



Maternal well-being, mother-child interaction and  
child psychosocial outcome in the context of HIV/AIDS:  
A literature review with a keen eye on sub-Saharan Africa

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## Preface

I became interested in the field of child development and HIV when I was doing an exchange student program in South Africa in 2005. During my stay there I did volunteer work in Gugulethu, a township just outside Cape Town, where I implemented a swimming program for preschool-aged children. I was informed by the community workers that many of these children grew up in extended family households. Many families struggled to raise enough money for food, clothes and school-fees and I was told that HIV infection rates were high in this community. It was hard to witness the harsh reality of everyday life in this township, but on the other side I became touched by all the joy and hope seen in these children. My experiences made me question how these children and their families were dealing with the effects of HIV in general and maternal HIV in particular.

I chose to write this review because I realized after reading a few articles regarding maternal HIV and child psychosocial outcome that by far the greater majority of research has been conducted in the Western world. Knowing that sub-Saharan Africa is the region most severely affected by HIV/AIDS, I personally think that it is about high time that this important issue is given more attention. I have done all the necessary literature searches and came up with the particular focus of this paper myself.

I would like to thank my two supervisors, Jørgen Sundby and Floyd Webster Rudmin, for giving me good advice on structuring the paper and for limiting my focus in a large field of research. I would also like to thank the kind people at University of the Western Cape for giving me free access to the University library so that I could do necessary literature searches. A thank you to Numbolelo, one of the community workers in Gugulethu, for letting me be a part of her workday, giving me an eye-opening experience and valuable information about the reality of the lives of the children and their families in her community. A special thank you goes to my son, whose 10 months of life have taught me a mother's love, helping me realize how vulnerable and yet so strong a mother can be. Last but not least I would like to thank my dear husband for being supportive day and night throughout the process of writing this review.

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### Abstract

The paper reviews the psychosocial literature regarding the impact of maternal HIV on mothers and their uninfected children. Drawing on the ecological theory of Urie Bronfenbrenner, the review proposes a framework that both demonstrates the link between maternal HIV and child psychosocial outcome, and examines the pathways that account for this relationship. Maternal HIV has been found to potentially affect a mother's well-being negatively through a host of mediation factors associated with her infection. These factors affect a mother's ability to be sensitive and responsive towards her child, influencing on attachment security, and thereby the quality of the mother-child interaction. One important finding appearing from this review is that children of HIV-infected mothers are at greater risk for psychosocial problems compared to children of non-infected mothers. An important channel through which child psychosocial problems emerge is the quality of the mother-child interaction. However, some studies reports that both children of infected and non-infected mothers are in the clinical range of concern, which draws attention to the fact that these children and their mothers all originate from high-risk environments. On the optimistic side, many HIV-infected mothers and their children cope well in face of adversity, which speaks for the presence of resilience factors. One particular resilience factor studied in this review is the support of the extended family system. The majority of the literature reviewed is from studies in the Western world, but the focus in the discussion takes into consideration the sub-Saharan African context. Based on the findings from the literature reviewed, intervention programs are recommended taking into consideration the sub-Saharan African context. Also, the findings are used for the recommendation for further research in sub-Saharan Africa.

## Introduction

*Most families are doing the best they can under difficult circumstances; what we should try to do is to change the circumstances, not the families* (Bronfenbrenner, 1979a).

Twenty-seven years ago, the first recognized cases of the HIV virus was identified in the USA (UNAIDS 2006). At the end of 2005, an estimated 38.6 million people worldwide were living with HIV, and the Jointed United Nations Programme of HIV/AIDS (UNAIDS) and World Health Organization (WHO) estimated that the virus has killed more than 25 million people so far. HIV/AIDS is a major global health concern and the pandemic is expanding beyond limits many experts believed possible (UNAIDS 2006).

HIV (Human Immunodeficiency Virus) is transmitted through direct contact of a mucous membrane or the bloodstream with a bodily fluid containing the virus, such as blood, semen, vaginal fluid, pre-seminal fluid, and breast milk (“HIV,” 2007). A person infected with HIV will eventually develop AIDS (Acquired Immunodeficiency Syndrome), which is a collection of symptoms and infections resulting from the specific damage to the immune system caused by HIV. HIV is a slow-growing virus, and usually there is a long period of infection before serious symptoms appear (Miller & Murray, 1999). A person is said to have AIDS when he or she first becomes seriously ill with opportunistic diseases or when the number of immune system cells in their body drops below a particular point. AIDS is a deadly disease and there is no cure.

Sub-Saharan Africa is the region most severely affected by the HIV/AIDS pandemic (Lau & Muula, 2004). In 2006, 63% of all persons infected with HIV were living in this region (UNAIDS/WHO, 2006). Both HIV prevalence rates and the numbers of people dying from AIDS vary greatly between African countries, and the national prevalence of HIV infection have been found to vary from 1% in Senegal to 33.4% in Swaziland (UNAIDS, 2006). The largest contributor to new HIV infections in sub-Saharan Africa is heterosexual intercourse (Lau & Muula, 2004; UNAIDS, 1999). Other main routes of HIV transmission in this region are from infected mother to child, prenatally, at birth and through breastfeeding (Miller & Murray, 1999). In sub-Saharan Africa women are the most affected group (Lau & Muula, 2004; UNAIDS/WHO, 2006). The majority of these women are in their childbearing age and it is estimated that up to 45% of pregnant women in sub-Saharan Africa are HIV-infected (UNAIDS, 2002). A mothers HIV infection and health status affects the child’s well-being and survival in many ways (Hong, Banta & Kamau, 2006; Hankin, Thorne, Peckham &

Newell, 2004). Without preventive treatment, about one-third of the births to HIV infected mothers will also become HIV-positive newborns (Schwartländer, Stanecki, Brown, Way & Monasch, 1999). Also, HIV-infected mothers tend to deliver premature and low birth weight infants (Castetbon et al., 1999; Leroy et al., 1998; Bodkin, Klopper & Langley, 2006; Hong et al., 2006; Dreyfuss et al., 2001).

Two decades of experience with HIV prevention and treatment and ten years of experience with effective antiretroviral therapy have given multiple evidence on how to prevent and treat this disease (UNAIDS, 2006). Antiretroviral treatment slows the progression from HIV to AIDS and can keep some people healthy for many years. In developed countries HIV/AIDS has become a highly sophisticated medical speciality (Levine, Foster & Williamson, 2005). Treatment to reduce mother-to-child HIV transmission has succeeded extraordinarily well in these countries with the introduction of antiretroviral medication (Kassage & Katzenstein, 2003). This practice can reduce mother-to-child transmission from up to 40% to below 10% (Newell, 2001). Unfortunately these interventions are not yet widely available in sub-Saharan Africa (Phaladze et al., 2005; Wood, 2002), but still the minority of children born to HIV-infected mothers in this region are infected by mother-to-child transmission (Newell, 2001; Richter & Foster, 2005).

The number of orphans in sub-Saharan Africa is increasing as rates of adult mortality have started to accelerate (Richter, 2003; UNAIDS/UNICEF/USAID, 2004). However, by far the largest group of vulnerable children are those living with an HIV-infected mother (Stein, et al., 2005). Approximately 70% of infected mothers in this region will survive for at least the first five years of their child's life (Nakiyingi et al., 2003), and this number will increase with the introduction of antiretroviral treatment. The effects of a mothers HIV infection on children are complex and wide-ranging (Bauman & Germann, 2005), and the picture is especially complex in sub-Saharan Africa. HIV-positive mothers in this region face multiple stressors such as health related and practical problems, stigma and discrimination, social isolation and lack of social support and mental health problems, all of which potentially can affect the well-being of these mothers and their children.

For the majority of HIV-infected women and their children living in sub-Saharan Africa maternal HIV can best be considered an additional stressor in an already stressful environment (Klein et al., 2000). In this region, poverty is a highly prevalent problem, which often precedes maternal HIV infection. Many people in sub-Saharan Africa live below the poverty line and any additional pressure on the family substantially strains the family resources financially, socially and emotionally (Foster, 2000; USAID, 2005). Extended

families seem to absorb the largest portion of the economic costs of the epidemic on households, and the majority of families receive no external help at all (Richter & Foster, 2004).

The economic and physical vulnerability accompanying the pandemic make the psychosocial burdens of the pandemic seem less important and less urgent (Bauman & Germann, 2005). Some countries in Africa have been addressing the psychosocial impact of the disease, but efforts have been generally inadequate (Lau & Muula, 2004). The effects of maternal HIV on child development are a major concern because the virus has become so widespread among women in their reproductive years (Stein et al., 2005). Therefore there is an urgent need to address the HIV pandemic's psychosocial effect on mothers and their children in sub-Saharan Africa.

