10.08	9.31	10.69
Maternal Family Social Support (5-20)			
Mean	16.80	17.00	16.52
SD	4.70	4.24	5.27
Maternal Non-Family Social Support (5-20)			
Mean	13.85	14.66	12.77
SD	6.36	5.82	6.90
Mother-Child Relationship (0-12)			
Mean	9.14	9.22	9.03
SD	2.50	2.26	2.79
Support in the Caregiver – Co-Caregiver Relationship (0-32)			
Mean	25.84	25.59	26.21
SD	4.81	4.41	5.36
Conflict in the Caregiver – Co-Caregiver Relationship (0-12)			
Mean	6.26	6.39	6.05
SD	2.26	2.07	2.52

Significant differences between groups based on t-test analyses: * = $p < .05$

Table 4
Correlation Matrix for the Total Sample – Demographic Variables

	Internalizing	Externalizing	Child Gender	Child Health	Child Age	Ethnic Group	Marital Status	Mother Education	Mother Age	HIV-Status
Internalizing	-	-	-	-	-	-	-	-	-	-
Externalizing	.278**	-	-	-	-	-	-	-	-	-
Child Gender	.031	.096	-	-	-	-	-	-	-	-
Child Health	.114	.061	-.114	-	-	-	-	-	-	-
Child Age	.142*	.038	-.100	-.071	-	-	-	-	-	-
Ethnic Group	.004	-.152*	-.077	.012	-.010	-	-	-	-	-
Marital Status	.103	.051	-.006	-.073	.172*	.055	-	-	-	-
Mother Education	-.171*	.136*	.039	.036	-.190**	-.113	-.070	-	-	-
Mother Age	.000	-.108	-.175**	-.051	.362**	.017	.181**	-.279**	-	-
HIV-Status	-.071	.073	.012	.020	.043	-.029	-.185**	-.106	-.034	-

* $p < .05$, ** $p < .01$

Table 5
Correlation Matrix for the Total Sample – Potential Protective Factors

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Internalizing	-	-	-	-	-	-	-	-	-	-
2. Externalizing	.278**	-	-	-	-	-	-	-	-	-
3. HIV-Status	-.071	.073	-	-	-	-	-	-	-	-
4. Maternal Depression	.279**	.253**	.190**	-	-	-	-	-	-	-
5. Family Social Support	-.150*	-.156*	-.051	-.147*	-	-	-	-	-	-
6. Non-Family Social Support	.009	-.023	-.147*	-.073	.166*	-	-	-	-	-
7. Economic Stability	-	-.011	-.007	-.157*	.073	.085	-	-	-	-
8. Mother-Child Relationship	.174**	-	-.038	-	.125	.013	.011	-	-	-
9. Support in the Caregiver – Co-Caregiver Relationship	.222**	.592**	.064	-.028	.219**	.164*	.147*	.079	-	-
10. Conflict in the Caregiver – Co-Caregiver Relationship	.115	-.016	.064	-.028	.268**	.164*	.147*	.079	-	-
	.330**	.081	-.074	.118	-.108	-.028	.049	.024	.261**	-

* $p < .05$, ** $p < .01$

In order to address Aims 1 and 2, six hierarchical multiple regression analyses were conducted, one for each resource category (i.e., material, maternal, and caregiving) for both outcome variables (internalizing and externalizing symptoms) with maternal HIV status as the independent variable. The results of the regression analyses are presented in Tables 6 – 11.

Aim 1

Based on the results from the hierarchical multiple regression analyses, there was no direct effect for maternal HIV status on either of the two outcome variables. Refer to Tables 6-11.

Table 6

Multiple Regression Analysis – Internalizing Symptoms and Economic Resources (Familial Economic Resources)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.225	.047	.047*	2.69*
	Mother's Education	-.666*			
	Ethnic Group	-.062			
	Child Age	.264			
2	HIV-Status	-.892	.056	.008	2.53*
3	Familial Economic Stability	-.252*	.073	.017*	2.80*
4	Child Age*Economic Stability	.054	.075	.003	2.16*
	HIV-Status*Child Age	-.014			
5	HIV-Status*Economic Stability	-.062	.076	.000	1.92*
6	HIV-Status*Child Age*Economic Stability	.139	.080	.004	1.82

* p < .05, ** p < .01

Table 7
Multiple Regression Analysis – Externalizing Symptoms and Economic Resources (Familial Economic Resources)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.262	.044	.044*	2.45*
	Mother's Education	.930*			
	Ethnic Group	-.523*			
	Child Age	.198			
2	HIV-Status	1.469	.053	.009	2.41*
3	Familial Economic Stability	-.280	.062	.009	2.36*
4	Child Age*Economic Stability	.052	.075	.013	2.15*
	HIV-Status*Child Age	.975			
5	HIV-Status*Economic Stability	.049	.076	.000	1.91*
6	HIV-Status*Child Age*Econ. Stability	.355	.086	.010	1.97*

