THE RELATIONSHIP BETWEEN INTIMATE PARTNER VIOLENCE, HIV-RELATED STIGMA, SOCIAL SUPPORT, AND MENTAL HEALTH AMONG PEOPLE LIVING WITH HIV

ELSIE-MARIE BREET

Thesis presented in partial fulfilment of the requirements for the degree of Masters of Science (Psychology) in the Faculty of Science at Stellenbosch University

Supervisor: Professor SA Kagee

Faculty of Arts

Department of Psychology

Co-Supervisor: Professor S Seedat

Faculty of Medicine & Health Sciences

Department of Psychiatry

December 2012

DECLARATION

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STATEMENT REGARDING BURSARIES

The financial assistance from the South African Research Chair Initiative, National Research Foundation (NRF) is hereby acknowledged. Opinions expressed or conclusions arrived at in this work are those of the author and should not necessarily be regarded as those of the National Research Foundation (NRF).

ABSTRACT

Global estimates show that sub-Saharan Africa has the largest portion of HIV cases with South Africa having more people living with HIV than any other country in the world. Moreover, studies have shown a high incidence of intimate partner violence (IPV) among people living with HIV. IPV has been shown to be associated with mental health problems. Considerable empirical studies have demonstrated that HIV is a highly stigmatized disease. In addition, HIV-related stigma has also been shown to be a risk factor for mental health problems among persons living with HIV. However, no empirical studies have examined the combined effect of IPV and HIV-related stigma on mental health. This thesis builds on the existing body of research by examining to what extent the linear combination of IPV (timing and frequency) and HIV related stigma explained variation in symptoms of common mental health disorders in both men and women living with HIV. In addition, theoretical and empirical studies have suggested that social support may serve as a protective factor in the relationship between IPV, HIV-related stigma, and mental health. Yet, despite the increasing attention, no known studies have focused on the mediating or moderating role of social support in the relationship between IPV or HIV-related stigma, and mental health.

This thesis examined the extent to which social support played a mediating or moderating role in these relationships. The study used a cross-sectional research design to study a convenience sample of 210 people living with HIV in three peri-urban areas in the Western Cape, South Africa. Participants completed a battery of self-report questionnaires that assessed IPV (timing and frequency), HIV-related stigma, social support, and symptoms of common mental health.

The results from the hierarchical multiple regression analysis demonstrated that the linear combination of psychological aggression frequency and HIV related stigma explained a significant portion of the variance in symptoms of depression. Likewise, both physical assault timing and psychological aggression timing combined with HIV-related stigma explained a significant portion of variance in symptoms of depression. Psychological aggression timing combined with HIV-related stigma significantly explained variance in symptoms of posttraumatic stress disorder (PTSD). The results from the product-term regression analyses indicated that social support played a mediating role in the relationship between HIV-related stigma and symptoms of PTSD, but not depression. Social support did not moderate the relationship between HIV-related stigma and symptoms of common mental health disorders.

In conclusion, the combination of IPV (physical assault and psychological aggression) and HIV-related stigma explained a significant portion of the variance in symptoms of common mental health disorders. Future research is needed for a better understanding of these relationships. A longitudinal experimental design is recommended in order to explore the direction of these relationships and to examine the context in which the IPV, HIV-related stigma, and social support is experienced.

OPSOMMING

Wêreldwye beramings toon dat sub-Sahara Afrika die grootste gedeelte van HIV gevalle te wêreld het, terwyl Suid-Afrika meer mense het wat met MIV leef as enige ander land in die wêreld. Verder het studies getoon dat daar 'n hoë voorkoms van intiemepaargeweld (IPV) is onder mense wat met MIV leef. Daar is al getoon dat IPV verband hou met geestelike probleme. Aansienlike empiriese studies het getoon dat MIV 'n hoogs gestigmatiseer siekte is. Daarbenewens, is daar getoon dat MIV-verwante stigma 'n risiko faktor is vir geestelike probleme onder persone wat leef met MIV. Daar is egter geen empiriese studies wat die gekombineerde effek van IPV en MIV-verwante stigma op geestesgesondheid ondersoek nie. Hierdie tesis bou voort op die bestaande navorsing deur te ondersoek tot watter mate die lineêre kombinasie van IPV (tydsberekening en frekwensie) en MIV-verwante stigma variasie in die simptome van algemene geestesgesondheid afwykings verduidelik in beide mans en vroue wat met MIV leef. Daarbenewens, het teoretiese en empiriese studies voorgestel dat sosiale ondersteuning kan dien as 'n beskermende faktor in die verhouding tussen IPV, MIV-verwante stigma, en geestesgesondheid. Tog, ten spyte van die toenemende aandag, het daar al geen studies gefokus op die bemiddelende of modererende rol van sosiale ondersteuning in die verhouding tussen IPV of MIV-verwante stigma, en geestesgesondheid.

Hierdie tesis ondersoek die mate waarin sosiale ondersteuning 'n bemiddelende of modererende rol speel in hierdie verhoudings. Die studie het 'n deursnee-navorsing ontwerp gebruik om 'n gerieflikheidsteekproef van 210 mense wat met MIV leef in drie peri-stedelike gebiede in die Wes-Kaap, Suid-Afrika te bestudeer. Deelnemers het 'n battery van self-verslag vraelyste voltooi wat IPV (tydsberekening en frekwensie), MIV-verwante stigma, sosiale ondersteuning, en simptome van algemene geestesgesondheid geassesseer het.

Die resultate van die hiërargiese meervoudige regressie-analise het getoon dat die lineêre kombinasie van sielkundige aggressie frekwensie en MIV-verwante stigma 'n beduidende deel van die variansie in simptome van depressie verduidelik. Net so, het beide fisiese aanranding tydsberekening en sielkundige aggressie tydsberekening gekombineer met MIV-verwante stigma 'n beduidende deel van die variansie in simptome van depressie verduidelik. Sielkundige aggressie tydsberekening gekombineer met MIV-verwante stigma het ‘n beduidende variansie in simptome van post-traumatiese stresversteuring (PTSV) verduidelik. Die resultate van die produk-term regressie-analises het aangedui dat sosiale ondersteuning 'n bemiddelende rol speel in die verhouding tussen MIV-verwante stigma en simptome van PTSV, maar nie depressie nie. Sosiale ondersteuning het nie die verhouding tussen MIV-verwante stigma en simptome van algemene geestesgesondheid versteurings modereer nie.

Ten slotte, die kombinasie van IPV (fisiese aanranding en sielkundige aggressie) en MIV-verwante stigma het 'n beduidende deel van die variansie in simptome van algemene geestesgesondheid versteurings verduidelik. Toekomstige navorsing is nodig vir 'n beter begrip van hierdie verhoudings. 'n Longitudinale eksperimentele ontwerp word aanbeveel om die rigting van hierdie verhoudings te verken en die konteks waarin die IPV, MIV-verwante stigma en sosiale ondersteuning ervaar is te ondersoek.

ACKNOWLEDGEMENTS

In no specific order I hereby wish to acknowledge and thank the following people for their role in this thesis:

-Professor Ashraf Kagee, for believing in my academic abilities, for spending countless hours helping me write and rewrite this thesis, for financial assistance to conduct this study, for fulfilling all of his duties, and more, as a supervisor, for mentoring me with regard to research, and for creating opportunities to further develop my skill as a researcher.

-Professor Soraya Seedat, for providing feedback, and suggestions in order to improve my research skills, and for creating opportunities to further develop my skills in presenting my research.

-Zuhayr Kafaar, for presenting a workshop about product-term regression analysis, and for providing additional information regarding the analysis.

-Henry Steel and Justin Harvey, for their patience and providing statistical assistance.

-Cindy Wiggett-Barnard from the Stellenbosch University Writing Lab, for assisting me to write in a way that is focused and well-structured.

-Mariana le Roux, for organizing the research support group meetings and for assisting me with the complex APA guidelines.

-Marlene Van Wyk, for always being friendly and willing to help students with library related questions.

-Raymond Bokako, Leticia Hintsho, and Izak Mofokeng, for helping me to recruit participants for this study.

-Cecile Joubert, for her administrative support and always being kind.

-Caren Van Houwelingen, for assisting in editing and providing advice regarding academic writing.

-Georgina Spies, for always being friendly and willing to offer immediate academic assistance.

-Mien, for being by my side from day one right through to the end of my degree, believing in my abilities to complete this thesis, for taking care of me, for listening to the good and the bad stories related to this thesis, for motivating me in times I felt overwhelmed, and for being proud of me.

-My family, for taking an interest in my research and believing in my ability to successfully complete this thesis.

-Francois, for technical support and for making helpful suggestion with regard to the process of successfully completing a thesis.

-All the participants, for being willing to take the time to complete the questionnaires.

DEDICATION

I dedicate this thesis to my participants. Thank you for taking the time to share your experiences.

I hope that this thesis in some way may help to better the lives of those living with HIV.

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LIST OF ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
AUDIT	Alcohol drug use disorder identification test
BDI-II	Beck depression inventory (Second edition)
CTS2	Revised conflict tactics scale
CTQ	Childhood trauma questionnaire
DUDIT	Drug use identification test
HIV	Human immunodeficiency virus
IPV	Intimate partner violence
PA	Physical assault
PAs	Patient advocates
PSS-SR	Post-traumatic stress disorder symptom scale-self report
PsyA	Psychological aggression
SC	Sexual coercion
SPSS	Statistical Package for the Social Sciences
SSA	Social Support appraisal scale
UNAIDS	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction and rationale for the present study

The human immunodeficiency virus is a retrovirus that infects the cells of the immune system (specifically CD4 positive cells), consequently destroying or impairing their function. This means that people infected with this virus become increasingly vulnerable to contract a range of opportunistic infections (e.g. tuberculosis) as more CD4 cells are destroyed during disease progression (UNAIDS, 2007). It may take 10 to 15 years for HIV to reach the most advanced stage in the virus, namely acquired immunodeficiency syndrome (AIDS) (UNAIDS, 2007).