### *Purpose*

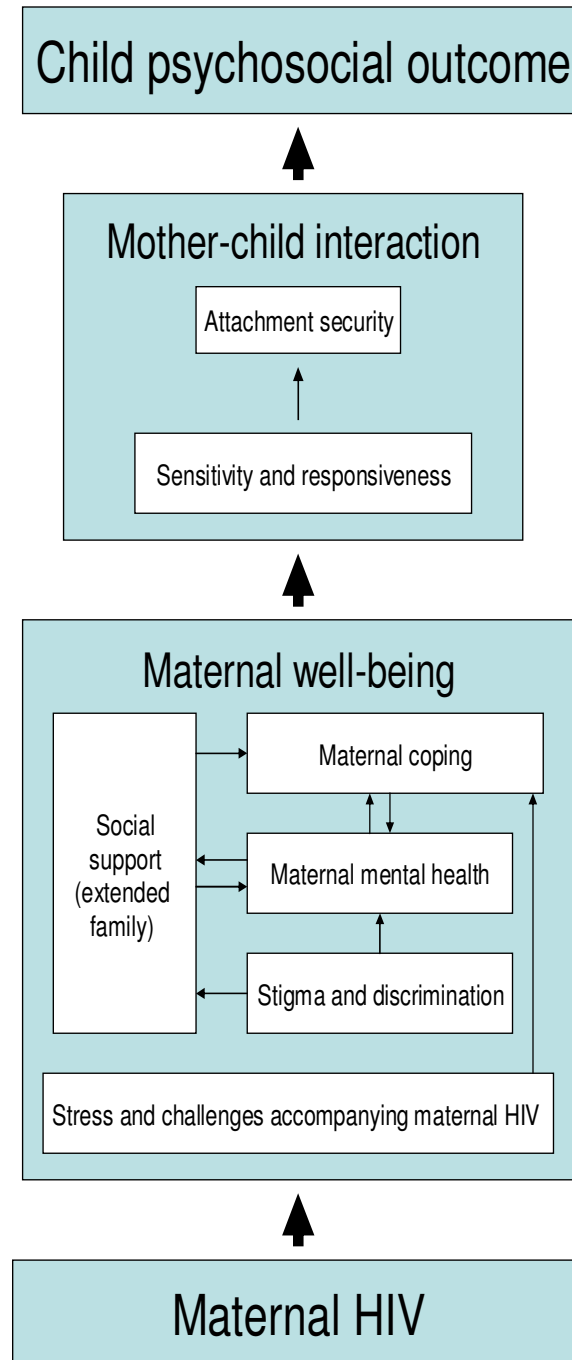
The purpose of this paper is to provide a review of the psychosocial literature regarding the impact of maternal HIV on mothers and their uninfected children, in order to provide a picture of the relationship between the well-being of HIV-infected mothers, mother-child interaction, and children's psychosocial outcome. The reviewed literature is primarily from the USA, but its implications will be considered for sub-Saharan Africa. A framework is presented (Figure 1), drawn on the ecological theory of Urie Bronfenbrenner (1974; 1977; 1979a; 1979b), as a way to organize the review and make coherent sections out of a large literature. The framework (Figure 1) both demonstrates the link between maternal HIV and child psychosocial outcome, and proposes a pathway that accounts for this relationship. Bronfenbrenner stressed the importance of studying a child's development within a context (Bronfenbrenner, 1977). The context that will be studied in this review are the one of a child living with a HIV-infected mother. As the framework demonstrates (Figure 1), maternal HIV is associated with a series of maternal well-being mediators influencing on each other and together determine maternal psychosocial well-being. A mother's well-being affects her ability to be sensitive and responsive towards her child, which again shapes the quality of the mother-child interaction through attachment security. Depending on how the different maternal well-being mediators associated with maternal HIV plays out and influences on each other they can serve either as risk factors or resilience factors. While acknowledging that the mother-child interaction and child psychosocial outcome are also influenced by a child's characteristics and environmental factors which affect the child directly this will not be given any focus in this paper.

The questions that are searched to be answered are: 1) Do children of HIV-positive mothers have an increased risk for psychosocial adjustment problems compared to children of HIV-negative mothers? 2) Can the quality of the mother-child interaction in the context of maternal HIV be impaired, impacting on child psychosocial outcome? 3) How does maternal HIV affect a mothers' well-being, thereby affecting mother-child interaction? 4) How can research findings so far in this field contribute to the planning and implementation of intervention programs in sub-Saharan Africa? 5) How can findings from studies so far provide ideas for further research in sub-Saharan Africa?

## Method

The review draws on published material from 1974 to 2007 which was mainly identified using keyword searches of electronic databases at the University of the Western Cape in South Africa, and at Tromsø University, Bodø University College, and Finnmark University College in Norway. Important electronic databases and web-sites used in this research are: Pubmed, Psycinfo, South African epublications, Blackwell-Synergy, ScienceDirect, Ebchohost, Springerlink, Google, Google Scholar, Google Books and JSTOR. Also, other articles were identified by scanning the reference list obtained through some of these sources. Keywords used included HIV/AIDS, maternal HIV, mother-child interaction, sub-Saharan Africa, child psychosocial development, mental health, social support, stigma, coping, attachment, sensitive and responsive caregiving, and interventions. Literature searches were also conducted in French, using the database "Google", but these searches gave few results compared to the same searches in English.

Figure 1, A framework demonstrating the link between maternal HIV and child psychosocial outcome, proposing a pathway that accounts for this relationship (Draws on the ecological theory of Bronfenbrenner, 1974; 1977; 1979a; 1979b).





### Child psychosocial outcome

The majority of the research on child psychosocial outcome addresses the effects of the virus on children that are HIV-infected, but recent studies have begun to examine the impact of maternal HIV on uninfected children's psychosocial development (New, Lee & Elliott, 2007). Although the literature remains in its infancy, there is some evidence that children of HIV-positive mothers have a moderately increased risk for psychosocial adjustment problems when compared with children of HIV-negative mothers, even though the children are not themselves infected (Forehand et al., 2002; Forehand et al., 1998; Forsyth, Damour, Nagler & Adnopoz, 1996; Fair, 2006; Kotchick, et al., 1997; Hough, Brumitt, Templin, Saltz & Mood, 2003; Klein & Forehand, 2000; Biggar, et al., 2000; Foster & Williamson, 2000; Bauman, Camacho, Silver, Hudis & Draimin, 2002;; Reyland, McMahan, Higgins-Delessandro & Luthar, 2002; Dorsey et al., 1999; Esposito et al., 1999; Miller & Murray, 1999). These children have demonstrated adjustment difficulties in multiple domains. Some of the studies will be reviewed in the following.

#### *Internalizing problems*

One of the more robust findings is that children of HIV-infected mothers have an increased likelihood of experiencing internalizing problems (i.e. depression and anxiety). These findings have been supported by a four-year longitudinal study (Forehand et al., 2002) and two cross-sectional analyses (Forsyth et al, 1996; Forehand et al., 1998) which all compared children of HIV-infected mothers with children of non-infected mothers from the same African-American community.

Forehand et al. (1998) conducted a study looking at the psychosocial adjustment of children and their HIV-infected mothers. The results indicated that children living with HIV-infected mothers demonstrated more internalizing problems than national averages on the CBCL ("Child Behaviour Check List"). On a child self-report indicator for depression, they found that 11% of children whose mothers were HIV-infected had scores equal to or close to the clinical cut-off score, whereas the same accounted for 2% of children whose mothers were not infected. The average mother-completed CBCL internalizing score also showed that children of infected mothers were reported to have more internalizing problems than children of uninfected mothers. However, the internalizing score for both children of HIV-infected and non-infected mothers were in the clinical range of concern. Forehand et al. (2002) also found that children whose mothers were HIV-infected reported more depressive symptoms ( $M = 9.21$ ) than children whose mothers were not infected ( $M = 6.99$ ) on the Children's Depression

inventory (CDI). Still, mothers in this study failed to report elevated levels of internalizing symptoms amongst their children compared to controls. Forsyth et al. (1996) found that children of HIV-infected mothers in the USA were found by the CBCL to be significantly more withdrawn and have more problems with attention than controls. In addition, compared to control children, children living with an HIV-infected mother reported more depression on the Children's Depression Inventory (CDI), but were not more anxious. However, compared with children of asymptomatic mothers, the children of symptomatic mothers were reported to be significantly more anxious and depressed on the CBCL, and the children reported more anxiety on the Revised Children's Manifest Anxiety Scale. Forsyth et al. (1996) also reported differences based on child versus mothers report, where the children reported more internalizing problems than their mothers did. One explanation for this finding can be a difficulty for the mothers to be aware of these problems because of the internalizing nature of the problems in question. It will therefore be important that researchers give it careful thought when they chose informants on child adjustment.