* p < .05, ** p < .01

Table 8
Multiple Regression Analysis – Internalizing Symptoms and Maternal Resources (Maternal Depression; Maternal Family Social Support; Maternal Non-Family Social Support)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.213	.050	.050*	2.84*
	Mother's Education	-.670*			
	Ethnic Group	-.054			
	Child Age	.290			
2	HIV-Status	-.867	.057	.008	2.64*
3	Maternal Depression	.132**	.148	.091**	4.66**
	Maternal Family Social Support	-.113			
	Maternal Non-Family Social Support	.037			
4	Child Age*Depression	.015	.159	.010	3.30**
	Child Age*Family Social Support	.018			
	Child age*Non-Family Social Support	.037			
	HIV-Status*Child Age	.102			
5	HIV-Status*Depression	-.007	.176	.017	2.95**
	HIV-Status*Family Social Support	.232			
	HIV-Status*Non-Family Social Support	-.140			
6	HIV-Status*Child Age*Depression	.018	.182	.006	2.52**
	HIV-Status*Child Age*Family Social Support	.080			
	HIV-Status*Child Age*Non-Family Social Support	.034			

* $p < .05$, ** $p < .01$

Table 9
Multiple Regression Analysis – Externalizing Symptoms and Maternal Resources (Maternal Depression; Maternal Family Social Support; Maternal Non-Family Social Support)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.256	.044	.044*	2.47*
	Mother's Education	.924*			
	Ethnic Group	-.518*			
	Child Age	.219			
2	HIV-Status	1.454	.053	.009	2.41*
3	Maternal Depression	.182**	.131	.078**	4.01**
	Maternal Family Social Support	-.175			
	Maternal Non-Family Social Support	-.007			
4	Child Age*Depression	.021	.166	.035	3.47**
	Child Age*Family Social Support	.123*			
	Child age*Non-Family Social Support	-.027			
	HIV-Status*Child Age	1.018			
5	HIV-Status*Depression	.111	.199	.033*	3.41**
	HIV-Status*Family Social Support	.489*			
	HIV-Status*Non-Family Social Support	.184			
6	HIV-Status*Child Age*Depression	.062	.205	.006	2.90**
	HIV-Status*Child Age*Family Social Support	.059			
	HIV-Status*Child Age*Non-Family Social Support	.045			

* p < .05, ** p < .01

Table 10
Multiple Regression Analysis – Internalizing Symptoms and Caregiving Resources (Mother-Child Relationship; Support from a Co-Caregiver; Conflict with a Co-Caregiver)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.177	.042	.042	1.96
	Mother's Education	-.601			
	Ethnic Group	-.086			
	Child Age	.291			
2	HIV-Status	-1.072	.053	.011	2.00
3	Parent-Child Relationship	-.605**	.237	.184**	6.83**
	Support - Caregiver – Co-Caregiver Relationship	.073			
	Conflict - Caregiver – Co-Caregiver Relationship	.646**			
4	Child Age*Parent-Child Relationship	-.107	.249	.012	4.76**
	Child Age* Support - Caregiver – Co-Caregiver Relationship	-.036			
	Child Age* Conflict - Caregiver – Co-Caregiver Relationship	.033			
	HIV-Status*Child Age	-.060			
5	HIV-Status*Parent-Child Relationship	-.059	.265	.016	4.06**
	HIV-Status* Support - Caregiver – Co-Caregiver Relationship	.201			
	HIV-Status* Conflict - Caregiver – Co-Caregiver Relationship	-.484			
6	HIV-Status*Child Age*Parent-Child Relationship	-.018	.272	.007	3.45**
	HIV-Status*Child Age* Support - Caregiver – Co-Caregiver Relationship	.086			
	HIV-Status*Child Age* Conflict - Caregiver – Co-Caregiver Relationship	.068			

* $p < .05$, ** $p < .01$

Table 11
Multiple Regression Analysis –Externalizing Symptoms and Caregiving Resources (Mother-Child Relationship; Support from a Co-Caregiver; Conflict with a Co-Caregiver)

Block	Variable	b	R ²	R ² Δ	F
1	Marital Status	.033	.051	.051*	2.43*
	Mother's Education	.936			
	Ethnic Group	-.651*			
	Child Age	.072			
2	HIV-Status	1.124	.057	.005	2.15
3	Parent-Child Relationship	-1.700**	.373	.316**	13.03**
	Support - Caregiver – Co-Caregiver Relationship	.030			
	Conflict - Caregiver – Co-Caregiver Relationship	.367			
4	Child Age*Parent-Child Relationship	-.297**	.408	.035*	9.83**
	Child Age* Support - Caregiver – Co-Caregiver Relationship	.064			
	Child Age* Conflict - Caregiver – Co-Caregiver Relationship	.067			
	HIV-Status*Child Age	.313			
5	HIV-Status*Parent-Child Relationship	-.467	.420	.012	8.10**
	HIV-Status* Support - Caregiver – Co-Caregiver Relationship	.271			
	HIV-Status* Conflict - Caregiver – Co-Caregiver Relationship	-.242			
6	HIV-Status*Child Age*Parent-Child Relationship	-.021	.421	.001	6.66**
	HIV-Status*Child Age* Support - Caregiver – Co-Caregiver Relat.	.058			
	HIV-Status*Child Age* Conflict - Caregiver – Co-Caregiver Relat.	.003			

* $p < .05$, ** $p < .01$

Aim 2

In order to present the results of Aim 2, information will be organized separately for Internalizing and Externalizing Symptoms by Resource Category.