According to the joint United Nations Programme on HIV and AIDS (UNAIDS) as well as the World Health Organization (WHO), an estimated 34 million people worldwide were living with HIV in 2010 (UNAIDS, 2011). During 2010, it is estimated that there were 2.7 million new infections worldwide. Sub-Saharan Africa has the largest portion of HIV cases, with an estimated 22.9 million people living with HIV in 2010 and 1.9 million new infections that year (UNAIDS, 2011). During this year, an estimated 5.6 million people who were living with HIV resided in South Africa (UNAIDS, 2011).

Given the high prevalence rates of HIV among people living in South Africa, it is important to examine the negative effects experienced by those who are living with the virus. The negative effects associated with HIV include psychological sequelae (e.g. fear of dying) (Stevens & Doerr, 1997), job loss due to illness or discrimination against people living with HIV

(Ketchen, Armistead, & Cook, 2009), poor mental health outcomes (e.g. depression) (Brandt, 2009; Freeman, Nkomo, Kafaar, & Kelly, 2008), and social isolation related to stigma (Kalichman, DiMarco, Austin, Luke, & DiFonzo, 2003; Lichtenstein, Laska, & Clair, 2002). This study will focus specifically on poor mental health outcomes, HIV-related stigma, and social support among people living with HIV.

Several studies have investigated common mental health disorders among people living with HIV (Myer et al., 2008; Olley et al., 2003). A review of the literature regarding poor mental health outcomes among people living with HIV, demonstrate that psychological distress commonly manifest as symptoms of depression (Bonomi et al., 2006; Kagee & Martin, 2010; Wight, 2000) or anxiety (Cohen et al., 2009; Martin & Kagee, 2011; Young, 2011). Fewer studies have focused on the incidence of alcohol and drug abuse, but some have demonstrated the incidence of substance use disorders among people living with HIV (Freeman et al., 2008; Vlahov et al., 2011).

Global research findings demonstrate that HIV is a highly stigmatized medical condition (Herek, 1999; Simbayi et al., 2007; Turan et al., 2010) resulting from beliefs that the person is contaminated or responsible for contracting the virus (Simbayi et al., 2007). The attribution of blame for contracting the virus relate to beliefs that HIV is contracted from risk behaviours (e.g. unprotected sex), that are considered avoidable. Stigma and discrimination may in turn lead to social isolation (Earnshaw & Chaudoir, 2009), negative mental health outcomes and in extreme cases physical injury. The poor mental health outcomes commonly associated with HIV-related stigma are posttraumatic stress disorder (PTSD) (Adewuya et al., 2009; Katz & Nevid, 2005), and depression (Bogart et al., 2011). Detail with regard to the definition of HIV-related stigma,

the incidence of HIV-related stigma, and the poor mental health outcomes associated with HIV-related stigma will be discussed in Chapter two.

Numerous studies have shown that the risk for contracting and spreading HIV may relate to substance use (i.e. alcohol consumption and drug use) (Vlahov et al., 2011), biological vulnerability of women (Turmen, 2003), socio-economic status (Cavanaugh, Hansen, & Sullivan, 2010), level of education (Kalichman et al., 2006), and violence within an intimate relationship (Burke, Thieman, Gielen, O'Campo, & McDonnell, 2005; Dude, 2011; Josephs & Abel, 2009; Shisana, Rice, Zungu, & Zuma, 2010). Specifically, this study will consider the role of intimate partner violence as a risk for transmitting HIV between intimate partners. In this study, IPV refers to the HIV-positive person as the recipient of IPV, regardless of whether or not the victim contracted HIV from the perpetrator or whether the person was already HIV-positive before their relationship with the perpetrator. In addition to the risk of transmitting or contracting HIV, IPV has been associated with common mental health disorders namely PTSD, major depressive disorder (depression), and substance use disorders (Randle & Graham, 2011). Detail with regard to the definition for IPV, incidence of IPV, and associated poor mental health outcomes will be discussed in Chapter two.

1.2 Motivation for the study

Increasingly research outputs demonstrate higher rates of poor mental health outcomes among people living with HIV compared to people who are not infected with the virus. Several studies have shown that PTSD (Martin & Kagee, 2011), depression (Young, 2011) and substance use disorders (Vlahov et al., 2011) are the most common mental health disorders among people

living with HIV. Moreover, studies show that HIV is a stigmatized disease and that a greater level of perceived HIV-related stigma is associated with a higher incidence of common mental health disorders (Adewuya et al., 2009; Simbayi et al., 2007). Likewise, persons living with HIV who have experienced IPV report higher rates of poor mental health outcomes than those who have not experienced IPV (Wong et al., 2008). It is well documented that social support may serve to mitigate the poor mental health outcomes associated with HIV-related stigma (Adewuya et al., 2009; Coughlin, 2011), or IPV (De Jonghe, Bogat, Levendosky, & Eye, 2008; Mburia-Mwalili, Clements-Nolle, Lee, Shadley, & Yang, 2010) among people living with HIV. It is necessary for research studies to investigate the relationship between HIV-related stigma, IPV, poor mental health outcomes, and social support among people living with HIV, as all of these factors have been associated with HIV testing (Young et al., 2010), disclosure (USAID, 2010), and treatment adherence (USAID, 2010). However, to the author's knowledge no known studies have investigated the combined effect of HIV-related stigma and experiences of IPV on common mental health disorders. In addition, no research on South African populations has examined the role of social support in the relationship between HIV-related stigma, experiences of IPV, and poor mental health outcomes. This study will attempt to address this gap in the literature by addressing the following research aims.

1.3 Aims of the study

This study aims to explore the relationship between HIV-related stigma, experiences of IPV, and poor mental health outcomes as well the role of social support in this relationship. The specific aims are:

1. To determine to what extent the combination of IPV (timing) experiences and perceived HIV-related stigma accounts for the variance in symptoms of common mental health disorders among people living with HIV while controlling for gender and childhood trauma.
2. To determine to what extent the combination of IPV (frequency) experiences and perceived HIV-related stigma accounts for the variance in symptoms of mental health disorders among people living with HIV while controlling for gender and childhood trauma.
3. To determine to what extent perceived social support mediates or moderates the relationship between experiences of IPV (timing and frequency), or perceived HIV-related stigma, and mental health disorders among people living with HIV.

These research aims led to three study hypotheses.

1.4 Study hypotheses

The hypotheses for this study are threefold:

H_1 - The combination of more recent experiences of IPV, and greater self-perceived HIV related stigma will account for a greater variance in symptoms of common mental disorders.

H_2 - The combination of more frequent experiences of IPV, and greater self-perceived HIV related stigma will account for a greater variance in symptoms of common mental disorders.

H_3 - An increased level of perceived social support will mediate the relationship between experiences of IPV (timing and frequency) or perceived HIV-related stigma, and mental health.

The three null hypotheses are as follows:

H_0 - The combination of more recent experiences of IPV, and greater self-perceived HIV-related stigma does not account for significant variance in symptoms of common mental health disorders.

H_0 - The combination of more frequent experiences of IPV, and greater self-perceived HIV-related stigma does not account for significant variation in symptoms of common mental health disorders.

H_0 - Perceived social support does not mediate or moderate the relationship between experiences of IPV (timing or frequency) or perceived HIV-related stigma and common mental health disorders.

1.5 Overview of chapters

Following the introductory first chapter, Chapter 2 will provide a brief overview of the negative effects and poor mental health outcomes associated with HIV as well as the risk factors for contracting or spreading the virus. This chapter will also discuss the definition, prevalence rates, negative effects, and poor mental health outcomes associated with HIV-related stigma and IPV respectively. Similarly, the importance and role of social support in the relationship between HIV-related stigma, IPV, and common mental health disorders is discussed. Lastly, Chapter 2 briefly describes the theoretical framework for this study. Chapter 3 provides an overview of the methodology followed to examine the relationship between HIV-related stigma, experiences of IPV, and common mental health disorders, as well as the role of social support in this relationship. In Chapter 4 the results from the analyses are presented. Following from Chapter 4,

Chapter 5 provides a discussion of the results as well as the study limitations and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

The relationship between experiences of IPV, HIV-related stigma and poor mental health outcomes has not been well documented. Empirical studies demonstrate high prevalence rates of IPV as well as HIV-related stigma among persons living with HIV. Likewise, experiences of IPV and HIV-related stigma each contribute to unique and overlapping poor mental health outcomes among people living with HIV (Davis, 2012). This chapter provides a brief overview of the negative effects associated with HIV as well as the risk factors for transmitting or contracting the virus. Following from this brief overview, literature is discussed with regard to IPV and HIV-related stigma among people living with HIV. Emphasis is placed on the unique and overlapping poor mental health outcomes that are associated with HIV-related stigma and experiences of IPV. Similarly, the role and importance of social support in the relationship between experiences of IPV, HIV-related stigma and poor mental health is discussed. Finally, Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1975) is introduced as the theoretical framework through which the association between experiences of IPV, HIV-related stigma and poor mental health outcomes, as well as the role of social support is perceived.

2.1 Human immunodeficiency virus (HIV)

2.1.1 Negative effects of HIV

Considerable research has shown that there are multiple negative effects associated with HIV. These include: an increased level of risk for contracting one or more opportunistic viruses; physical effects of HIV/AIDS treatment; mother-to-child transmission; death; discrimination; job

loss (Simbayi et al., 2007); loss of income; crime; social isolation; poor mental health outcomes; stigma; and IPV (Simbayi et al., 2007; UNAIDS, 2010). A detailed discussion of all the HIV-related effects is beyond the scope of this study. However, this study places specific emphasis on HIV-related stigma as an effect of HIV, and is discussed in more detail in section 2.3. The next section will provide a brief overview of common mental health disorders associated with HIV.