In a different study, also from the USA, Fair (2006) found that children whose mothers were HIV-infected and abused substances had poorer emotional functioning only when their mothers experienced HIV-related symptoms compared to non-infected mothers with a history of substance abuse. Children living in families with maternal HIV and substance use exhibited poorer emotional functioning than children who lived with substance use only. This study indicates that maternal HIV in the presence of other risk factors (i.e. maternal substance abuse) presents additional risk for the children. The studies mentioned indicate that maternal HIV is a moderately strong predictor for child internalizing problems.

### *Externalizing problems*

Several studies have reported elevated levels of externalizing symptoms (i.e. aggression and behaviour problems) amongst children of HIV-infected mothers in the USA (Kotchick et al., 1997; Hough et al., 2003; Klein & Forehand, 2000; Forehand et al., 2000; Forehand et al., 1998; Forsyth et al., 1996; Klein et al., 2000). Kotchick et al. (1997) studied the impact of maternal HIV on parenting in inner-city African-American families and found that maternal HIV emerged as a significant predictor of child-reported externalizing problems on the 19-item Aggressive Behaviour subscale from the Youth Self Report on the CBCL, with positive HIV-status being associated with more externalizing problems. Hough et al. (2003) also used the CBCL and Youth Self Report to assess the presence of behavioural problems among uninfected children of HIV-infected mothers in the USA. They found that the children

in their sample had significantly more externalizing problems than children in the non-clinical, normative sample. Klein and Forehand (2000) observed a significant association between a mother's HIV status and her child's externalising problems, where cross-sectional analyses scores revealed that higher scores on a risk factor index (RFI) were consistently associated with higher levels of child disruptive behaviour. However, the trend from these studies seem to be that the differences between children of infected and non-infected mothers are less marked than with internalizing symptoms. Forehand et al. (2002) found in their longitudinal study no differences at all between the two groups regarding externalizing problems, based on either children or mothers reports. Still, the average mother-completed CBCL externalizing score for children of both infected and non-infected mothers were in the borderline clinical range or in the clinical range. Forehand et al. (1998) found that compared to national averages, both children of HIV-infected and non-infected mothers had elevated levels of behaviour problems. The results regarding externalizing problems seem to be more mixed than for internalizing problems, with some studies failing to find a significant difference between children of HIV-infected and non-infected mothers. Still, externalizing problems for both groups of children in the studies mentioned seem to be close to or in the clinical range of concern.

#### *Cognitive problems, school performance and social problems*

Some of the studies mentioned have also indicated that children of HIV-infected mothers are at risk for developing cognitive problems and problems with academic achievements, in addition to social competence problems. Forehand et al. (1998) assessed the children's cognitive competence by a standardized reading achievement test and by the mother's report of the child's cognitive competence by administering the "Parent's Rating Scale for Child's Actual Competence" (PRS). The results indicated that children born to HIV-infected mothers show lower levels of cognitive competence than children of non-infected mothers, but the difference was not significant. Biggar et al. (2000) used Grade point average (GPA) to measure academic performance among children of HIV-infected mothers compared to controls. They revealed that maternal HIV status predicts children's grades where children living with HIV-infected mothers were likely to have poorer grades than children living with non-infected mothers. Also, Forehand et al. (1998) assessed the children's social competence by a mother report on the social competence subscale of the PRS, and found that children of infected mothers show lower levels of social competence compared to controls. The difference was not significant. Finding from these studies gives an

indication that children born to HIV-infected mothers experience problems in multiple domains.

To summarize, many empirical studies report that children of HIV-positive mothers show more adjustment problems than children of HIV-negative mothers (Forehand et al., 1998; Forehand et al., 2002; Forsyth et al., 1996; Fair, 2006; Hough et al., 2003; Biggar et al., 2000). This finding is especially evident when it comes to internalizing problems. The results therefore suggest that maternal HIV infection is a stressor that places children of HIV-infected mothers at greater risk for psychosocial difficulties. With respect to sub-Saharan Africa, no empirical research regarding children's psychosocial adjustment were to be found. One study conducted in Uganda reports that most children of HIV-infected parents felt hopeless and angry when parents became ill, and were scared their parents were going to die (Foster & Williamson, 2000).

One salient finding emerging from the studies mentioned is that some studies could only report moderate mean differences between children of infected versus non-infected mothers on some measures of child psychosocial adjustment (Forehand et al., 1998; Forsyth et al., 1996; Fair, 2006). Also, both groups of children in question were in some studies found to be close to or in the clinical range. It is hypothesized that the difference is not greater because the children in these studies originate from environments with multiple risk-factors that precedes or becomes a consequence of HIV/AIDS. These children have been found to live in environments with multiple stressors beyond maternal HIV-infection (i.e. poverty, community violence, and single-parent households) (Forehand et al., 1998). In addition, the findings from the abovementioned studies show that despite this adversity, most children do not show elevated levels of psychosocial problems, which speaks for the role of resilience factors.

#### Mother-child interaction

Multiple factors contribute the outcome of child development. Of special importance is the quality of the caregiver-child relationship. Recent research has identified two fundamental qualities that determine the caregiver's ability to provide effective care for the child, namely *sensitivity* and *responsiveness* (WHO, 2004). Sensitivity is the awareness of the infant and awareness to the infant's acts and vocalizations as communicative signals to indicate needs and wants. Responsiveness is the capacity for caregivers to respond contingently and appropriately to the infant's signals (WHO, 2004). Sensitive and responsive

caregiving is believed to be a requirement for the healthy psychosocial development of a child, and are key features of caregiving (WHO, 2004). Some meta-analyses have validated the responsiveness/sensitivity hypothesis (de Wolff & van Ijzendoorn, 1997; Bakermans-Kranenburg, Ijzendoorn & Jultter, 2003).

The most influential current account of caregiver-child relationships is *attachment theory* (WHO, 2004). Attachment is the strong, emotional, and reciprocal relationship established between an infant and a particular caregiver (Roediger et al., 1996). Multiple studies have found that maternal sensitivity and quality of attachment are closely related (Smith & Pederson, 1988; Bakermans-Kranenburg et al., 2003; Bakermans-Kranenburg, van Ijzendoorn & Kroonenberg, 2004; True, Pisani & Oumar, 2001). Both sensitive and responsive caregiving have been found to lead to secure attachment between caregiver and infant in several studies (Crockenberg, 1981; Bakermans-Kranenburg et al., 2003; Bakermans-Kranenburg et al., 2004; van Ijzendoorn, 1990). The relationship between sensitivity/responsiveness and an attachment classification has been found in different cultural settings and under both normal and stressful conditions (WHO, 2004; Bakermans-Kroonenburg et al., 2004).

There have been numerous studies assessing caregiver-child attachment cross-culturally, but less attention has been paid to early caregiver-child interaction in the developing world (True et al., 2001). Some studies have been conducted in sub-Saharan Africa. These studies, in addition to studies with African-American families, seem to imply a context for the infant-caretaker attachment formation that is rather different from the white middleclass families in the Western world (Bakermans-Kranenburg et al., 2004). African and African-American families are often embedded in multigenerational family systems where mothers draw on parenting support of relatives and non-relatives (Forehand et al., 2002; Odejide, Oyewunmi & Ohaeri, 1989; Bakermans-Kranenburg et al., 2004; Freeman & Nkomo, 2006). Infants and young children are seen as belonging to the extended family and the community as a whole, where several adults and older children often have a designated responsibility for infant and child care (Tomlinson, Cooper & Murray, 2005; Foster & Williamson, 2000). Over the past decades however, sub-Saharan African families and communities have undergone massive transformation (Verhoef, 2005). With increasing urbanization, globalization, labour migration, formal schooling, increasing poverty, effects of colonialism and apartheid, extended family members have found themselves relating to one another in new and different ways. Relatives have less contact with one another than they once did and the number of extended families continues to decrease (Kabiru, Njenga &

Swadener, 2003). Therefore, the support of extended families can not simply be taken for granted. There might be that these transformations have led to change in the traditional African extended family, especially in urban areas, but still the extended family network remains as an important resilience factor for many mothers and their children in sub-Saharan Africa (Foster, 2005).

To date, little is known about the different practices and effects of the rearing of children by more than one intimate adult (WHO, 2004). Some researchers argue that sensitive and responsive child-rearing dimensions and attachment formation affect children from developed and developing countries in similar ways (Bradley & Corwyn, 2005). The few studies conducted in sub-Saharan Africa show for the most part that the majority of infants form secure attachment with their caretakers (Tomlinson et al., 2005; Kermoian & Leiderman, 1986; True et al., 2001). However some researchers question whether attachment theory is a Western world concept that can not simply be adapted to the developing world context (Bretheron, 1992). One of the most controversial critics, Nancy Scheper-Hughes, went as far as criticizing the concept of innate maternal bonding as a myth (Scheper-Hughes, 1992).