Material Resources

Economic Stability

Internalizing symptoms. Refer to Table 6. There was a direct effect for economic stability, but no moderating effect (i.e., protective effect) indicating that higher levels of economic stability were associated with lower levels of internalizing symptoms among all children, regardless of maternal HIV status.

Externalizing symptoms. Refer to Table 7. There was no direct or moderating (i.e., protective) effect for economic stability. These results indicate that in this sample, there was no association between economic stability and level of caregiver reports of children's externalizing symptoms regardless of maternal HIV status.

Maternal Resources

Maternal Depression

Internalizing symptoms. Refer to Table 8. There was a direct effect for maternal depression, but no moderating effect (i.e. protective effect), with lower levels of maternal depression associated with lower levels of internalizing symptoms among all children, regardless of maternal HIV status.

Externalizing symptoms. Refer to Table 9. There was a direct effect for maternal depression, but no moderating effect (i.e., protective effect). Again, lower levels of

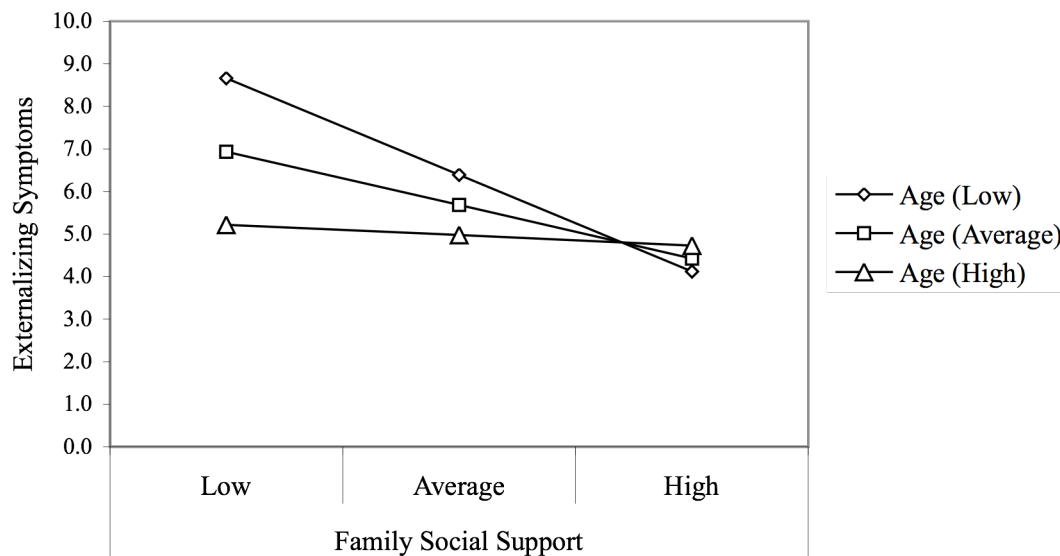
maternal depression were associated with lower levels of externalizing symptoms among all children, regardless of maternal HIV status.

Family Social Support

Internalizing symptoms. Refer to Table 8. There was no direct or moderating (i.e., protective) effect for satisfaction levels with family social support on children's internalizing symptoms.

Externalizing symptoms. Refer to Table 9. There was no direct effect for satisfaction with family social support on children's externalizing symptoms. However, two 2-way interactions emerged: 1) between child age and family social support; and, 2) between maternal HIV status and family social support. Specifically, with regard to the interaction between child age and family social support, for older children (1 SD above the mean), satisfaction with family social support was not associated with externalizing symptoms. However, for children of average age and younger children (1 SD below the mean), lower levels of satisfaction with family social support were associated with higher levels of externalizing symptoms. More specifically, for children of average age and younger children, one unit increase in satisfaction with family social support was associated with .255 and .519 units decrease in externalizing symptoms respectively. Refer to Figure 2.