2.1.2 Prevalence of mental health outcomes among people living with HIV

Several studies have investigated common mental health disorders (e.g. PTSD, depression, and substance use disorders) among people living with HIV (Myer et al., 2008; Olley et al., 2003). A review of the literature regarding poor mental health outcomes among people living with HIV, demonstrate that psychological distress commonly manifest as symptoms of depression (Bonomi et al., 2006; Kagee & Martin, 2010; Wight, 2000) or anxiety (Cohen et al., 2009; Martin & Kagee, 2011; Young, 2011). Fewer studies have focused on the incidence of alcohol and drug abuse, but some have demonstrated the incidence of substance use disorders among people living with HIV (Freeman et al., 2008; Vlahov et al., 2011). The following section will provide an overview of the incidence of PTSD, depression and substance use disorders (i.e. alcohol consumption and drug abuse) among people living with HIV.

2.1.2.1 PTSD and HIV

In recent years considerable attention has been dedicated to PTSD among people living with HIV. PTSD is described as a disorder with a specific cluster of symptoms that develop after the individual is exposed to an extreme traumatic stressor (i.e. event of actual or threatened death or injury, or threat to physical injury) (APA, 2000). According to the most recent Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), symptoms associated with PTSD include

persistent re-experiencing of the traumatic event, avoidant behaviour of stimuli that relate to the traumatic event, and numbing of responsiveness (APA, 2000). A number of empirical studies postulate that PTSD may result from receiving an HIV diagnosis, whereas other studies suggest that the symptoms of PTSD relate to an event that occurred before or after being diagnosed with HIV. The symptoms of PTSD are therefore not caused by the diagnosis itself.

Kagee (2008) notes some concerns with applying the DSM-IV criteria to the experience of living with HIV. According to the DSM-IV-TR's criteria for PTSD, a traumatic event must first take place followed by a series of reactions in the individual that include intrusive thoughts and physiological hyper arousal (APA, 2000). However, people living with HIV may be more concerned about future events, namely a decline in health, death, and physical injury related to stigma or discrimination (Kagee, 2008). Therefore, if concerns among people living with HIV are rooted in the future, then it does not meet the criteria for PTSD that requires the event to occur in the past (Kagee, 2008). Nevertheless, it is possible to develop symptoms of PTSD from events (e.g. discrimination associated with HIV-related stigma) that are related to an HIV diagnosis but occur after the diagnosis, referred to as HIV-related PTSD.

Several studies have demonstrated the incidence of PTSD among people living with HIV in South Africa (Martin & Kagee, 2011) and in other parts of the world (Cohen et al., 2009). In a review by Young (2011) the author discusses a number of studies that focused on the incidence of PTSD among people living with HIV in South Africa. For example, in order to determine the incidence of lifetime PTSD and HIV-related PTSD among people living with HIV, Martin and Kagee (2011) recruited 85 recently diagnosed HIV-positive patients with a mean age of 33 years, from a public health clinic in the Western Cape, South Africa. Findings from this study demonstrated that 54.1% (95% CI: 43.6-64.3%) met the DSM-IV criteria for lifetime rates of

PTSD, whereas 40% (95% CI: 30.2-50.6%) met the full criteria for HIV-related PTSD (Martin & Kagee, 2011). In addition, results demonstrated no significant difference between men and women in this sample (Martin & Kagee, 2011). Based on these findings, the authors suggest that being diagnosed with HIV or living with HIV may be considered a stressor that in turn may result in HIV-related PTSD (Martin & Kagee, 2011). However, some caution is necessary when considering these findings because a relatively small sample size and cross-sectional research design was used.

The relationship between living with HIV and experiencing symptoms of PTSD appear to be a circular relationship. This means that symptoms of PTSD may be already present before an HIV diagnosis or may be present following events that occur as a result of having HIV. In addition to symptoms of PTSD, people living with HIV often present comorbid symptoms of depression.

2.1.2.2 Depression and HIV

Several research studies show that depression is as a common mental health disorder among people living with HIV (Brandt, 2009; Cohen et al., 2009; Kagee & Martin, 2010; Simoni et al., 2011). The symptoms related to depression may take the form of changes in appetite, weight loss, changes in sleep pattern, decline in energy, and problems thinking or making decisions (APA, 2000). According to a review by Brandt (2009), the incidence rates of depression have varied from 20% to 50% among people living with HIV in Africa. The following section will discuss some studies to illustrate the incidence of depression among people living with HIV.

In a study that aimed to investigate the prevalence of mental disorders among people living with HIV in a developing country, Freeman and colleagues recruited 900 HIV-positive participants from five provinces in South Africa (Freeman et al., 2008). The study findings demonstrated prevalence rates of 11.1% for major depressive disorder and 29.9% for mild depression. In a smaller sample consisting of 85 people living with HIV, Martin and Kagee (2011) demonstrated that 37.6% of the sample reported scores on the Beck Depression Inventory that fell in or above the moderate range for depression.

2.1.2.3 Substance use disorders and HIV

Fewer research studies have investigated the incidence of substance use disorders among people living with HIV. In this study, substance use disorders are understood as the abuse of substances (e.g. alcohol) that lead to impairment or distress (APA, 2000). A review by Brandt (2009) demonstrated that between 7% and 16% of people living with HIV reported that they abuse or are dependent on alcohol or other substances. In a South African study, 5% of the sample reported alcohol dependence while 7% reported alcohol abuse among 44 women and 19 men who were enrolled in HIV treatment and care facilities at the time of the study (Myer et al., 2008). In a larger study that included 235 men and 662 women from five provinces in South Africa, the authors demonstrated that 12.4% of their sample reported scores indicative of alcohol abuse disorder (Freeman et al., 2008).

2.2 Risk factors for HIV

Several studies have investigated the factors associated with risk behaviour for contracting and spreading HIV. The factors that may play a role in the risk for contracting or spreading HIV include substance use (i.e. alcohol consumption and drug use), gender, socio-

economic status, level of education (Rogan et al., 2011), and violence within an intimate relationship (Burke et al., 2005; Dude, 2011; Jewkes, Dunkle, Nduna, & Shai, 2010; Jewkes, Sikweyiya, Morrell, & Dunkle, 2011; Josephs & Abel, 2009; Schafer et al., 2012; Shisana et al., 2010; Townsend et al., 2012). A detailed discussion with regard to all of the risk factors associated with the spread of HIV is beyond the scope of this study. However, this section will discuss some studies in order to provide an overview of these risk factors.

The consumption of alcohol is a common social practise among South Africans and several studies demonstrate the role of alcohol in the spread of HIV within these social settings (Cook & Clark, 2005; Kalichman, Simbayi, Kaufman, Cain, & Jooste, 2007; Kalichman, Simbayi, Vermaak, Jooste, & Cain, 2008). According to Kalichman et al. (2008), alcohol-serving establishments - such as informal drinking places (e.g. shebeens) - often serve as high risk areas for HIV transmission. In this study a total of 91 men and 248 women, with an average age of 34 years, were recruited from four shebeens in racially integrated townships in Cape Town (Kalichman et al., 2008). Participants were asked to complete a paper-pencil survey related to substance use, sexual risk behaviour, and HIV history. The findings demonstrated that 94 participants had met sex partners at shebeens at least once in the past (Kalichman et al., 2008). Of these 94 participants, 25% reported having unsafe sex after they had been drinking (Kalichman et al., 2008).

In addition to substance use, level of education, socio-economic status and violence may also play a role in HIV risk (Kalichman et al., 2006; Rogan et al., 2011). For example, in a study among 948 men and 1224 women from three different townships around Cape Town, the authors proposed that stressor which affect the community (i.e. housing, transportation, sanitation, insufficient food, HIV/AIDS, unemployment, discrimination, poor education, violence, and

crime) would be associated with greater substance use and HIV risk (Kalichman et al., 2006). The participants, who varied with regard to race and socio-economic status, were asked to complete a survey that included poverty-related community stressors, AIDS-related knowledge, history of substance use, and HIV risk history (Kalichman et al., 2006). Findings from this study demonstrated that HIV/AIDS risk was associated with poor education, unemployment, discrimination, violence, and crime (Kalichman et al., 2006). Although poverty-related stress factors were associated with alcohol consumption and drug use, the authors reported that substance use did not moderate the relationship between poverty-related stressors and HIV-risk behaviour (Kalichman et al., 2006). One of the limitations of this study was that the authors did not clearly state which type of violence was being assessed in this study. However, it is well known that IPV may act as a risk factor for contracting and spreading HIV (Dude, 2011; Champion, Shain, & Piper, 2004; Jewkes et al., 2010; Jewkes et al., 2011; Schafer et al., 2012; Shisana et al., 2010; Townsend et al., 2012; Turmen, 2003). Detail with regard to the definition, prevalence rates, negative effects of IPV, as well as the intersection between IPV and HIV is discussed section 2.4.

2.3 HIV-related stigma

2.3.1 Definition of HIV-related stigma

HIV-related stigma may be understood as the prejudice, disapproval, discrediting and discrimination directed at someone living with HIV, but also the individuals, groups and communities associated with them (Alonzo & Reynolds, 1995; Herek, 1999). In general, HIV-related stigma involves the negative social attitudes related to HIV/AIDS that may lead to social disapproval, discrimination and/or the social isolation of people living with HIV (Vandenbos,

2007). Theoretical frameworks propose that there are four different dimensions of HIV-related stigma, namely anticipated stigma (i.e. anticipation that one will experience stigma if one is found to be HIV positive), perceived community stigma (i.e. the perception that people who are living with HIV/AIDS are rejected from the community), enacted stigma (i.e. acts of discrimination toward people living with HIV), and self-stigma (i.e. negative or adverse feelings toward the self for having HIV) (Earnshaw & Chaudoir, 2009; Galvan, Davis, Banks, & Bing, 2008; Holzemer et al., 2008; Steward et al., 2008). These four dimensions individually or in concert have negative effects on quality of life, access to health care, and poor mental health outcomes (Turan et al., 2011). In this study HIV-related stigma will be understood as perceived stigma, or a person's awareness of HIV-related issues (e.g. lack of full social acceptance or social rejection). Some studies have included this definition to establish the prevalence of HIV-related stigma among people living with HIV.