#### *Maternal HIV and mother-child interaction*

Researchers have started to pay attention to the quality of the interaction between HIV-infected mothers and their non-infected children. Studies conducted in the USA have shown that children growing up with a HIV-infected mother show a lower quality of mother-child interaction and more conflicts with their mother than children of non-infected mothers (Forehand et al., 2002; Kotchick et al, 1997; Klein et al., 2000; Semple, Patterson, Nannis, Grant & the HNRC Group, 1995; Andrews, Williams & Neil, 1993; Reyland et al., 2002). Klein et al. (2000) assessed children's supportive relationship with their mother by using mother- and child reports of the "Interaction Behaviour Questionnaire" (IBQ). Children of HIV-infected mothers reported significantly lower mean levels of a supportive relationship with their mother than children of non-infected mothers. In the study conducted by Forehand et al. (2002), child report of mother-child relationship quality suggested that children of HIV-infected mothers view their relationship with their mother as less warm and supportive than do children whose mothers are not infected. However, mothers in the two groups did not report different levels of relationship quality. Kotchick et al. (1997) investigated in their longitudinal study the impact of maternal HIV infection on parenting in inner-city African-American families. The results revealed that the mothers in the control group reported

significantly better relationship quality and more monitoring of child behaviour compared to mothers in the HIV-infected group. HIV-infected mothers have also reported more resentment towards their children (Semple et al., 1995), as well as increased conflict with their children (Andrews et al., 1993). A more promising outcome was reported by Tompkins, Henker, Whalen, Axelrod and Comer (1999). They found high levels of mother-child relationship satisfaction between HIV-infected African American mothers and their children, reported by the mothers ( $M = 5.67$  on a 7-point scale from not at all satisfied (1) to extremely satisfied (7)).

In the broader child development literature, quality of the caregiver-child relationship has been shown to constitute a significant pathway whereby different environmental and individual factors impact on child development, serving either as risk or resilience factors (Brandt, 2005). Several different studies with HIV-infected mothers in the USA have found that a poor mother-child relationship can lead to psychosocial problems for the child (Bauman et al., 2002; Hough et al., 2003; Holditch-Davis et al., 2001; Kotchick et al., 1997; Forehand et al., 2002; Dorsey, Chance, Forehand, Morse & Morse, 1999). Hough et al. (2003) found in their study of low-income African-American mothers and their children that children's psychosocial adjustment is affected by the quality of their relationship with their parents. Children who felt more supported by their mothers were better able to cope with maternal HIV infection and to maintain a positive relationship with their mothers. Bauman et al. (2002) found that more conflict in the parent-child relationship was significantly correlated with higher CBCL scores for the children. Holditch-Davis et al. (2001) studied developmental outcomes of infants born to women with HIV in the USA and found that parenting ability, and especially positive attention, had the statistically strongest and most consistent relation to child outcome. Children who experienced more positive attention had better mental development, motor skills, language abilities, and adaptive behaviors. The results from the study of Kotchick et al. (1997) revealed that a better parent-child relationship was associated with lower levels of child-reported internalizing problems on the CDI (Children's Depression Index) and externalizing problems on the CBCL, and higher levels of mother-reported social and cognitive competence on a parent rating scale. Forehand et al. (2002) also reported that a more positive mother-child relationship quality consistently predicted fewer internalizing and externalizing problems on the CBCL, but only when the reporter of the relationship quality and child adjustment was the same person (i.e. child in both cases or mother in both cases). Also the results indicated a stronger association between a warm and supportive parent-child relationship and fewer adjustment difficulties (i.e. internalizing and externalizing problems)

for the non-infected group than the HIV-infected group. These findings suggest that the mother-child relationship is operating less effectively as a buffer in the HIV-infected families than in the families without maternal HIV infection. One explanation for this finding is that stresses accompanying the HIV infection may serve to disrupt the buffering effects of the mother-child relationship (Forehand et al., 2002).

Contrary to the findings mentioned above, a study conducted in sub-Saharan Africa and one study conducted in the USA, have demonstrated patterns of security attachment between HIV-infected mothers and their infants that were comparable to children of uninfected mothers (Peterson, Drotar, Olness, Guay & Kiziri-Mayengo, 2001; Johnson & Lobo, 2001). In the study of the relationship between maternal HIV infection and security of attachment among mothers and their infants in Uganda, Peterson et al. (2001) found no significant difference between the mean attachment security score for children of HIV-positive mothers compared to children of HIV-negative mothers. The HIV-infected mothers did not differ from uninfected mothers on total frequency of positive mother-child interactions and the mothers affect towards the child. It must be noted however that in cases where the mothers HIV infection had progressed to AIDS, their infants were found to be less securely attached. Moreover, mothers who were diagnosed with AIDS demonstrated less positive affect and lower frequency of positive interactions with their infants (Peterson et al., 2001).

Johnson and Lobo (2001) used the Nursing Child Assessment Teaching Scale (NCATS) to assess the quality of mother-infant interaction in two groups in the USA, namely HIV-positive mothers and their infant and HIV-negative mothers and their infant. Findings from this research showed no statistically significant difference in mother-child interaction between the HIV-positive and HIV-negative groups. Although maternal symptoms of depression were noted in more of the HIV-positive mothers than the HIV-negative mothers, covariant analysis failed to show that this factor had any significant influence on mother-child interaction scores between the groups. It was noted, however, that total sample group mean scores on NCATS maternal subscale and total interaction were significantly lower than published population norms. As Peterson et al. (2001) found in their study with respect to the caregiver-child relationship, disruptions are more evident in parents with advanced stages disease, and thus with more symptoms and functional impairment. Johnson and Lobo (2001) also found that the stage of the caregivers` illness was associated with the quality of the caregiver-child relationship and children`s security of attachment, rather than their HIV status per se.



Considering other environmental risk factors, Dutra et al. (2000) found that inadequate income and community risks predicted high levels of maternal depressive symptoms which resulted in poor parenting and, ultimately, child adjustment problems. Bakermans-Kranenburg et al. (2003) found in their study that the attachment security of African-American children was substantially lower than in white children. These two groups may be exposed to culturally different experiences, but that did not seem to lead to differences in attachment security. Poverty, however, were found to seriously hamper mothers sensitivity and the security of attachment between mother and child. Contrary to these findings, studies conducted in high risk communities in sub-Saharan Africa characterized by extremely high levels of adversity found high levels of secure attachment (Tomlinson et al., 2005; True et al., 2001). Barbarin (1999) hypothesized that South African children is more resilient with respect to poverty because of the role of the extended family.

To summarize, several studies from the USA have shown that maternal HIV can serve as a risk factor for HIV-infected mothers and their children, potentially disrupting the quality of the mother-child interaction. In addition, other risk factors (i.e. poverty) seem to influence mother's ability to provide sufficient emotional care for their children, thereby affecting quality of attachment. However, some studies provide evidence for the fact that some HIV-infected mothers and mothers in high risk South African communities, are able to provide sensitive and responsive care for their children. This speaks for the role of resilience factors, and it has been hypothesized that the role of the extended family can serve as such a resilience factor.

### Mothers' psychosocial well-being

There have been identified numerous potential mediators by which maternal HIV infection may be associated with disturbances in the psychosocial well-being of the mother (Forehand et al., 1998). In the following there will be a focus on the mediators that has been given the most attention in the literature reviewed. These are 1) stress and challenges accompanying maternal HIV infection, 2) maternal mental health, 3) maternal coping, 4) social support, and 5) stigma and discrimination.

#### *Stress and challenges accompanying maternal HIV infection*

Maternal HIV infection has been shown to be a clear stressor for African-American women and for women and their families in sub-Saharan Africa. These women face multiple psychological and practical challenges associated with maternal HIV such as disruptions in

family roles, anticipatory grief, lack of energy, poor health, reduced feeling of life quality, partner violence, substance abuse, and concerns about disclosure (Mast et al., 2004; Forehand et al., 2002; Hough et al., 2003; Miller & Murray, 1999; Klein et al., 2000; Dunkle et al., 2004; Koenig & Moore, 2000; Cohen et al., 2000; Murray et al., 2006; Phaladze, 2005; Maman et al., 2002; Gielen, McDonnell, Burke & O'Campo, 2000; Temmerman, Ndinya-Achola, Ambani & Piot, 1995; Hudson, Lee & Portillo, 2003). Mast et al. (2004) examined self-reported quality of life and health status of HIV-infected women and a comparison sample of non-infected women in Uganda with a culturally adapted version of "the Medical Outcomes Survey-HIV (MOS-HIV). They found that HIV-positive women reported significantly poorer health and physical functioning, more pain, and poorer role functioning and overall quality of life than HIV-negative women in the same community. In another study from sub-Saharan Africa, Phaladze et al. (2005) conducted a study in four different countries with people living with HIV/AIDS. They also found that few people in sub-Saharan Africa have a concept of "living well" with HIV/AIDS because treatment are not widely available. A HIV diagnosis may be perceived as a death sentence and the end of any quality of life (Phaladze et al., 2005).