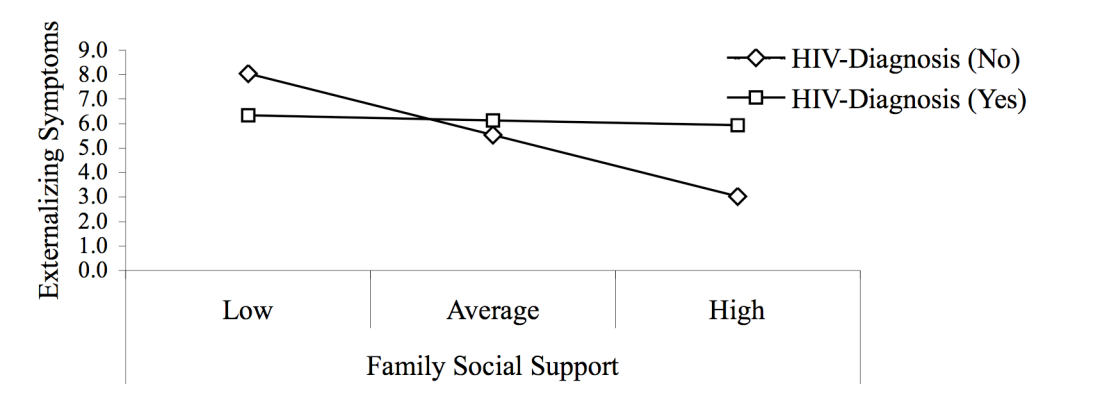
Figure 2
*Two-Way Interaction between Child Age and Family Social Support in the Context of HIV-
 Infection as a Diagnosis*



Note: Simple Slopes analyses: Low age (11.5 yrs): significant ($b = -.519$)
 Average age (13.2 yrs): significant ($b = -.255$)
 High age (15 yrs): not significant ($b = -.079$)

In addition, in terms of the interaction between maternal HIV status and satisfaction with family social support, for mothers who reported being HIV-infected, family social support was not associated with children's externalizing symptoms. However, for women who self-identified as HIV-negative, lower levels of satisfaction with family social support were associated with higher levels of children's externalizing symptoms. Refer to Figure 3.

Figure 3
Two-Way Interaction between HIV-Infection as a Diagnosis and Family Social Support



Note: Simple Slopes analyses: HIV-Diagnosis (Yes): not significant
HIV-Diagnosis (No): significant

Non-Family Social Support

Internalizing symptoms. Refer to Table 8. There was no direct or moderating (i.e., protective) effect for non-family social support, indicating that in this sample, there was no association between non-family social support and children's internalizing symptoms.

Externalizing symptoms. Refer to Table 9. There was no direct or moderating (i.e., protective) effect for non-family social support, indicating that in this sample, there was no association between non-family social support and children's externalizing symptoms.

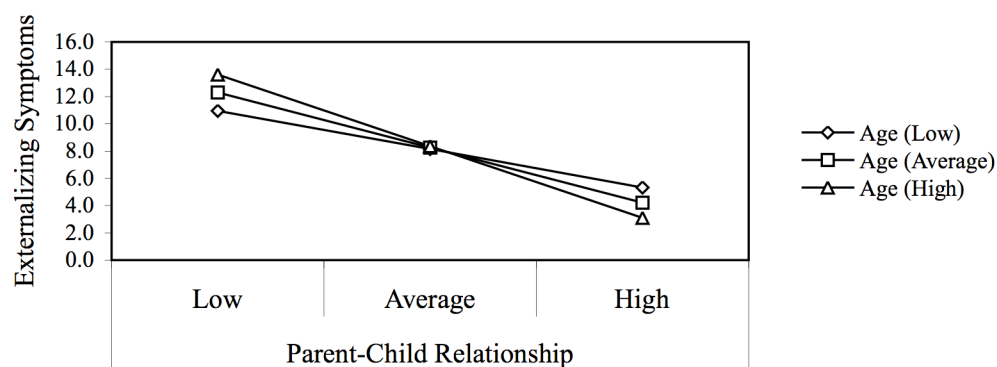
Caregiving Resources

Parent-Child Relationship

Internalizing symptoms. Refer to Table 10. There was a direct but no moderating (i.e., protective) effect for the parent-child relationship. These results suggest that a better parent-child relationship was associated with lower levels of internalizing symptoms among all children, regardless of maternal HIV status.

Externalizing symptoms. Refer to Table 11. There was a direct but no moderating (i.e., protective) effect for the parent-child relationship, indicating that a better parent-child relationship was associated with lower levels of externalizing symptoms among all children, regardless of maternal HIV status. In addition, a two-way interaction between child age and the parent-child relationship emerged. Specifically, for children of all ages, a better parent-child relationship was associated with fewer externalizing symptoms. The relationship was strongest for older children and lowest for younger children, with one unit increase in the quality of the parent-child relationship associated with 2.158 and 1.251 units decrease in externalizing symptoms respectively. For average aged children, one unit increase in the quality of the parent-child relationship was associated with 1.705 units decrease in externalizing symptoms. Refer to Figure 4.