2.3.2 Prevalence and negative effects of HIV-related stigma

Findings from theoretical and empirical studies suggests that there are multiple health consequences associated with HIV stigma relating to HIV-testing, mother-to child transmission, disclosure, access to social support or medical resources, decreased quality of life and poor mental health outcomes (Chesney & Smith, 1999; Davis, 2012; Riggs, Vosvick, & Stallings, 2007). The following section will discuss some research outputs to illustrate prevalence and negative effects associated with HIV-related stigma.

Stigma related to a positive HIV diagnosis may act as a barrier for HIV-testing which in turn increases the risk of spreading the virus (Chesney & Smith, 1999; Turan et al., 2011; Young et al., 2010). In a study to assess the relationship between HIV-related stigma, low perceived

motivation for testing in the community and rates of HIV-testing, Young et al. (2010) recruited a sample of 5259 participants from Vulindlela and Soweto, South Africa. Data from the self-report questionnaires showed that participants who reported increased levels of perceived HIV-related stigma and low perceived levels of motivation to get tested for HIV among community members were less likely to seek or agree to HIV-testing (Young et al., 2010). In addition, the findings demonstrated that older participants, compared to younger participants, reported higher levels of perceived stigma related discrimination and less reports of HIV-testing. These findings are particularly important considering that an array of literature suggests that early HIV diagnosis and consequent early treatment are associated with improved rates of survival and reduced rates of HIV transmission (Carr & Gramling, 2004).

HIV-related stigma as a barrier for testing may also serve as a risk factor for mother-to-child transmission of HIV (Turan et al., 2011). A study among 1525 pregnant women residing in Kenya at the time of the study, aimed to quantitatively demonstrate that anticipated HIV-related stigma served as a barrier for HIV testing. Findings showed that 32% of the sample anticipated that their partner would break-up with them if they disclosed an HIV positive status, whereas 45% of the sample anticipated the loss of friends (Turan et al., 2011). Moreover, women who anticipated male partner stigma were more than twice as likely to refuse an HIV-test (OR = 2.10, 95% CI: 1.15-3.85) (Turan et al., 2011). Although HIV testing is routinely included in antenatal care services, pregnant women still have the right to refuse an HIV test. The findings from this study supports the notion that HIV-related stigma plays a role in refusing HIV testing, which in turn leads to the virus not being treated thus increasing the likelihood of transmitting the virus from the mother to her unborn child.

According to Lee, Kochman, and Sikkena (2002), persons living with HIV may internalize HIV-related stigma, which in turn may manifest as negative views of themselves and their disease. Moreover, internalized stigma may lead to an increased sensitivity for real and anticipated alienation (Chesney & Smith, 1999), which in turn may be associated with poor mental health outcomes (Riggs et al., 2007). The poor mental health outcomes associated with HIV-related stigma will be discussed in the next section.

2.3.3 HIV-related stigma and mental health

The complex nature of HIV-related stigma and its associated poor health consequences has been a topic of interest for theoretical (Herek, 1999) and empirical (Wingood et al., 2008) research studies. Findings from the literature suggest that for those who are living with HIV, stigma results in "blaming, shaming and status loss" (Deacon, 2006, p. 421) that in turn may lead to social isolation and poor mental health outcomes. The following section will illustrate the relationship between perceived HIV-related stigma and poor mental health outcomes (i.e. PTSD, depression, and substance use disorders).

A number of studies have provided results in support of the association between HIV-related stigma and symptoms of PTSD (Adewuya et al., 2009; Katz & Nevid, 2005). In a study to examine the risk factors for symptoms of PTSD among people living with HIV, Katz and Nevid (2005) recruited 102 HIV-positive women residing in New York City. Findings from this study sample, with a mean age of 43.48 years, demonstrated that greater perceived HIV-related stigma was a significant ($p<.001$) predictor of symptoms of PTSD (Katz & Nevid, 2005). In addition to symptoms of PTSD, some research studies have established an association between HIV-related stigma and depression, or substance use disorders.

In a study to demonstrate the effects of internalized HIV-related stigma, Simbayi and colleagues recruited 420 HIV-positive men and 643 HIV-positive women who, at the time of the study, made use of AIDS services in Cape Town, South Africa (Simbayi et al., 2007). Findings from the study demonstrated that internalized stigma accounted for a significant 4.8% ($p<.01$) of the variance in symptoms of depression (Simbayi et al., 2007). These findings offer some support that it is important to consider the effect of internalized stigma in research regarding depression among people living with HIV.

2.4 Intimate partner violence

2.4.1 Definition of intimate partner violence

There is no universal operational definition for violence between two intimate partners. In the simplest form IPV may be understood as any type of behaviour that may result in physical, sexual or emotional harm to those within an intimate relationship (WHO, 2002). However, several authors have elaborated on this basic definition for IPV across an array of studies to suit their specific study aim(s). A review of the literature shows that these varied definitions might be classified on the basis of four basic characteristics, namely type of behaviour, whether the violence takes place within homosexual or heterosexual couples, the gender of the individuals within the relationship, and whether the abusive partner was a former or current partner. These characteristics will now be considered separately after which an operational definition will be provided for this study.

The type of abusive behaviours that are included in the definition for IPV has varied across research studies. In general, IPV is defined as any physical (i.e. kicking and punching), psychological (i.e. humiliation) and sexual (i.e. forced intercourse) abusive or controlling

behaviour within an intimate relationship (Campbell, 2002; Goodman & Smyth, 2011; WHO, 2002). According to WHO (2002), some studies elaborate on this description even more by including emotional abuse (e.g. stalking) as a type of IPV, whereas another study has measured emotional abuse separately (Campbell, 2002). No literature could be found that makes a clear distinction between emotional and psychological abuse. However, in a study measuring emotional abuse, the authors asked participants if their intimate partner has ever "called them names", "put them down" or controlled their behaviour (Bensley, Van Eenwyk, & Simmons, 2003, p. 39). These questions used to assess emotional abuse are similar to those used in a study conducted by Caldwell, Swan, and Allen (2009), in order to measure psychological abuse. Therefore, it is possible that the term psychological abuse is used interchangeably with emotional abuse across some studies.

In general studies in this field have limited their focus to only IPV perpetrated within heterosexual couples (Archer, 2002; Ramsay et al., 2009) whilst some studies have demonstrated the need to admit that IPV also takes place within same sex couples (Thompson et al., 2006). In a study conducted by Thompson et al. (2006), IPV was defined as physical, sexual or psychological violence between two adult individuals who are currently, or have previously been, in either a heterosexual or homosexual relationship (Thompson et al., 2006). Following a review of the literature, it is unclear whether or not the type of IPV perpetrated in homosexual couples, and the associated adverse health consequences experienced, differ significantly from that of heterosexual couples. However, some research studies have shown that men and women use different types of abuse within an intimate relationship and as a result suffer different health outcomes (Archer, 2000; Holtzworth-Munroe, 2005; Randle & Graham, 2011). It could therefore

be assumed that the adverse health outcomes associated with IPV in homosexual or heterosexual couples may differ.

The majority of research has focused on men as perpetrators of IPV. However, some empirical research findings demonstrate evidence of female-to-male perpetrated IPV (Carney, Buttell, & Dutton, 2007; Randle & Graham, 2011). Findings from a study by Archer (2002) demonstrate that the men as well as the women in their sample engaged in physical abuse toward an intimate partner. Moreover, early research suggests that women perpetrate violence as a defence response whereas men perpetrate IPV in an attempt to coerce their intimate partner (R. P. Dobash, R. E. Dobash, Cavanagh, & Lewis, 1998). However, a defensive response cannot explain all IPV perpetrated by women toward a male partner. More recent research findings demonstrate that women initiated relationship violence toward a non-violent partner (Simmons, Lehmann, Cobb, & Fowler, 2005; Straus & Ramirez, 2004). Caldwell et al. (2009) conducted face-to-face interviews with women to explore women's reasons for using violence toward their intimate partner. The authors concluded that aggressive behaviours were driven by complex and multiple motives but that sexual aggression was used as a tool to frighten and intimidate their partner in an attempt to appear tough (Caldwell et al., 2009). Moreover, women may adopt a tough guise in mutually abusive relationships in an attempt to convey the message to her partner that she is not to be considered lightly (Caldwell et al., 2009).

In general, IPV has been defined as abuse experienced by a current or former intimate partner (Carmo, Grams, & Magalhaes, 2011; Goodman & Smyth, 2011). For example, Harvey, Garcia-Moreno, and Butchart (2007) suggest that IPV may occur within marriage or between short-term or long-term partnerships, or by an ex-partner after the intimate relationship has ended. Likewise, Thompson et al. (2006), describe intimate partners as former or current dating

partners who have been in a relationship for longer than one week, non-marital partners, or spouses.

In this study IPV is understood as any form of actual or threatened physical abuse (i.e. arm twisting, strangling and slapping), sexual abuse (i.e. coerced sex through intimidation, threat or physical force) and psychological abuse (i.e. verbal aggression) that takes place between two intimate partners who are currently or have previously been in a heterosexual relationship.

2.4.2 International prevalence rates of IPV

Prevalence estimates for IPV vary greatly across an array of studies with regard to differences in definitions used for IPV(e.g. which behaviours or experiences are included in the definition), gender of the perpetrator, study methodology (e.g. sample size and measures used), and ethnicity or culture (Harvey et al., 2007; Randle & Graham, 2011; WHO, 2002). The following section will discuss a few studies to demonstrate these differences among international and South African studies.