Studies have shown that partner violence is highly prevalent in HIV-infected women, and there is growing evidence of the connection between HIV infection and violence toward women and children (Dunkle et al., 2004; Koenig & Moore, 2000; Cohen et al., 2000; Aldrovandi, Sinkala, Thea & Bolton, 2006). A study conducted in Zambia using systematic qualitative methods found that HIV-infected women identified domestic violence as one of the most prevalent problems linked to HIV (Murray et al., 2006). Maman et al. (2002) studied HIV-infected women in Tanzania found that they were significantly more likely to have experienced physical and/or sexual violence with a current partner compared to non-infected women. Partner violence was 10 times higher among HIV-infected women under the age of 30 than non-infected women in the same age-group. In a study conducted in the USA, Gielen et al. (2000) found that HIV-positive women report high rates of experiencing intimate partner violence (56% for emotional abuse, 21% for sexual abuse and 60% for physical abuse). Studies both from the USA and sub-Saharan Africa have reported that women who disclosure their HIV status to their partners may be at increased risk for violence (Gielen et al., 2000; Temmerman et al., 1995). This finding may result in reduced availability of social support for HIV-infected women because they are afraid of disclosing their HIV status to people close to them.

It has been hypothesized that the quality of the interaction between HIV-infected mothers and their children may suffer partly because of the stress these women have to deal with (Forehand et al., 2002; Hough et al., 2003; Miller & Murray, 1999). Some studies have shown that because of the stress and structural changes accompanying the illness, HIV-positive mothers engage in lower levels of effective parenting behaviours (Forehand et al., 2001; Forehand et al., 2002; Kotchick et al., 1997). These behaviours include maternal absence, fewer efforts to discipline and supervise the child, and reduced parental support for the child. It has been hypothesized that lack of adequate care for their children may be the result of HIV-infected mothers wrestling with their own feelings of guilt and anxiety (Foster & Williamson, 2000). Mothers who are HIV-infected might also be parenting less effectively as a direct result of their physical condition (Kotchick et al., 1997), thus making them less able to interact positively with their infants and children (Peterson et al., 2001).

A group of researchers in the USA examined the impact of parenting strain on the mental health of HIV-positive parents (Semple et al., 1997). They found that non-Hispanic white parents reported significantly more intrapsychic strain related to their role as a parent as compared to ethnic minority participants. This finding may reflect the importance of extended family and the strong bonds that exists within African-American and Hispanic families. The values of cooperation and reciprocity within ethnic minority families may help HIV-positive parents to cope (Semple et al., 1997). This finding is of great importance for the study of resilience factors in the lives of HIV-infected mothers and their children.

To summarize, multiple stressors and challenges accompanying maternal HIV have been found both in the USA and in sub-Saharan Africa, which can affect the mother-child interaction negatively. No studies could be found in the literature search that take into consideration how HIV-related stress in sub-Saharan Africa affect mother-child interaction and whether the support of extended families can help reduce HIV-related stress in this region. The study of Semple et al. (1997) gave some evidence for the fact that extended families may function as a resilience factor for African American and Hispanic families in the USA.

### *Maternal mental health*

Seriously ill mothers are often confronted with negative and stressful emotional effects that can lead to psychological disorders (UNAIDS, 1999). Mental health issues have been shown to be closely related to the experience of living with HIV/AIDS and with the course and management of the disease (Freeman, Patel, Collins & Bertolote, 2005). There are few

studies looking at mental health functioning in HIV-infected women and the greater majority of these studies have come from European samples (Mellins, Ehrhardt & Grant, 1997; Bungener, Marchand-Gonod & Jouvent, 2000; Kempainen et al., 2003), and samples from the USA, mainly with African-American women (Morrison et al., 2002; Miles, Burchinal, Holditch-Davis, Wasilewski & Christian, 1997; Klein et al., 2000; Kempainen et al., 2003; Tompkins et al., 1999). Results indicate that HIV-infected women report higher levels of psychological distress than non-infected mothers (Klein et al., 2000; Schuster et al., 2000; Morrison et al., 2002; Roth, Siegel & Black, 1994; Brackis-Cott, Mellins, Dolezal & Spiegel, 2007; Hough et al., 2003; Bungener et al., 2000; Miles et al., 1997). With the use of the Structured Clinical Interview for DSM-III-R, Mellins et al. (1997) found that thirty-five percent of HIV-infected women in their study met criteria for experiencing at least one psychiatric diagnosis. A study conducted in France found that 77% of African women and 52% of European women in the sample studied were diagnosed with one psychiatric condition, mainly anxiety or depression (Bungener et al., 2000).

#### *Maternal anxiety*

Morrison et al. (2002) found in a sample of women in the USA no significant difference between HIV-positive and HIV-negative women in the rate of the different anxiety disorders in DSM-IV, but HIV-positive women had significantly higher anxiety symptom scores on the “14-item Hamilton anxiety scale”. In a review conducted by Kempainen et al. (2003) it became clear that people living with HIV/AIDS in the USA and in Norway commonly experience anxiety and fear, but that anxiety among HIV/AIDS patients is frequently unrecognized and underreported.

#### *Maternal depression*

The most robust finding has been that HIV-positive women and mothers are at high risk for depressive symptoms (Miles et al., 1997; Moneyham, Sowell, Seals & Demi, 2000; Morrison et al., 2002; Hughes, Jelsma, Maclean, Darder & Tinise, 2004; Tompkins et al., 1999). Miles et al. (1997) examined longitudinally depressive symptoms in 54 HIV-infected mothers with infants in the USA. About a third were at risk for depression. The best predictors of depressive symptoms were feelings of stigma, self-perceptions of health, and physical symptoms, all factors associated with HIV. In another study from the USA, Morrison et al. (2002) concluded that the proportion of women with a diagnosis of current major depressive disorder was four times greater in the HIV-positive group compared to the HIV-negative group. Tompkins et al. (1999) found using the Center for Epidemiological Studies-Depression (CES-D) Scale that HIV-infected women had greatly elevated depression scores

compared to non-infected women ( $M_s = 19.77$  vs.  $12.69$ ), all from an African American community.

Research conducted in sub-Saharan Africa has showed that depression is highly prevalent (Jelsma et al., 2002). One study conducted in a peri-urban South African community found that the point prevalence of maternal depression was almost 3 times the rate in Western samples, without controlling for HIV infection (Cooper et al., 1999). Another study from South Africa reported high prevalence rates of depression among HIV-infected participants, all of whom were in advanced stages of AIDS and were living in a resource poor area (Hughes et al., 2004).

It is well established, in studies not involving HIV/AIDS, that maternal depression has adverse effects on mother-child interaction (Goodman & Gotlib, 1999; Beardslee, Bemporad, Keller & Klerkman, 1983; Hartley & Pheland, 2003; Heneghan, Silver, Bauman, Westbrook & Stein, 1998). The symptoms of depression can disrupt caregiving because of self-preoccupation, negative mood, and lack of energy (WHO, 2004). It has been hypothesized that depression associated with maternal HIV infection make the mothers less available for parenting (Roth et al., 1994; Bauman et al., 2002), withdrawing from her child and become inattentive to the child's needs (WHO, 2004). Maternal depression, particularly in disadvantaged communities and among HIV-infected mothers, has been shown to be associated with impairments in the mother-child relationship, which in turn have an adverse impact on the course of the child's development (Forehand, Biggar & Kotchick, 1998; Cooper & Murray, 1998; Hough et al., 2003; Tomlinson et al., 2005; Bauman et al., 2002). Hough et al. (2003) found in their study of low-income, HIV-infected African-American women and their non-infected children that maternal levels of emotional distress, which included depression, directly predicted children's problem behaviours. The children in this sample had significantly more internalizing and externalizing problems than a normative group. Also, Bauman et al. (2002) handed out a self-report instrument for mental health (PSI- Psychiatric Symptom Index) to HIV-infected mothers in the USA measuring the intensity of 29 common symptoms of depression, anxiety, anger and cognitive disturbance. They found that the PSI score was significantly related to the mother-reported CBCL score for their child, and therefore concluded that the effects of the HIV risk factors on the child's mental health were mediated through increased psychological disturbance in the mother.