Figure 4
Two-Way Interaction between Child Age and the Parent-Child Relationship in the Context of HIV-Infection as a Diagnosis



Note: Simple Slopes analyses: Low age (11.5 yrs): significant ($b = -1.251$)
 Average age (13.2 yrs): significant ($b = -1.705$)
 High age (15 yrs): significant ($b = -2.158$)

Support in the Caregiver – Co-Caregiver Relationship

Internalizing symptoms. Refer to Table 10. There was no direct or moderating (i.e., protective) effect for support in the caregiver – co-caregiver relationship, indicating that in this sample, there was no association between support in this relationship and children’s internalizing symptoms.

Externalizing symptoms. Refer to Table 11. There was no direct or moderating (i.e., protective) effect for support in the caregiver – co-caregiver relationship, indicating that in this sample, there was no association between support in this relationship and children’s externalizing symptoms.

Conflict in the Caregiver - Co-Caregiver Relationship

Internalizing symptoms. Refer to Table 10. There was a direct but no moderating (i.e., protective) effect for conflict in the caregiver – co-caregiver relationship. These results suggest that more conflict in this relationship was associated with higher levels of internalizing symptoms among all children, regardless of maternal HIV status.

Externalizing symptoms. Refer to Table 11. There was no direct or moderating (i.e., protective) effect for conflict in the caregiver – co-caregiver relationship, indicating that in this sample, there was no association between conflict in this relationship and children’s externalizing symptoms.

Additional Analyses

Combined Resource Category Variables

In order to gain an understanding of the relative effects of the resource variables, all resource variables correlated with the outcome variables were analyzed using separate hierarchical multiple regression analyses for internalizing and externalizing behaviors respectively. Maternal education, marital status, ethnic group, and child age were entered in the first block, and all relevant resource variables in the second block.

Internalizing Symptoms

For internalizing symptoms, economic stability, maternal depression, family social support, the parent-child relationship, and conflict between the caregiver and co-caregiver were entered in the second block. This model accounted for 25.7% of the variance in the outcome variable, with conflict in the caregiver- co-caregiver relationship, the parent-child relationship, and maternal depression making significant unique

contributions. The standardized regression coefficients revealed that conflict in the caregiver- co-caregiver relationship had the strongest association with the outcome variable, followed by the parent-child relationship and maternal depression respectively. Refer to Table 12.

Table 12

Multiple Regression Analysis –Internalizing Symptoms and Combined Resources (Economic Stability; Maternal Depression; Family Social Support; Mother-Child Relationship; Conflict with a Co-Caregiver)

Block	Variable	Beta	R ²	R ² Δ	F
1	Marital Status	.073	.041	.041	1.90
	Mother's Education	-.131			
	Ethnic Group	-.039			
	Child Age	.091			
2	Economic Stability	-.102	.257	.217**	6.70**
	Maternal Depression	.152*			
	Family Social Support	-.075			
	Parent-Child Relationship	-.236**			
	Conflict - Caregiver – Co-Caregiver Relationship	.301**			

* $p < .05$, ** $p < .01$

Externalizing Symptoms

For externalizing symptoms, maternal depression, family social support, and the parent-child relationship were entered in the second block. This model accounted for 39.9% of the variance in the outcome variable, with the parent-child relationship and maternal depression making significant unique contributions. The standardized regression coefficients revealed that the parent-child relationship had the strongest association with the outcome variable. Refer to Table 13.

Table 13
Multiple Regression Analysis –Externalizing Symptoms and Combined Resources (Maternal Depression; Family Social Support; Mother-Child Relationship)

Block	Variable	Beta	R ²	R ² Δ	F
1	Marital Status	.059	.044	.044*	2.47*
	Mother's Education	.135*			
	Ethnic Group	-.135*			
	Child Age	.053			
2	Maternal Depression	.145*	.399	.356**	20.33*
	Family Social Support	-.066			
	Parent-Child Relationship	-.540**			

* p < .05, ** p < .01

DISCUSSION

Impact of Maternal HIV-Infection on Children's Psychosocial Adjustment

Black South African children are exposed to numerous socio-cultural stressors beyond those associated with HIV-infection, which place them at particular risk for psychosocial adjustment difficulties. Given these contextual vulnerabilities, it is important to assess whether maternal HIV-infection serves as an additional risk factor for these children. As such, the first aim of this study was to evaluate whether maternal HIV-infection confers risk for psychosocial adjustment difficulties (i.e., internalizing and externalizing behaviors) among these children. Participants included rural and urban Black South African women who self-identified as HIV-infected or non-infected and who reported on their biological child aged 11 through 16.

Results suggested that there were no significant differences in the presence of internalizing or externalizing problems between children of HIV-infected mothers and children whose mother self-identified as non-infected. As there is a lack of empirical examination of the impact of maternal HIV-infection on Black South African children, these findings cannot be compared to other South Africa-based studies. However, these findings are inconsistent with those from the U.S. that indicate that children of HIV-infected mothers demonstrate higher levels of both internalizing and externalizing symptoms than children of non-infected mothers (e.g. Forehand et al., 1998). In addition, information from African countries other than South Africa suggests that HIV-infection among a child's caregiver is associated with higher levels of internalizing symptoms (e.g. Foster & Williamson, 2000).