In a review that included men as well as women who reported experiences of IPV, the authors suggested that the type of violence being measured relates strongly to IPV prevalence estimates (Randle & Graham, 2011). For example, a population-based household survey was carried out among 2128 women aged between 15 to 49 years residing in rural and urban areas in Brazil (Ludermir, Schraiber, Olivera, Franca-Junior, & Jansen, 2008). Data from the self-report questionnaires demonstrated psychological abuse (18.8%) as the most frequent experienced IPV, followed by physical abuse (3.7%), then sexual abuse (3%) (Ludermir et al., 2008).

Moreover, studies that only focus on one type of abuse have reported lower IPV prevalence rates when compared to findings that explored a combination of abuse (Carmo et al., 2011). In a retrospective study, Carmo and colleagues recruited 535 Portuguese male victims of female perpetrated IPV aged 18 to 89 years (Carmo et al., 2011). Findings from the study demonstrated that the majority of the sample experienced a combination of psychological and physical abuse (55.7%), whereas fewer men reported experiences of only physical abuse (19.8%), or only psychological abuse (17%) (Carmo et al., 2011).

The prevalence of IPV has been found to vary with regard to the severity of the violence being measured. In a review by Archer (2002), the author demonstrates that women may be more likely than men to slap, kick or throw something at their partner, whereas men may be more likely to beat up, choke or strangle a female partner. Likewise, a study by Cramo et al. (2011) reported that the most common mechanisms of aggression used by female perpetrators were scratching (18.9%), punching (16.7%), and hitting with a blunt object (16.6%).

The differences in findings from various studies may be attributed to the measures used to assess perpetration of IPV. For example, the Revised Conflict Tactics scale (CTS2) is a popular measure used to assess severity and type of IPV perpetrated. However, the CTS2 does not measure the context within which the violence is perpetrated (Holtzworth-Munroe, 2005). Therefore, it is not possible to establish whether violence was used in defence towards an abusive partner or if abuse was used to control an intimate partner.

2.4.3 South African prevalence rates of IPV

In addition to international research, the incidence of intimate partner violence in Sub-Saharan Africa and South Africa have been well documented (Jewkes, Levin, & Penn-Kekana,

2002; Jewkes, Vundule, Maforah, & Jordaan, 2001; Maharaj & Munthree, 2007; Seedat et al., 2009; Speizer et al., 2009). A cross-sectional survey was conducted in the Eastern Cape (EC), Mpumalanga (MP), and the Northern Province (now known as Limpopo) in order to assess the prevalence of physical, sexual, financial, and emotional abuse among 1447 women aged 18-49 years (Jewkes, Vundule et al., 2001). Findings demonstrated that the prevalence of having ever experienced abuse by an intimate partner were 26.8% (EC), 28.4% (MP) and 19.1% (Limpopo). Moreover, abuse in the last twelve months was reported as follows: 10.9% (EC), 11.9% (MP), and 4.5% (Limpopo) (Jewkes, Vundule et al., 2001). In this study, the authors assessed emotional and financial abuse together without making any distinction with regard to the difference between these two types of abuse. It was also not discussed why emotional abuse was grouped with financial abuse. Therefore, these prevalence rates will not be discussed here.

2.4.4 Negative effects of IPV

IPV is associated with physical (e.g. gynaecological problems) (Kelly, 2010) and poor mental health consequences (e.g. PTSD, depression and substance use disorders) (Randle & Graham, 2011) as well as other adverse effects, namely interpersonal and family rupture, decreased quality of life (Kelly, 2010), decreased social functioning (Bosch & Bergen, 2006), and sexually transmitted diseases (Dude, 2007). A review of empirical research suggests that IPV-related health consequences vary with regard to IPV type (i.e. physical, sexual or psychological), timing (i.e. when the abuse occurred), duration (i.e. over what period IPV was experienced), frequency (i.e. how often the IPV was experienced) and severity (i.e. the extent to which the abuse was experienced). A detailed discussion with regard to all of the adverse effects related to IPV is beyond the scope of this study. However, this section will briefly consider literature regarding IPV-related health consequences.

In a study conducted by Bonomi et al. (2006) the objective was to assess the relationship between women's health (e.g. general health, physical, social, and mental functioning) and the timing, type, and duration of IPV experienced. In the study by Bonomi and colleagues, IPV timing was defined as recent (i.e. during the last five years) or remote (more than 5 years ago); IPV type was defined as exposure to physical, sexual, and non-physical IPV; and IPV duration was defined as 0 to 2 year, 3 to 10 years, and more than 10 years. Findings from the study by Bobomi et al., showed that compared to women who have never experienced IPV, more pronounced health effects were observed among women who reported recent (vs. remote) IPV; physical and/or sexual (vs. non-physical) IPV; and a longer period of exposure. For example, the authors report that compared to women who reported having never experienced IPV, women with any recent IPV reported higher rates of severe depressive symptoms (prevalence ration [PR] = 2.6; 95% confidence interval [CI] = 1.9 – 3.6). Moreover, findings from this same study demonstrated that women who have experienced IPV, compared to women who reported no IPV experiences, were more likely to have smoked before (52.2% vs 32.3% no IPV, $p<.01$), and to engage in risky behaviours (30.3% vs 12.0% no IPV, $p<.01$), namely intravenous drug use or had anal sex without a condom.

In another study, Straus et al. (2009) investigated physical and mental health outcomes associated with a variation in IPV severity and perceived danger. A sample of 3083 women from an emergency department (ED) in a large south eastern U.S. city, consented to completing a computer survey consisting of validated measures which included the conflict tactics scale (Straus et al., 2009). A total of 548 participants disclosed experiencing IPV and of these 78% agreed to participate in the follow-up interview. Findings report that women experienced diminishing mental health functioning (depression, PTSD and suicide ideation) as both physical

assault and psychological aggression increased (Strauss et al., 2009). Men, on the other hand, experienced diminishing mental health only as psychological aggression increased (Straus et al., 2009). Detail with regard to poor mental health consequences (i.e. PTSD, depression and substance use disorder) related to IPV is discussed in the next section.

2.4.5 IPV and mental health

A rich fund of knowledge has established the incidence of common mental health disorders among men and women who experiences IPV (Bonomi et al., 2009; Campbell, Greeson, Bybee, & Raja, 2008; Cavanaugh et al., 2010; Kaminer, Grimsrud, Myer, Stein, & Williams, 2008; Olley, Zeier, Seedat, & Stein, 2005; Olley, Seedat, & Stein, 2006; Randle & Graham, 2011; Rose et al., 2010). In a review by Randle and Graham (2011), it was found that PTSD, depression, and substance use disorders are the most common mental health disorders associated with IPV. The following section will provide an overview of the literature regarding IPV and common mental health disorders among people living with HIV and those not living with HIV.

Research outputs suggest that people who experience IPV in addition to living with HIV report higher rates of poor mental health outcomes compared to those who do not live with HIV. Wong et al. (2008) made use of advertisements and referrals from community-based organizations in order to recruit 195 men and 200 women living in townships outside of Cape Town, South Africa. Data from the survey and self-report questionnaires were used to explore the relationship between soft drug use (i.e. recreational drugs), hard drugs (i.e. drugs that lead to severe addiction), alcohol use, HIV-related risk behaviour, and IPV experiences. Compared to participants who did not experience IPV in the last six months, male victims were twice as likely

to use soft drugs (AOR = 2.5, 95% CI = 1.2-5.5) as well as severe drugs (AOR = 2.0, 95% CI = 1.0-4.1), whereas women were more likely to participate in problem drinking (AOR = 3.0, 95 CI 1.5-5.9) than using drugs (Wong et al., 2008). The authors conceded that this study was not designed to establish causal relationships. However, the findings offer some support for the intersection between past experiences of IPV and alcohol or drug use which in turn relate to an increased level of risk for unprotected sex and contracting or spreading HIV (Wong et al., 2008). Moreover, the study by Wong et al. (2008) highlights the importance of including men-as-victims into the discourse of violence and HIV prevention.

Studies that have examined the relationship between poor mental health outcomes and IPV timing have varied with regard to the time period referred to by the term 'recent' or 'remote'. Some studies refer to IPV within the last twelve months as 'recent IPV', whereas other studies have used 'recent' to refer to IPV during a certain number of years. For example, Bonomi et al. (2006) recruited 3429 women aged 18 to 64 years from Washington state in order to demonstrate that women who reported any type of recent IPV (i.e. in the last five years) experienced higher rates of minor depressive symptoms (PR2.3; 95% CI = 1.9-2.8), compared to those who did not report recent IPV. Likewise, a random sample of 753 women from Michigan participated in a study that aimed to establish the relationship between IPV and poor mental health outcomes (Tolman & Rosen, 2001). The study findings presented that women who experienced physical abuse from an intimate partner in the last twelve months were up to twice as likely to report symptoms of PTSD, depression and substance use, compared to those women who experienced physical violence only before the last twelve months. The discrepancies with regard to the period of time referred to as 'recent' or 'remote' make it difficult to compare studies.

Likewise, few studies have examined the relationship between the number of IPV experiences over a certain period of time, and associated poor mental health outcome (Escriba-Aguir et al., 2010). In order to examine the relationship between a greater number of IPV experiences and psychological well-being, the authors conducted a cross-sectional survey among 10 322 women who were randomly selected from primary healthcare centres in Spain (Escriba-Aguir et al., 2010). Findings from the study demonstrated that a greater number of IPV experiences were associated with worse psychological wellbeing (i.e. psychological distress, psychotropic drug use, and self-perceived health status) (Escriba-Aguir et al., 2010). Likewise, a study by Martinez-Toreya and colleagues demonstrated that more frequent experiences of IPV were associated with more symptoms of PTSD ($p<.05$), but not depression (Martinez-Torteya, Bogat, von Eye, Levendosky, & Davidson, 2009). These findings support the notion that the frequency of IPV experiences plays a role in the prevalence of common mental health disorders. However, few studies have investigated the relationship between IPV frequency and associated mental health disorders. This study will attempt to address this gap in the literature by assessing the association between IPV frequency and common mental health disorders.