Regarding sub-Saharan Africa, a study conducted in South Africa found high levels of postpartum depression and associated disturbances in the mother-infant relationship (Tomlinson et al., 2005). Another study of maternal depression in sub-Saharan Africa have

shown with regard to the mother-infant relationship that depressed mothers were significantly less sensitive and responsive to their infants than were non-depressed mothers (Cooper et al., 1999). Also the infants of depressed mothers were shown to be less positively engaged with their mothers (Cooper et al., 1999).

It must be noted that some studies failed to find an association between HIV-infected mothers' depression and a disruption in the mother-child interaction and child psychosocial outcome. One study reported that while HIV-infected mothers exhibited more depression than non-infected mothers, depression was not associated with a noticeable reduction in the quality of interaction with their children (Johnson & Lobo, 2001). Another study found no relationship between maternal depressive symptoms and child development, including language, adaptive behaviour, and mental and motor development (Holditch-Davis et al., 2001). It therefore seems reasonable to conclude that quality of mother-child interaction, rather than maternal depression per se, affects child psychosocial outcome. This is consistent with other research which shows that the relationship between depression and child adjustment is largely mediated by quality of parenting (Murray, Fiori-Cowley, Hooper & Cooper, 1996). A further explanation can be that more direct links between depression and parenting or child outcome are only evident where levels of depression are particularly high (Brandt, 2005).

To summarize, HIV-infected women are at greater risk for psychiatric disorders, particularly depression. Mother-child interaction can be disturbed because of a mother's depression, but still some women seem to provide proper care and have a warm and caring relationship with their children despite their depression. If the mother-child interaction is disturbed however, there is an increased risk for child psychosocial problems.

### *Maternal coping*

Studies have shown that HIV-infected patients in the USA and Europe frequently use ineffective coping strategies when trying to cope with their infection (Hough et al., 2003; Grassi, Righi, Sighinolfi, Makoui & Ghinelli, 1998). These include emotion-focused strategies such as denial, concealment, isolation, crying, yelling, excessive eating and sleeping, and daydreaming. In contrast, taking an active-behavioural approach (i.e. seeking information and using positive reappraisal) appears to be the most effective means of dealing with a HIV diagnosis (Hough et al., 2003). Very few studies have been conducted on African women and it is not known whether they cope with an HIV-infection in the same way as women in the Western world (Bungener et al., 2000).

Less effective coping styles among HIV-infected patients in the USA and in Europe has been associated with both increased psychological distress and decreased social support (Leserman, Perkins & Evans, 1992; Grassi et al., 1998; Hough et al., 2003). Grassi et al. (1998) evaluated coping among HIV-infected out-patients in Italy through the Mental Adjustment to Cancer (MAC) scale, a 40-item self-report questionnaire recently used with HIV-infected patients. They found that psychological distress symptoms (i.e. phobic anxiety, depression) and low levels of social support were related to less effective coping styles. Hough et al. (2003) found that HIV-infected mothers coping behaviour was mediated through access to social support. Maternal social support was shown to have a strong, positive effect on the use of active meaning-making coping, which, in turn, predicts less emotional distress (Hough et al., 2003). They also found that the greater the severities of symptoms, the more likely the mothers were to use passive, emotion-focused coping strategies. It seems reasonable that the more symptoms a HIV-infected woman experience, the greater difficulties she will have maintain an effective coping strategy.

To summarize, no studies were to be found that specifically studied the link between maternal coping, mother-child interaction and child psychosocial outcome in the presence of maternal HIV. However, studies from the USA and Europe give an indication that coping strategies can be associated with a mother's psychological well-being and her access to social support. It is hypothesized that sufficient social support enables HIV-infected mothers to cope with their infection, which, in turn, leads to less psychological distress. These findings points in the direction of social support as an important resilience factor for HIV-infected mothers, positively affecting their coping abilities.

### *Social support*

Social support is the physical and emotional comfort given to us by our family, friends, and others ("Social support," 2007). It is an indication of social resources individuals can access in times of need (McCarty & McMahon, 2003). Researchers have investigated the sources of support received by HIV-infected mothers as well as the relationship this support has to the well-being of both infected mothers and their children.

Literature from the USA demonstrates the beneficial effects of social support on HIV-infected women's emotional distress. For instance, more social and emotional support from neighbours and friends has been associated with less psychological distress (Klein et al., 2000; Hough et al., 2003; Hough, Magnan, Templin & Gadelrab, 2005). As mentioned in the study of Hough et al. (2003), mothers with adequate social support were more likely to use

effective coping strategies in addition to exhibiting decreased emotional distress. They also reported that the amount of social support experienced decreased as HIV symptoms increased. Social support has also been shown to have a beneficial effect on health-related quality of life for those with and without access to antiretroviral treatments (Burgoyne & Renwick, 2004; Kirksey, Hamilton & Holt-Ashley, 2002). Kirksey et al. (2003) reported among a sample of HIV-infected women in the USA that social support correlated significantly with overall health perception.

Recent research among families in sub-Saharan Africa and among African-American families have found that the social network, that involves extended families, community members and friends, often serves as a powerful source of support for HIV affected families (Burchinal, Follmer & Bryant, 1996; Owens, 2003). Some studies have shown, however, that HIV-infected mothers do not always have the opportunity to take advantage of that support. Klein et al. (2000) found that HIV-infected low-income African-American mothers and their children endorsed receiving lower levels of socio-emotional support from neighbours and friends than controls. Research conducted in sub-Saharan Africa indicates that HIV-infection can lead to a withdrawal from existing social networks and a breakdown in non-family social support. Osei-hwedie (1994) revealed that as a result of the shame and guilt associated with AIDS, many families isolated themselves from social support.

The lack of support for mothers is likely to strain their caregiving capacity (Brandt, 2005). Mothers with larger support networks have been shown to be more responsive to their infants and provide more stimulating home environments than mothers with smaller support networks (Burchinal et al., 1996). Crockenberg (1981) found that social support affects security of attachment in part through a mother's responsiveness. Whether a mother behaves unresponsively appears to be influenced by perceived social support, and the adequacy of the mother's social support has been found to consistently be associated with the security of attachment between mother and infant (Jacobson & Frye, 1991).

It has been established from studies not involving HIV/AIDS that lack of maternal social support has adverse effects on children's development, particularly in disadvantaged communities (Stein et al., 2005; Cooper & Murray, 1998). Amongst HIV-infected mothers, more social support has been associated with less depressive mood and disruptive behaviour among the children (Klein et al., 2000). Research conducted in the USA suggests that one important way in which maternal social support impacts children's psychosocial adjustment is through its association with mothers psychological functioning. As mentioned earlier, Hough et al. (2003) found that higher levels of maternal social support, in the context of maternal



HIV-infection, were associated with less emotional distress among the mothers. In addition, lower levels of maternal emotional distress were, in turn, associated with lower levels of both internalizing and externalizing symptoms among their children.

To summarize, the studies mentioned show a trend that lack of social support among HIV-infected mothers puts these women at risk for psychological distress and for using insufficient coping strategies, which in turn is associated with disruptions in the mother-child relationship and psychosocial problems among their children. On the other side, sufficient maternal social support can serve as an important resilience factor for the mother and her child by improving maternal well-being and quality of caregiving, thereby protecting the children from negative developmental outcomes.

### *Stigma and discrimination*

Stigma is a social construction where stigmatized individuals are said to possess a characteristic that labels them as different in a negative way (Carr & Gramling, 2004). It has been well documented that people living with HIV/AIDS experience stigma and discrimination on an ongoing basis (Skinner & Mfecane, 2004). Studies have shown that HIV-infected women face a unique set of stressors associated with the stigmatizing and discriminating nature of the disease (Semple et al., 1997; Clark, Lindner, Armistead & Austin, 2003; Alonzo & Reynolds, 1995).

In an ethnographic study of HIV-infected European American women it was found that at the time of diagnosis with HIV/AIDS, women already are aware of the stigma associated with the disease and they immediately see themselves differently and believe others do also (Carr & Gramling, 2004). It also became clear that the fear of stigma was so overwhelming that on diagnosis, the women were not concerned with the possible physiological changes or death accompanying the HIV infection but rather the psychosocial ramifications that accompany this disease (Carr & Gramling, 2004). In most African communities, HIV/AIDS is a taboo subject and diagnosis of HIV is often associated with negative social stigma. People often feel ashamed and do not want to discuss the disease or determine their HIV status (Lau & Muula, 2004; Kegeles, Coates & Christopher, 1989; Skinner & Mfecane, 2004; Clark et al., 2003; Duffy, 2005). Fear of discrimination and stigma limits the possibility of disclosure even to important sources of support such as family and friends (Skinner & Mfecane, 2004; Miller & Murray, 1999). Carr and Gramling (2004) found that the first persons told of the HIV/AIDS diagnosis were usually close family members or friends. Sometimes family members were supportive, but often this was not the case. Stigma

has been found to contribute to a family's increasing alienation from the traditional social supports of extended family and community institutions that are available to families living with other serious illness (Roth et al., 1994).