The lack of differences between the two groups of children may indicate that in the context of the constellation of stressors Black South African children face, maternal HIV-infection may not serve as a unique stressor for adjustment difficulties. Yet, the lack of differences between the two groups of children should not necessarily be understood to mean that a child whose mother self-identifies as HIV-infected is not affected by his/her mother's diagnosis of HIV-infection. Various factors may account for the lack of differences between the two groups. More specifically, both groups of children are potentially at high risk for behavior difficulties based on their contextual vulnerabilities (e.g., poverty and violence). When high-risk control groups, such as the one used in this study, are used for between group comparisons, group differences are often less pronounced and not statistically significant (McDonald & Jouriles, 1991). Additionally, when understanding the lack of group differences, it is also important to consider that the measures used in this study may not have assessed the domains in which children of HIV-infected mothers were experiencing problems. Specifically, the child outcome measures in this study were limited to internalizing and externalizing problems, and other child outcomes, such as resilience or competencies (e.g. academic performance) were not addressed.

The interpretation of the group differences should also include the possibility that for various reasons, the measures used in this study did not detect difficulties children were experiencing. A non-clinically elevated cluster of symptoms does not necessarily imply absence of difficulties in the domain assessed. Indeed, the mean scores on the CBCL for both groups of children were low, with the mean for externalizing symptoms somewhat higher than for internalizing symptoms. The low CBCL means were surprising given that the BBT study found

that at age 5, 14% of the sample scored above the clinical cutoff range on the anxious-depressed scale, and 28% on the aggressive behavior scale of the CBCL (Barbarin & Richter, 2001a). Several possible explanations may account for this study's low CBCL means. First, given financial and practical limitations of the larger study, children were not interviewed, and as such, only mothers' reports of children's functioning were obtained. Research in the U.S. suggests that parents typically provide better reports of their children's externalizing symptoms, whereas children provide more accurate reports of their own internalizing symptoms (e.g., Loeber, Green, & Lahey, 1990). As such, in this study the higher externalizing scores could be a better reflection of children's difficulties than their internalizing scores.

The higher externalizing scores may also reflect behaviors that are more culturally salient to Black South African mothers. Specifically, according to the BTT study, Black South African parents appear to place more importance on behavioral self-regulation, as opposed to emotional self-regulation. Parents are less likely to endorse, or perhaps even notice, symptoms related to anxiety and sadness, and more likely to endorse those related to observable and disruptive behaviors (Barbarin & Richter, 2001a). As such, in this study mothers might have been more likely to notice and report on externalizing behaviors. The higher externalizing mean for all children is also consistent with previous South African studies that addressed Black South African children's functioning in their socioeconomic context (e.g., poverty and violence). These studies demonstrated higher rates of externalizing versus internalizing problems in childhood among this population (Barbarin, 1999; Barbarin & Richter, 2001a).

The results from this study also indicated that the mean score for internalizing symptoms was slightly lower for children of HIV-infected mothers as compared to those of non-infected

mothers. This finding may relate to HIV-infected mothers underreporting symptoms in their children that are challenging to detect, in particular due to their own physical and emotional distress. This proposition is consistent with information from the U.S. indicating that children's reports of internalizing difficulties increased as a function of their mother's stage of illness, whereas mothers' reports of their own children's difficulties decreased (Dorsey et al., 1999a). Finally, it is also possible that the low CBCL scores indicate that despite contextual vulnerabilities and high base rates of problem behaviors in early childhood, a subset of Black South African children in the 11 to 16 age range appear resilient, which highlights the role of protective factors.

Protective Factors of the Proposed Relationship between Maternal HIV-Infection and Children's Psychosocial Adjustment

The second aim of the study was to examine potential protective resources for children of HIV-infected mothers that could ideally be addressed through appropriate community-level interventions. The resources addressed included economic resources (i.e., economic stability); maternal resources (i.e., maternal psychological functioning, family and non-family social support); and caregiving resources (i.e., the parent-child relationship, quality of the mother- co-caregiver relationship). In addition, child age was examined in order to allow for a better understanding of how protective functions may differ as a function of child age.

Given the lack of empirical work in this domain, the second aim of the study was considered exploratory in nature. The results did not illuminate any variables that were particularly salient to the children of HIV-infected mothers. Rather, the results highlighted variables that were salient to all children, regardless of maternal HIV status. These findings are consistent

with the premise of the ecological-transactional model indicating that the contexts most proximal to the child (e.g. family) may be more likely to exhibit main effects (i.e., be beneficial to all children, regardless of maternal HIV-status) as opposed to protective effects (i.e., benefit only children of HIV-infected mothers).