A number of empirical studies have evidenced that people who experience IPV also have a history of childhood abuse (Campbell, Greeson et al., 2008; Cavanaugh et al., 2011; Wyatt, Loeb, Williams, Zhang, & Davis, 2012). Bensley and colleagues demonstrated that women who experienced physical abuse during childhood were more likely to report experiences of physical IPV in adulthood, compared to women who did not report physical abuse during childhood (Bensley et al., 2003). Moreover, childhood trauma may result in lowered self-esteem that in turn may contribute to early-onset mental health disorders such as PTSD (Randle & Graham, 2011).

Therefore, it is necessary to consider a history of childhood trauma in research related to IPV and poor mental health outcomes.

Findings with regard to experiences of IPV and associated poor mental health among men and women have demonstrated different outcomes. In a longitudinal birth cohort design, with repeated measures at ages 18 and 26 years, the authors reported that women who experience abuse in their intimate relationships were more likely than men to experience symptoms of depression, PTSD or to use marijuana (Ehrensaft, Moffit, & Caspi, 2006). Likewise, findings from a cross-sectional study among IPV survivors in Columbia illustrated that 24% of women and 20% of men reported moderate-to-severe PTSD at the time of the study (Coker, Weston, Creson, Justice, & Blankeney, 2005). Although women reported higher rates of moderate-to-severe PTSD, the study's findings illustrate that experiences of IPV among men are associated with common mental health disorders. Therefore, research studies should include men when examining the relationship between IPV and common mental health disorders.

2.4.6 IPV as a risk factor for HIV

Empirical evidence demonstrates that IPV may serve as a risk factor for transmitting or contracting HIV (Dude, 2011; Champion, Shain, & Piper, 2004; Jewkes et al., 2010; Jewkes et al., 2011; Schafer et al., 2012; Shisana et al., 2010; Townsend et al., 2012; Turmen, 2003). This section will provide a brief overview of the pathways through which IPV associates with contracting or spreading HIV. Following on this, an explanation is provided with regard to whether IPV refers to the HIV-positive person as the recipient or perpetrator of IPV within this study.

According to Maman, Campbell, Sweat, and Gielden (2000), there are two different pathways through which IPV may act as a risk factor for transmitting or contracting HIV. First, HIV may be spread through forced sex by an intimate partner who is HIV-positive (Maman et al., 2000; Sareen, Pagura, & Grant, 2009). Research demonstrates that women are biologically more vulnerable to contract STD's or HIV during forced sex compared to men (Turmen, 2003). Women's increased vulnerability may be due to an increased surface of mucous membrane being exposed during sex, more fluids being transferred from men to women than vice versa, and increased viral content in male sexual fluids (Turmen, 2003).

Second, fear of any type of IPV may serve as a barrier to negotiating safer sex practices which in turn may act as a risk factor for transmitting HIV to, or contracting HIV from a partner who perpetrates IPV (Maman et al., 2000). Violence or the fear of violence from an intimate partner has been found to serve as a barrier for disclosing a HIV-positive status and negotiating safe sex practices which in turn puts the partner at risk of contracting the virus (WHO, 2004). Moreover, findings from a qualitative study that focused on the situational factors associated with sexual risk behaviour demonstrated that a woman's fear of her partner's potentially violent reaction to suggesting condom use may act as a barrier to negotiating condom use (Champion et al., 2004). The inability to negotiate condom use within a violent relationship is particularly problematic since male perpetrators of IPV often have more than one sexual partner at a time (Abrahams, Jewkes, Hoffman, & Laubscher, 2004; Townsend et al., 2012).

These two mechanisms may work separately or in concert as risk factors for the spread of HIV within an intimate partner relationship. However, a review of the literature demonstrates that a shortage of longitudinal experimental research designs makes it difficult to determine a temporal order or causal relationship between IPV and HIV (Campbell, Baty et al., 2008).

Therefore, it is necessary to keep in mind that a bidirectional relationship may exist between IPV and HIV. In this study, IPV refers to the HIV-positive individual as the recipient of the violence regardless of the type of violence or whether the virus was contracted from the IPV perpetrator or whether the victim was already HIV-positive before the relationship. The next section will provide an overview of the prevalence rates of IPV among people living with HIV.

2.4.7 Prevalence rates of IPV among people living with HIV

Several studies have examined the prevalence of IPV experiences among men and women living with HIV (Campbell, Greeson et al., 2008; Dunkle et al., 2004; El-Bassel et al., 2007; Jewkes et al., 2010; Rose et al., 2010). Results from international community-based samples exploring the relationship between IPV and HIV among women who are HIV-positive compared to women who are HIV-negative have been relatively consistent (Campbell, Baty et al., 2008). According to El-Bassel et al. (2007), experiences of physical or sexual violence within an intimate relationship were not significantly higher among HIV-positive women compared to HIV-negative women. Likewise, Burke et al. (2005) did not find any significant difference in IPV experiences among a community sample of HIV-positive and HIV-negative women.

In contrast, community-based studies conducted in South Africa have demonstrated a significant difference with regard to prevalence rates of IPV among HIV-positive and HIV-negative people. In a cross-sectional study with a total of 1366 women living in Soweto were recruited for face-to-face interviews that aimed to assess gender-based violence as a risk factor for contracting HIV (Dunkle et al., 2004). The authors reported that the co-occurrence of physical and sexual IPV was associated with increased odds (1.48, 95% CI 1.15-1.89) of being HIV-positive (Dunkle et al., 2004). Definitions used with regard to IPV and differences in

methodology may be responsible for the discrepancies in findings between international and South African studies (Campbell, Baty et al., 2008).

2.5 The role of social support

It has been well documented that social resources (i.e. friends, family, loved ones and community members) directly impact the way people living with HIV cope with HIV-related stigma (Cohen & Wills, 1985; Galvan et al., 2008; Lichtenstein et al., 2002) and IPV (Mburia-Mwalili et al., 2010; Paranjape & Kaslow, 2010). Therefore, the lack of positive social relationships adversely affects mental health. For survivors of IPV, and people who experience HIV-related stigma, social support may serve as a protective factor that mitigates the negative effects on mental health. Therefore, abuse may have a differential effect on mental health, depending on the perceived level of social support (Beeble, Bybee, Sullivan, & Adams, 2009). Likewise, Galvan et al. (2008) suggest that people who report greater perceived social support are more likely to internalize positive appraisals that promote the development of more effective coping mechanisms compared to those individuals who report lower levels of perceived social support. However, HIV-related stigma and IPV play a role in lowering the level of perceived social support, which in turn leads to poor mental health outcomes.

Cohen and Wills (1985) propose that large social networks may lead to physical and psychological wellbeing because they provide positive affect and a sense of stability to those who form part of the social network. Integration in a social network may also motivate the members of the network to engage in health-promoting behaviour. Therefore, the social support is not received in response to stress or a specific problematic situation: instead, social support is

received in order to promote general wellbeing. According to Cohen and Wills (1985), this is known as the main effect model.

In contrast, social support may serve to 'buffer' the relationship between stressful life events and poor mental health outcomes. This phenomenon is referred to as the stress buffering hypothesis (Cohen & Wills, 1985). The authors distinguish between three types of social support, namely emotional support, appraisal support, and tangible support (Cohen & Wills, 1985). Emotional support is related to a person's self-esteem and their perception of themself. Appraisal support refers to the help received from others in order to cope with stressful situations. Tangible support refers to the appropriate material support received from others in order to resolve a problem. Cohen and Wills (1985) suggest that these three types of support may work individually or in concert in order to mitigate negative effect of stressful situations on mental health outcomes that include depression or anxiety.

IPV acts as a barrier to receiving social support, which in turn leads to negative mental health outcomes. There are two mechanisms through which IPV directly affect the survivors' social network. First, friends and family may avoid the survivor because they fear the perpetrator or they may perceive the abuse as a private matter (Beeble et al., 2009). Second, the perpetrator may purposefully isolate the survivor from their social network in an attempt to exert control over their partner (Levendosky et al., 2004). The phenomenon where IPV directly affects the victim's social network which in turn negatively affects mental health is also known as the mediating role of social support. The mediating and moderating role of social support will be discussed in section 3.11.2.

HIV-related stigma plays an important role in maintaining social inequality that serves as a barrier for accessing social resources (Earnshaw & Chaudoir, 2009). Moreover, Lichtenstein

(2006) suggests that internalized HIV-related stigma may lead women to feel shame, isolation from social support, and neglect their physical and mental health. According to Galvan et al., (2008), attitudes and beliefs associated with HIV-related stigma may lead to a loss of self-esteem that in turn impedes social interaction. This decline in social interaction may lead to negative effects such as common mental health disorders.

The discussion above provides an overview of the role that social support plays to protect an individual against stressful life events and associated common mental health disorders. However, few studies have examined the role of social support in the relationship between common mental health disorders and IPV or HIV-related stigma respectively. This study will attempt to address this gap in the literature.

2.6 Theoretical framework of the relationship between HIV-related stigma, IPV and mental health

The present study will make use of Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1975) to conceptualize the way in which the social environment may play a role in the relationship between HIV-related stigma, IPV and poor mental health outcomes. Bronfenbrenner (1975) identifies four levels of interaction, or systems that form part of a nested structure where each system is embedded within another system. These systems are known as the micro-,meso-, exo- and macrosystems, where the micro-, meso-, and exo-systems are embedded within the macrosystem. Section 2.6.1 will provide a brief definition of each system. Following on this section, a few examples are provided in order to integrate Bronfenbrenner's Ecological Systems Theory with the literature regarding the relationship between HIV-related stigma, experiences of IPV, and poor mental health outcomes.