As the level of perceived stigma increases the level of psychological functioning tends to decrease (Clark et al., 2003). Studies have shown that HIV-infected mothers who feel stigmatized are more depressed, more isolated and receive less social support than mothers who are not stigmatized (Miles et al., 1997; Carr & Gramling, 2004). Stigma has also been shown to undermine the person's capacity to cope with the disease (Skinner & Mfecane, 2004).

Some evidence has indicated that experienced stigma by HIV-infected mothers can affect the psychosocial development of her child. Bauman et al. (2002) found in their study that higher personal maternal stigma from HIV/AIDS was significantly related to increased CBCL scores for children, especially associated with child behavioural problems

To summarize, maternal stigma have been shown to lead to multiple problems for the mother, including stress and challenges accompanying the illness, psychological problems, ineffective coping strategies, and insufficient social support and social isolation. Therefore, stigma and discrimination are serious matters that need to be given more attention.

#### Suggestions for interventions in sub-Saharan Africa

Researchers world wide are working to find a cure for HIV/AIDS, and multiple interventions aimed at reducing the infection rates of HIV have been widely implemented both in the Western world and in sub-Saharan Africa. In addition to prevention strategies it is equally important to care for those already infected or affected by HIV/AIDS. Efforts are being made to reduce the impact of HIV/AIDS through interventions such as access to nutritional assistance and treatment for opportunistic infections and other health issues (UNAIDS 2006). Also, supportive programmes need to be implemented to help deal with the stresses accompanying maternal HIV infection. The factors discussed in this review contributing both to risk and resiliency in HIV-infected mothers and their children can work as a guideline for the development of intervention programs.

#### *Mother-child interaction*

The review provides some evidence for the importance of a secure mother-child relationship for a positive child psychosocial outcome in the context of maternal HIV. Therefore, at the core of most intervention programs there should be efforts to strengthen

caregiver-child relationships. An example of such an intervention program implemented in South Africa showed that it is possible to improve the quality of mother-infant interaction by providing mothers with support through their pregnancy and the first postpartum months (Cooper et al., 2002). The aim of the intervention was to provide one group of 32 mothers with emotional support and to encourage them in sensitive and responsive interactions with their infants, while a matched group of another 32 mothers did not receive such intervention. The intervention was delivered by four community workers who used particular items from the Neonatal Behavioral Assessment Schedule (NBAS) to sensitize the mother to her infant's individual capacities and sensitivities. At 6 months post-partum, maternal mood, the mother-infant relationship and infant growth were assessed (Cooper et al., 2002). No reliable impacts of the intervention on maternal mood were to be found using the rate of DSM-IV major depression. However, the quality of the mother-infant interaction was significantly more positive for those who had received the intervention, where the mothers expressed more positive affect and showed greater sensitivity than the mothers in the comparison group. Also, the two groups showed differences in terms of physical development at 6 months. Infants in the intervention group were significantly heavier and taller than those in the comparison group (Cooper et al., 2002). This pilot study has produced some evidence for the benefit of a community-based mother-infant intervention delivered by trained community workers in sub-Saharan Africa.

“The Programme on Mental Health” in the WHO has supported an intervention programme to improve caregiver-child interaction for the purpose of promoting better psychosocial development in children (WHO, 1998). They have developed a sensitization program by which the caregiver goes through a process of becoming more sensitive and responsive to the child's qualities and needs, as well as her own ability to provide loving care and guidance (WHO, 1998). The intervention is provided in groups. Information and training is given verbally, through videos, and booklets. Also, the intervention includes role play, group discussions and home tasks. The program incorporates traditional values and positive local practices of child-care. The planning and supervising of the program are done by professionals but the actual work in the field is done by facilitators that knows the community and knows how to communicate with the population. This intervention program with a focus on caregiver-child interaction can be recommended as a guideline for the implementation of intervention programs aimed at HIV-infected mothers in sub-Saharan Africa.

*Maternal well-being*

The findings from this review suggest that interventions should not only focus on improving the quality of mother-child interaction directly, but also indirectly by promoting maternal well-being. A particularly huge threat to the well-being of HIV-infected mothers has been shown to be through stigma and discrimination. Therefore, when mobilizing efforts to help mothers who are HIV-positive to deal with their illness, stigma and discrimination should be highlighted. Researchers stresses that all interventions should address stigma as a part of their focus, and any social support programmes and clinical services should be provided in unstigmatized settings (Skinner & Mfecane, 2004; Duffy, 2005). Much of what has been written about stigma in the context of HIV/AIDS has emphasized its complexity, and has attributed the inability to respond to them more effectively to both their complex nature and their high degree of diversity in different cultural settings (Parker & Aggleton, 2003). Parker and Aggleton (2003) argues that stigma, discrimination and denial have been poorly understood and often marginalized within national and international programmes and responses. Because of the seriousness of stigma and discrimination against HIV-infected mothers the issue should be addressed both on a community and a national level. Stigma and discrimination can be reduced by educating and informing the public in general about the transmission and outcome of HIV/AIDS. In addition, information about HIV/AIDS can help to reduce misbelieves and myths about the virus. Providing information about the HIV pandemic should therefore be at the core of most intervention programs (Åsander et al., 2004).

A particularly key element of all intervention programs should be to focus on promoting social support available for HIV-infected women. Researchers from the USA reports that HIV-infected mothers may benefit from interventions that increase their access to positive social support (Kirksey, Hamilton & Holt-Ashley, 2002; Klein et al., 2000). With respect to sub-Saharan Africa, no empirical studies could be found that have studied the effects of intervention programs on promoting social support for HIV-infected women. However, this review has provided some evidence for the fact that extended families have been found to be an important resilience factor for HIV-infected mothers and their children. In addition, traditional indigenous and support groups are major sources of support in communities that are experiencing the impact of the AIDS pandemic (UNAIDS, 1999; WHO, 2003). Many communities have traditional indigenous groups such as savings clubs, burial societies and labour-sharing schemes which play a major role in helping households to cope with the HIV pandemic. In addition to providing material support, these informal groups are

major sources of psychosocial support (UNAIDS, 1999). The report from WHO (2003) described a range of projects in different parts of the world that provide care, psychosocial support and counselling to HIV-infected women and their families. Many of these projects come from sub-Saharan Africa. These support groups which provide information about the different aspects of HIV/AIDS and give the women an opportunity to share their stories and worries.

As some studies have shown, maternal social support has a strong, positive effect on the use of active meaning-making coping, which, in turn, predicts less emotional distress. Therefore by intervening on the abovementioned factors directly, it is hypothesized that this can also lead to an improvement in maternal mental health and the use of effective coping strategies.

#### *Extended families and community support*

Since the role of the extended family has been proven in many different studies to function as an important resilience factor, interventions should help them fulfil their potential to protect HIV-infected women and children from negative outcomes. It is important, however, to consider that although the extended family may serve as an important source of support, it may not always be the case. In rural communities in sub-Saharan Africa, the traditional values are often maintained and the extended family safety net is better preserved (Foster & Williamson, 2000). Contrary to that, countries that have become more urbanized have shown to have extended family nets that are weakened. Mothers and their children who slip through the safety net of the extended family may end up in a variety of vulnerable situations. Also the multiple risk factors in many sub-Saharan African communities may cause stress and problems fulfilling everybody's needs in the extended family system. Therefore, some researchers argue that reliance on traditional family structures to deliver home-based care might no longer be realistic without some external assistance (Phaladze et al., 2005). Families affected by HIV/AIDS should be given additional support that goes beyond maternal psychosocial support for HIV-infected mothers. Researchers should assess what assistance families need and when they need it.

In reality, many affected families receive no formal assistance from external agencies and are therefore dependent on the support they receive from neighbors and the community (Richter & Foster, 2005). In sub-Saharan Africa, community involvement is said to be the key to the sustaining of HIV/AIDS intervention programs, and the results from community-based programs in this region have been encouraging (Lau & Muula, 2004; Salole, 1992; Gillespie,

Norman & Finley, 2005). Thousands of communities throughout Africa have begun to recognize the increasing vulnerability of children affected by HIV/AIDS and have responded with ingenuity (Bolton & Wilk, 2004; Mutangadura et al., 1999). Interventions involving community members are shown to be effective and sustainable, but mobilizing the community can be a challenge (Lau & Muula, 2004). Most programs implemented on community level are run by volunteers without the expertise to evaluate their efforts or to conceive their activities on a larger scale (Richter & Foster, 2005). In spite of a considerable amount of activity being carried out by community groups throughout sub-Saharan, there is lack of data and limited study of many key issues (Foster & Williamson, 2000).