In terms of material resources, higher levels of economic stability were associated with lower levels of internalizing symptoms for all children. These findings are consistent with the BTT study, which found that children who experience hunger also experience higher levels of anxiety and depression (Barbarin & Richter, 2001a). In addition to limited access to nutrition, higher rates of internalizing problems, in the context of poor economic stability, may relate to the potential disruption of children's access to developmentally appropriate tasks (e.g., attending school) due to the need to provide supplemental income for the family. Economic stability was low for both groups of mothers, which highlights the economic vulnerability of Black South African women and their children. Overall, these findings underscore the importance of economic stability for all children, regardless of maternal HIV status.

With regard to maternal resources, higher levels of maternal depression were associated with more internalizing and externalizing symptoms among all children, regardless of maternal HIV status. The negative association between maternal depression and children's psychosocial adjustment is consistent with research conducted with both general samples of women (e.g. Goodman & Gotlib, 1999), and with samples of women infected with HIV (e.g. Hough et al., 2003) in the U.S. In this study, HIV-infected mothers reported higher levels of depression than non-infected mothers, and the mean levels of depressive symptoms were high for both groups of women, and the sample as a whole. These trends are consistent with findings from studies

indicating high rates of depression in high density, township areas of South Africa (Jelsma et al., 2001, 2002). The results of this study highlight the importance of maternal depression for all Black South African children.

As concerns both family and non-family social support, neither was directly related to children's internalizing or externalizing symptoms. However, child age and family social support interacted such that for children of average age and younger children, lower levels of family social support were associated with higher levels of externalizing symptoms. The trend was stronger for younger children, and there was no significant association for older children. Family support may be more important in families for younger children than older children, as older children are more independent. Specifically, they may be less dependent on their mother than younger children and more able to access beneficial relationships outside of the mother-child dyad.

Family social support and HIV-infection also interacted. For HIV-infected mothers, varying levels of satisfaction with family social support were not associated with increased levels of children's externalizing symptoms. However, for non-infected mothers, lower levels of satisfaction with family social support were associated with higher levels of children's externalizing symptoms. This finding may relate to lower expectations for social support among the HIV-infected group of women. For instance, women in the HIV-infected group may report satisfaction levels similar to their non-infected counterparts despite differences in the actual levels of social support between the two groups of women. In addition, as non-infected women may not have lowered expectations for social support, reduced satisfaction with social support may have a greater influence on their functioning as well as their children's psychosocial adjustment. There

were no differences in satisfaction with both types of social support between HIV-infected women and non-infected women. This finding is surprising given that studies in South Africa indicate that HIV-infected individuals report loss of family support, as well as social withdrawal (POLICY et al., 2003).

In this study, the parent-child relationship emerged as important for all children, with a better parent-child relationship associated with lower levels of both internalizing and externalizing symptoms. This is consistent with research that suggests that the parent-child relationship moderates the effects of a wide range of stressors on children's psychosocial adjustment, and that for children exposed to a combination of socio-economic risk factors, the parent-child relationship is beneficial for all children, not just for those at the highest level of risk (Klein et al., 1994).

Results from this study also revealed that child age and the parent-child relationship interacted. For children of all ages, a better parent-child relationship was associated with lower levels of externalizing symptoms, with the association strongest for older children, followed by children of average age and younger children respectively. This finding makes intuitive sense as, when children enter middle adolescence (15-16 years old), relationships with parents often become more strained. For those older children who are able to maintain a good relationship with their mother, there appear to be particularly protective effects of those relationships. This finding is important as older children may have more independence and be at greater risk of engaging in behaviors that place them at risk for HIV-infection. These results suggest that it is important to focus on the quality of the parent-child relationship for all children, with particular emphasis on older children.

Scores on the measure of quality of the parent-child relationship were relatively high for both groups, and there were no differences between HIV-infected and non-infected mothers. The lack of differences is inconsistent with findings from the U.S., which indicate that HIV-infected mothers, as compared to non-infected mothers, are less likely to have positive parent-child relationships (e.g. Kotchick et al., 1997). Moreover, the findings are not consistent with reports made by mothers during focus groups for the larger study. Specifically, mothers described ways in which being ill compromises their ability to parent their children (Armistead, 2003). The lack of differences may relate to HIV-infected mothers' perceptions of the parent-child relationship. Specifically, mothers may be reluctant to acknowledge the impact that HIV-infection has on their parenting, especially given the high value Black South African mothers place on their relationship with their children. Mothers may also be trying harder to maintain the quality of their relationship with their children given their awareness of their HIV-status and its impact on their children.

With regard to the quality of the mother- co-caregiver relationship, a supportive caregiver-co-caregiver relationship was not associated with child functioning, whereas higher levels of conflict within this relationship were associated with higher levels of internalizing symptoms for all children. This finding suggests that conflict between mothers and co-caregivers negatively impacts all children, regardless of maternal HIV status.