2.6.1 Definition of the micro-,meso-, exo- and macrosystem

The microsystem involves the person's direct interactions with individuals in their immediate environment such as close relatives, friends, community members, and church members (Bronfenbrenner, 1975). Therefore, the microsystem refers to the interpersonal relationships that the individual experiences in their immediate environment (Visser, 2007).

The mesosystem involves interactions between two or more settings containing the person (e.g. the relationship between the individual's home and workplace) (Bronfenbrenner, 1975). In other words, a mesosytem is a system of microsystems that are linked to the individual. According to Bronfenbrenner (1979), similar goals and values between the microsystems may enhance the individual's growth and wellbeing.

Systems to which the person is not directly linked, but that influences the individual indirectly, are referred to as the exosystem (Bronfenbrenner, 1975). The exosystem involves the interaction between the microsystems and other systems that are not directly linked to the person, but that indirectly affects the person. The exosystem describes the community-environment level and refers to medical, educational and recreational resources in the neighbourhood that may indirectly influence the individual (Visser, 2007).

The macrosystem contains all the other systems, with specific reference to the belief systems, cultural values, gender roles, bodies of knowledge, customs, and ideologies that are embedded in each of these systems (Bronfenbrenner, 1994). Therefore, the macrosystem refers to the wider organisation of social institutions that are related to a certain social class, ethnic group or culture to which the individual belongs (Visser, 2007).

In the present study the ecological systems theory is used to provide a framework for the literature regarding the relationship between HIV-related stigma, experiences of IPV and poor mental health. This study is located primarily within the microsystem as perceived HIV-related stigma, measured with the HIV-related stigma scale, and experiences of IPV, measured with the CTS2, are associated with individuals within the person's immediate environment. However, it is important to understand that this does not mean the microsystem is considered as separate from the meso-, exo-, and macrosystems as all of these systems influence the individual's experiences or behaviours. Therefore, the rest of this section will provide some examples that integrate the literature with all the systems in Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1975) in order to demonstrate the relationship between poor mental health outcomes and HIV-related stigma as well as experiences of IPV respectively.

2.6.2 An Ecological Systems Perspective on the relationship between HIV-related stigma and poor mental health

2.6.2.1 Relationship between HIV-related stigma and poor mental health within the Macrosystem

According to UNAIDS (2007), a national response that employs a wide range of approaches will have the greatest impact on reducing HIV-related stigma and associated poor mental health outcomes. Approaches that address HIV-related stigma on a national level may include 'Know your rights' campaigns, participatory education, media campaigns, and legal support to those individuals who are affected by HIV-related stigma (UNAIDS, 2007). In a review of the literature, the authors reported that mass-media campaigns (e.g. radio or television) could play a role in dealing with HIV-related stigma (Mahajan et al., 2008). In order to examine

the role of media in reducing HIV-related stigma, a popular television drama, *The Bold and the Beautiful,* aired a HIV-related story line (O'Leary et al., 2007). After the story line aired in Botswana a sample of 208 participants who viewed the story line and 207 participants who did not view the story line, were recruited to participate in interviews that lasted approximately an hour. The findings demonstrated significantly ($p<.01$) lower levels of HIV-related stigma among participants who viewed the story line compared to participants who did not view the story line. These findings demonstrated that media may play an important role in reducing HIV-related stigma on a national level.

2.6.2.2 Relationship between HIV-related stigma and poor mental health within the Exosystem

HIV-related stigma and associated discrimination serve as barriers to the delivery of effective services by health care workers as well as the utilization of such services by community members (Nyblade, Stangl, Weiss, & Ashburn, 2009). A review of the literature demonstrated that there are three main causes of stigma in health care facilities: fear of contracting the virus from the patient which stems from incomplete knowledge about how HIV is transmitted; lack of awareness about HIV and why it is damaging to the patient's health; and the belief that HIV is contracted while engaging in immoral and improper behaviour (Nyblade et al., 2009). These causes my work individually or in concert to serve as barriers for prevention (e.g. mother-to-child transmission) (Eide et al., 2006), HIV testing and counselling (Obermeyer & Osborn, 2007), as well as accessing care and treatment (Nyblade et al., 2009). In order to combat stigma in health care facilities it is important that health care providers participate in activities that reduce stigma within their health care facility (Nyblade et al., 2009).

The process of reducing HIV-related stigma within health care facilities (e.g. clinics) may take place within the exosystem when the clinic where the HIV-positive person receives their treatment, is linked to a health care committee that is responsible for implementing policies within the clinic. These policies may require that all health care providers participate in mandatory programs that focus on reducing stigma within the clinic. Participatory methods that may be used include the: Safe and Friendly Health Facility Trainers Guide (Oah, Muc, & Kidd, 2008), and Reducing HIV Stigma and Gender-Based Violence: Toolkit for Health Care Providers in India (Kidd et al., 2007). Therefore, the policies that are implemented by the health care committee may indirectly influence the wellbeing of patients if the policies lead to lower levels of HIV-related stigma and higher quality services provided by staff in the clinic.

2.6.2.3 Relationship between HIV-related stigma and poor mental health within the Mesosystem

The engagement of faith-based, nongovernmental, and community-based organizations may be regarded as a cost-effective strategy focused on expanding HIV-services and support offered to people living with HIV (USAID, 2008). For example, the Philippi Trust is a Christian-based organization dedicated to creating HIV awareness, promoting HIV-disclosure and providing psychosocial support as well as counselling for people living with HIV in and around Somerset West, Western Cape (The Philippi Trust South Africa, 2012). However, a person living with HIV in a community with little HIV awareness and high levels of HIV-related stigma may be hesitant to visit organizations such as the Philippi Trust due to fear of experiences of HIV-related stigma if individuals in their community or family members discover the person's HIV-status. Therefore, the lack of synergy between the individual's community or family environment

and the services provided by the Philippi Trust may isolate the person from much needed psychosocial support services which in turn may result in poor mental health outcomes.

2.6.2.4 Relationship between HIV-related stigma and poor mental health within the Microsystem

In this study, the HIV-related stigma scale measures perceived HIV-related from individuals directly linked to the person living with HIV. The person's perceived HIV-related stigma may be associated with disclosing an HIV-positive status, negative-self-image as a result of an HIV-positive status, public attitudes toward people living with HIV, and personalized stigma. For example, fear of negative social consequences and isolation from family members or the community that the HIV-positive individual is living in, often serve as barriers for HIV disclosure which in turn may lead to poor mental health outcomes (Sowell, Faan, & Phillips, 2010; Wingood et al., 2008). In order to examine the relationship between HIV-related stigma, mental health, disclosure of HIV status, and risk behaviour, Wolitski and colleagues recruited a sample of 637 men and women who were residing in the United States at the time of the study (Wolitski, Pals, Kidder, Courtenay-Quirk, & Holtgrave, 2009). Findings from this study demonstrated that perceived external (e.g. blaming people living with HIV for their illness) HIV-related stigma was significantly ($p<.001$) associated with poor mental health (e.g. symptoms of depression), and non-disclosure to social support networks, compared to participants who did not report perceived external HIV-related stigma (Wolitski et al., 2009).

Some studies demonstrate that social support may play a protective role in the relationship between HIV-related stigma and psychological distress (e.g. depression and anxiety) (Cohen & Wills, 1985; Galvan et al., 2008; Strutterheim et al., 2011). Strutterheim and

colleagues conducted a study in order to examine the relationship between HIV-related stigma (e.g. from family, friends, and health care workers), psychological distress, and social support among a sample of 667 participants who lived in Germany at the time of the study (Strutterheim et al., 2011). Findings from the survey demonstrated that social support played a mediating role in the relationship between HIV-related stigma, after disclosing a HIV-positive status, and psychological distress (Strutterheim et al., 2011). These findings suggest that social support plays a buffering role in the relationship between HIV-related stigma and psychological distress.

2.6.3 An Ecological Systems Perspective on the relationship between IPV and mental health

2.6.3.1 Relationship between experiences of IPV and poor mental health within the Macrosystem

Research findings demonstrate that perpetration and experiences of IPV are associated with the maintenance of patriarchy and male dominance within societies (Jewkes, 2002; Taft, 2009). In addition, patriarchal and male dominance norms reflect gender inequality and inequity that serve to legitimize intimate partner violence and sexual violence perpetrated by men (Russo & Pirlott, 2006). These societal norms serve to create power hierarchies where men are viewed, by society, as economically and religiously superior compared to women (Ali & Bustamante-Gavino, 2008). Accordingly, men are socialized to believe that they are superior to women and that they should dominate their female partner (Taft, 2009). Women's subordination is therefore considered normal and acceptable in some societies (Russo & Pilott, 2006). Such societal norms and ideologies may affect laws, criminal justice systems, and the seriousness with which complaints from women who experience abuse are treated by law enforcement (Jewkes, 2002). It

is important to address societal norms that perpetuate violence against an intimate partner as IPV have been associated with poor mental health outcomes (Cavanaugh et al., 2010; Randle & Graham, 2011; Rose et al., 2010).