To summarize, interventions targeted at HIV-infected women and their children in sub-Saharan Africa should emphasize the importance of the mother-child interaction and the well-being of the mother for a healthy developmental outcome for the child. Intervention programs should therefore include ways of helping HIV-infected mothers to become more sensitive and responsive towards their children and help mothers to re-establish their capacity for good caregiving appropriate for their culture. In addition, they should find cultural sensitive ways of improving maternal well-being, especially social support. In particular programs should intervene to help extended families and communities to fulfil their potential as an important resilience factor. For intervention programs to be implemented in sub-Saharan Africa they need to be sensitive for the fact that the problems facing HIV-infected mothers and their children in sub-Saharan Africa are many and varied. It therefore seems unrealistic that single interventions can produce significant improvement. Integrated and cost effective action is needed with the help and financial support from national and international agencies.

#### Suggestions for further research in sub-Saharan Africa

Research conducted in sub-Saharan Africa regarding the impact of maternal HIV on child psychosocial outcome is so far limited. One important question that arises from this review is whether research conducted in the Western world simply can be replicated to sub-Saharan Africa? Some researchers argue that maternal HIV and its impact on the mother-child interaction and child psychosocial outcome affects families in sub-Saharan Africa in many of the same ways as it does families in the Western world (Bauman & Germann, 2005). Therefore it has been suggested that findings from communities in the USA and in Europe can be generalized to sub-Saharan African communities. It is of value to be able to draw on some of the research already conducted in the Western world to guide future research in sub-

Saharan Africa. Still, while acknowledging that there is a need for empirical studies tested and validated in the sub-Saharan African context, some suggestions for further research will be presented in the following.

Firstly, prospective and longitudinal studies should examine whether an effect can be seen between maternal HIV and child psychosocial outcome in sub-Saharan Africa. It can be hypothesized that children of HIV-infected mothers in this region will be affected in many of the same ways as children of HIV-infected mothers in the Western world, knowing that maternal HIV has been shown to affect maternal well-being negatively in this region. If such a relationship is to be found in sub-Saharan Africa, researchers should further attempt to uncover the variables that mediate this relationship in a sub-Saharan African context. The proposed framework in Figure 1 can be used as a guideline in this research, but it will be important to carefully investigate whether other mediation pathways not considered in this review can provide additional effects. In addition to sort out the directionality of any effects, research methods designed to determine the different factors' contributions and how they interact with each other should be considered.

Secondly, as researchers have pointed out, there is lack of clarity of the attachment theory's implications for child rearing in sub-Saharan Africa. Therefore, further studies concerning attachment formation and caregiving practices should take into consideration the sub-Saharan African context. Of special interest would be to study how children of HIV-infected mothers form attachments with multiple close adults and older children in the extended family system. Researchers should be sensitive to cultural acceptable descriptions of sufficient care for children in sub-Saharan Africa as well as the context of multiple caregivers.

Thirdly, several studies mentioned in this review reported that the different stages of a mothers HIV-infection (HIV vs. AIDS, asymptomatic vs. symptomatic) can lead to different outcomes concerning the well being of the mother, the quality of the mother-child interaction and reports of child psychosocial problems. It seems like the longer the HIV virus has progressed the more serious effects it has on the mother's well-being and the mother-child interaction. Therefore, further studies should to a larger degree take into consideration the mother's stage of illness.

Forth, the issue of how some families in sub-Saharan Africa remain functioning well in the face of HIV/AIDS is a crucial area for further research. In particular, cultural sensitive studies should look into the different patterns of social support offered by extended families and communities. Researchers should explore the family characteristics and dynamics that allow some families to maintain their supportive function, while other families are failing to

do so. In the bigger picture, the tradition of the extended family system should be seen in the light of the social, cultural and economical changes following urbanization, globalization and increasing poverty in sub-Saharan Africa. Further, important means of assistance that these families might need in order to maintain their function as a resilience factor should be investigated. Therefore, agencies involved in research should conduct studies in partnership with affected families and communities.

Lastly, further research in sub-Saharan Africa should take into consideration the environmental challenges faced by families in this region. It should be recognized that HIV-infected mothers and their children in sub-Saharan Africa usually originate from environments with multiple risk factors which precedes a HIV-infection. Also, because of the high diversity in sub-Saharan Africa, research available and appropriate in developed country settings should not simply be recommended for the sub-Saharan African context without considering this diversity.

#### Limitations

Applying Western world research findings to draw conclusions concerning the sub-Saharan African context can be regarded a limitation in this review. However, considering the minimal amount of empirical research conducted in sub-Saharan Africa so far, this review helps drawing attention to urgent research needs in this region. This review did not take into consideration the children's age in the studies reviewed. Children in different age groups will probably respond to the effects of maternal HIV-infection in different ways considering different developmental stages. Also, no studies were reviewed considering neuropsychological problems amongst children born to HIV-infected mothers. Such problems might have accounted for some of the psychosocial problems reported amongst these children, especially cognitive problems. Another issue of concern not accounted for in this review is whether the HIV virus can lead to cognitive impairment or dementia, thereby effecting a mothers well-being and her ability to provide proper care for her child. Further, while acknowledging that antiretroviral treatment is highly available in the Western world and not so much in sub-Saharan Africa, this review did not take into consideration whether the HIV-infected mothers in the studies mentioned had access to such treatment. It can be hypothesized that whether a mother has access to antiretroviral treatment or not will affect her well-being accordingly. Other factors not accounted for in this review that might affect maternal well being is socioeconomic status, single-parent households and community crime rates to mention a few.



### Conclusions

This review has attempted to shine light on the effects of maternal HIV on child psychosocial outcome. Drawing on the ecological theory of Urie Bronfenbrenner, a proposed framework has served as a guideline for reviewing the research in this area, elucidating the pathways linking maternal HIV to child psychosocial outcome. Children of HIV-infected mothers in the majority of the studies reviewed are at moderately higher risk for psychosocial problems compared to children of non-infected mothers. However, some studies failed to find any difference between these two groups. As the relationship between maternal HIV and child psychosocial outcome was somehow inconsistent, studies provided some evidence for the fact that maternal well-being plays an important intermediate role in this relationship. The pathway from maternal well-being to child psychosocial outcome was found in several studies to go through the quality of mother-child interaction. More specifically, a mother's well-being directly affects her ability to provide sensitive and responsive care for her child, which impacts on the attachment formation between mother and child, thereby affecting child psychosocial outcome. The finding that both children of infected and non-infected mothers in some studies were close to or in the clinical range of concern provide evidence for the fact that HIV-infected mothers and their children typically originate from high risk environments. Some empirical research indicates that poverty in particular has been shown to be a threat to the well-being of HIV-infected mothers and to their children's psychosocial outcome. There is enough evidence available to conclude that any threat to the well-being of HIV-infected mothers, both that associated with their HIV status and their risky environments, can undermine the protective role of the mother-child relationship, thereby exposing the children to a range of risks to their psychosocial outcome. On the brighter side, many of the HIV-infected mothers and their children seem to cope well in the context of maternal HIV which speaks for the role of protective factors. The protective system of extended families has been shown to be an important resilience factor for these women and their children.

The few studies reviewed from sub-Saharan Africa illustrates that there is an urgent need for action in this region. Empirical studies conducted in sub-Saharan Africa should aid researchers in the design and implementation of effective intervention programs to help HIV-infected mothers and their children to cope in the face of maternal HIV. When implementing intervention programs in this region there should be a focus on building on what is already working, especially extended family support and strengthening of community capacity. Extended families in sub-Saharan Africa show great potential as a supportive system for HIV-infected mothers and their children, but some of their resilient features are not reaching their

full potential. Therefore, these families should be given additional support and assistance that goes beyond psychosocial support.

The findings from this review point to a number of directions for future research in sub-Saharan Africa. More empirical research is urgently needed in this region, culturally adapted and validated on sub-Saharan African populations. Research is needed to identify the mediating mechanisms by which maternal HIV affects child psychosocial outcome in this region, as well as other environmental factors that might affect maternal well-being and child psychosocial outcome in the context of maternal HIV. Further, child rearing and attachment formation in sub-Saharan Africa should be thoroughly addressed. In particular, the role of the extended family as an important resilience factor for HIV-infected mothers and their children should be given attention in future research.

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