In order to gain a richer understanding of the resource category variables in this sample of children, significant associations between and within the various resource category variables were examined. The findings showed that maternal depression was negatively associated with economic stability, which is consistent with the literature indicating that maternal depression among single-adult female-headed South African households is in part related to high levels of poverty (Barbarin & Richter, 2001a). These results suggest that when understanding depression among HIV-infected

South African women, it appears important to consider their level of economic stability. Overall, these findings indicate that maternal depression is important to address among all mothers, regardless of HIV-status, and that enhanced levels of economic stability may be helpful to mothers and their children.

Family social support was also negatively correlated with maternal depression, which is consistent with research that illustrates the beneficial effects of social support on HIV-infected women's emotional distress. For instance, research has demonstrated that higher levels of maternal social support are associated with less maternal emotional distress, and that lower levels of maternal emotional distress are, in turn, associated with lower levels of both internalizing and externalizing symptoms among children (Hough et al., 2003). Similar trends are possible among Black South African mothers and their children.

Maternal depression was also significantly negatively correlated with the parent-child relationship, suggesting that it has a negative influence on the quality of a mother's relationship with her children. This finding is consistent with studies conducted with both general samples of women (e.g. Cox, Puckering, Pound, & Mills, 1987; Lovejoy, 1991) and samples of HIV-infected women (e.g. Murphy et al., 2002). These studies suggest that depressed mothers are usually less able to maintain social interactions with their children, are less responsive to them, and have more contentious relationships with them (McCarty & McMahon, 2003). Results from this study suggest that there could perhaps be similar trends among Black South African women, and that overall, as levels of maternal depression increase, quality of the parent-child relationship decreases.

Results from the analyses that combined variables from the various resource categories (and which did not include maternal HIV-status) revealed that for internalizing symptoms, as expected maternal depression was important. In addition, in this model, the parent-child relationship and conflict in the caregiver – co-caregiver relationship emerged as the most important predictors. This finding may suggest that children whose two most significant relationships are more impaired may have more psychosocial adjustment difficulties. In addition, these impaired relationships may be indicative of maternal functioning, with mothers who have less positive relationships experiencing more negative functioning.

For externalizing symptoms, as expected, maternal depression was a significant predictor. However, in this model, the parent-child relationship emerged as the most important predictor. This finding is in line with Patterson's Coercion model, which indicates that children whose parents use coercive techniques as a way of managing them develop aggressive behavior.

In summary, results from this study suggest that economic stability, maternal depression, family social support, the parent-child relationship, and conflict in the mother- co-caregiver relationship are variables that are salient to Black South African children's functioning. These variables could be considered for targets of intervention by relevant community-based agencies. In addition, with the exception of maternal depression, there were no differences between the two groups of children as concerns material, maternal, and caregiving resources. Given the overall risk present in the lives of Black South African children beyond maternal HIV-infection, it appears important to address the needs of all children, regardless of maternal HIV status.

There is very little empirical research conducted with Black South African mothers, despite the myriad stressors they face. Thus, the current study is largely exploratory and many steps were undertaken to maximize the study's cultural competency. This included creating some measures

and/or modifying others for the larger study. Scores on these measures cannot be compared to current norms, which undermine the ability to address clinically meaningful scores. Moreover, the scope of the study did not allow for a comprehensive examination of the newly created or modified measures. Additional study limitations include the correlational nature of the data and generalizability. Specifically, the study was cross-sectional and not longitudinal, thus no statements regarding causality can be made. In addition, although the focus on Black South African mothers and their children is considered a strength of this study, it limits the generalizability of these findings to other groups. Further, all measures were completed by a sole source, which raises the issue of common method variance. Another study limitation is the way in which maternal HIV-infection was determined. As women's HIV-status was established through their self-report during the interview, it is possible that women who were HIV-infected, yet unaware of their status, or women who denied a known HIV diagnosis, were part of the control group. Given this grouping strategy, a mother's HIV-status was construed as a diagnosis that she had received and was willing to disclose at the time she was interviewed for the study.

Given the lack of research examining the impact of HIV-infection on Black South African children, this study provides valuable preliminary empirical data that can inform both future studies and interventions with these children and their mothers. Although this study focused on the children of HIV-infected mothers in particular, it provides important information about individual and family-level variables that serve as resources for all children, and which could be emphasized in family interventions with the population as a whole. This contribution is considered particularly salient as the current sample hails from a population that is exposed to numerous sociocultural and economic stressors and which has limited access to resources. In addition, interventions that

enhance the functioning of Black South African children may reduce the risk of HIV-infection among these children.

Maternal HIV-infection is a complex phenomenon that includes biological, psychological, and social components (e.g. physical symptoms, emotional distress, community-level HIV-related stigma, and disruption of caregiving roles). In addition, in South Africa HIV-infection occurs within a unique sociocultural and political context (e.g., poverty and significant HIV-related stigma). Future research should address the various aspects of maternal HIV-infection that Black South African children may be responding to, and explore which aspects appear most salient to their experience of living with an HIV-infected mother. In addition, given the resource-poor context of these children, it is essential for researchers to conduct research that can be directly useful to community-level interventions.

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