2.6.3.2 Relationship between IPV and poor mental health within the Exosystem

The community clinic where the individual receives treatment for their injuries may be linked to a healthcare committee responsible for governing policy in the clinic. If the healthcare committee were to change policy regarding routine screening for IPV, it could indirectly affect the individual, even though the individual is not directly linked to the committee. Routine screening for IPV has been introduced into many health care setting in an attempt to improve identification and intervention regarding experiences of IPV. Joyner and Mash conducted a study to evaluate a project that implemented a South African protocol for IPV screening and managing in health care settings (Joyner & Mash, 2011). The study recruited 168 women from rural primary care facilities, in the Western Cape, to participate in the study (Joyner & Mash, 2011). The study nurse assessed and managed the women according to the protocol, after which the researchers interviewed the participants one month later to establish to what extent the participant adhered to their care plan as well as the participant's views on the intervention (Joyner & Mash, 2011). Findings demonstrated that 75% of the 124 participants who returned for the follow up session reported significant ($p<.05$) benefits for their mental health, self-efficacy, and improved relationships (Joyner & Mash, 2011).

2.6.3.3 Relationship between IPV and poor mental health within the Mesosystem

Although some research findings illustrate that a higher level of education is often associated with lower rates of IPV experiences, some research demonstrate that a higher level of

education than a partner who perpetrates IPV may be associated with higher rates of IPV experiences (Jewkes, 2002; WHO, 2010). Findings among a sample of women aged from 15 to 49 years residing in Peru reported that participants with a higher level of education reported higher rates of sexual abuse (Flake, 2005). Likewise, a study among women who were residing in India at the time of the study, demonstrated that women with a higher level of education than their husbands showed a significantly ($p<.05$) higher risk of experiencing IPV (Ackerson, Kawachi, Barbeau, & Subramanian, 2008). According to Jewkes (2002), higher rates of IPV among individuals with a higher level of education may be associated with the perpetrator's feelings of insecurity or fear of losing control of their intimate partner.

Therefore, if a woman joins an institution that provides her with a level of education and means to find her own source of income that allows her to provide for herself, her abusive intimate partner may feel threatened and a loss of control or dominance over his female partner which in turn may result in her experiencing IPV. In this case, the lack of synergy between an institution that promotes knowledge as well as independence, and the women's home environment may lead to an increased risk of experiencing IPV.

2.6.3.4 Relationship between IPV and poor mental health within the Microsystem

Studies suggest that men as well as women experience IPV and associated poor mental health outcomes (Caldwell, Swan, & Woodbrown, 2012; Melton & Sillito, 2012). Family perspectives propose that men and women experience near equal rates of IPV, whereas feminist researchers maintain that women suffer disproportionally with regard to experiences of IPV (Melton & Sillito, 2012). The debate regarding more severe poor mental health outcomes among women than men is related to research findings demonstrating that men and women experience

different types of violence from an intimate partner (Caldwell et al., 2012; Carmo et al., 2011). A review of empirical literature regarding the negative effects associated with IPV, demonstrated that women are more likely to be injured as a result of IPV because men are often stronger than their female intimate partner (Caldwell et al., 2012). Likewise, the authors report that findings consistently illustrate higher rates of sexual abuse and associated symptoms of PTSD among women than men (Caldwell et al., 2012). These findings suggest that gender plays a role in the relationship between experiences of IPV and poor mental health.

Empirical studies demonstrate that in some cases victims of IPV also report a history of childhood trauma (Campbell, Greeson et al., 2008; Gass, Stein, Williams, & Seedat 2010). Some studies show that people who report experiences of IPV also report a history of childhood abuse (Campbell, Greeson et al., 2008; Cavanaugh et al., 2011; Wyatt et al., 2012). Findings from a study by Bensley and colleagues, demonstrated that women who experienced physical abuse during childhood were more likely to report experiences of physical IPV in adulthood, compared to women who did not report physical abuse during childhood (Bensley et al., 2003). In addition, a review of the literature shows that childhood trauma may result in lowered self-esteem that in turn may contribute to early-onset mental health disorders such as PTSD (Randle & Graham, 2011). These findings demonstrate that it is important to consider a history of childhood trauma when examining the relationship between IPV and poor mental health outcomes.

Increasingly, research has focused on the protective role of social support in the relationship between IPV and associated poor mental health outcomes (Beeble et al., 2009; Mburi-Mwalili et al., 2010). For example, Mburia-Mwalili and colleagues recruited 472 women from clinics- and service-based settings in Nevada in order to examine the role of social support in the relationship between IPV and depression (Mburi-Mwalili et al., 2010). Findings from their

study demonstrated that abused women who reported low [(AOR) = 4.95, 95% CI (1.69-14.49)], to moderate [AOR =2.71, 95% CI (1.00-7.33)] rates of social support were more likely to report symptoms of depression compared to women who reported higher rates of social support (Mburi-Mwalili et al., 2010). These findings are problematic as many abusers take explicit steps to isolate their partner from supportive networks (i.e. family and friends) (Goodman & Smyth, 2011).

CHAPTER 3

METHODOLOGY

3.1 Introduction

The following chapter describes the research design and methodology used to investigate the relationship between IPV, HIV-related stigma, and mental health (depression, PTSD and substance use disorders). In addition, the role of social support as a third variable was assessed. The procedure, data collection, data capturing and analyses will be discussed. Finally, detail about the measuring instruments in the test battery will be discussed.

3.2 Ethical considerations and approval

Ethical approval for this study was granted by the Health Research Ethics Committee, Faculty of Health sciences, Stellenbosch University. All components of recruitment, administration of questionnaires and assistance with data collection were approved by the Health Research Ethics Committee, Faculty of health sciences, Stellenbosch University**.**

3.3 Research design

The present study used a quantitative research methodology to compare and analyse the different cases and variables. Specifically, the design was cross-sectional, as the research question involved measuring the association between IPV, HIV-related stigma, and mental health at a single point in time (Bless, Higson-Smith, & Kagee, 2006).

3.4 Participants

By means of convenience sampling a total of 210 people living with HIV were recruited for the study. Participants were recruited from Somerset West, Gugulethu and Khayelitsha in the Western Cape, South Africa. Participants from Somerset West were recruited through the help of the Philippi Trust which is a Christian-based organization dedicated to providing psychosocial support, HIV-testing and counselling services to men or women. Their clients mostly speak Afrikaans, English, or Xhosa.

Participants from Gugulethu was recruited through the help of Thusanang Community Care which is an organization dedicated to providing social support to approximately 60 men who are living with HIV. Gugulethu is a located approximately 15 kilometres from Cape Town. The majority of people living in Gugulethu speak Xhosa or English. The ethnic makeup of Gugulethu is mostly Black and Coloured.

Participants from Khayelithsa were recruited through the help of a Xhosa speaking nurse who was living in the community at the time of the study. Khayelitsha is a partially informal township located on the Cape Flats approximately 35 kilometres away from Cape Town. The majority of people living in Khayelitsha speak Xhosa, Zulu, Sotho or English. The ethnic makeup of Khayelitsha is mostly Black and Coloured. Further information with regard to the demographic characteristics of the sample is described in Table 1, Chapter 4.

3.5 Participant inclusion criteria

To be eligible for the study, participants were required to: (1) be between 18 and 65 years of age; (2) have been diagnosed with HIV; (3) have been involved in an intimate relationship described as either dating, living together or married at the time of the study or at least once

before the study; (4) speak, read and understand either Xhosa, English, or Afrikaans to a degree that allowed them to complete the test battery. There were no gender restrictions to study participation. It was regarded important to include male participants as few similar studies regarding IPV have included male participants despite research findings suggesting that men also experiences IPV (Carney et al., 2007; Randle & Graham, 2011). Individuals who were poorly literate at the time of data collection were not included in the sample.

3.6 Sampling strategy and procedures

Participants were recruited from three different communities, namely Gugulethu, Khayelitsha, and Somerset West. Data collection at the three sites involved three different procedures with the assistance of: Thusanang Community Care, a Xhosa speaking nurse from Tygerberg medical campus (Stellenbosch University), and the Philippi Trust. Detail with regard to the specific sampling procedure followed at each site will now be discussed.

3.6.1 Gugulethu

The primary researcher met with the head and founder of Thusanang Community Care, Mr Raymond Bokako, who indicated his organization's willingness to assist in recruiting men from Gugulethu. Thusanang Community care is an organization dedicated to offering support to men living with HIV. The support takes the form of support groups that serve as a safe space for these men to talk about their experiences and the associated challenges of living with HIV. Mr. Bokako recruited men by informing his clients about the research study. All the men who indicated that they would like to participate in the study were then invited to meet on a specific day at Gugulethu Library, close to where the men lived.

On the day of data collection a local police officer accompanied the research team to the venue, which could comfortably sit 10 people. The research team consisted of the Primary Researcher, Research assistant, and a Xhosa speaking nurse who was also a trained researcher. A total of 48 men arrived who were then divided into groups of 10 and asked to wait outside the Library. One group at a time was invited into the venue where the men were asked to sit apart from each other for privacy. Once seated the men were further informed about the study and what was expected from them. All the men who indicated that they would like to participate in the study were then asked to sign an informed consent form (See Appendix H). Once consent was provided the participants were requested to answer all of the questions in the test booklet. Participants, who indicated that they did not feel comfortable to complete the questionnaire on their own, were assisted by one member of the research team.

3.6.2 Khayelitsha

The primary researcher met with a Xhosa speaking nurse who was an employee in the Department of Psychiatry, Tygerberg Medical campus at Stellenbosch University at the time of the study. The nurse indicated her willingness to approach former HIV/TB patients living in Khayelitsha, with whom she had pre-existing personal relationships, to request their participation in this study. Among her many tasks the nurse helped students with data collection therefore she did not require the same training as the PAs as she had already been trained in conducting research studies (including her own research). However, the researcher discussed with her the background, research question and hypotheses for this study as well as the specific measures included in the test battery.

The nurse invited patients, whom she knew had disclosed their status, to a venue in Khayelitsha to inform them of this study. Individuals who indicated that they understood what was expected and indicated their willingness to participate were then asked to sign the informed consent form (See Appendix H). Participants who provided consent were then requested to answer all of the questions in the test battery that took approximately 60 minutes to complete. Participants completed the questionnaires on their own but were permitted to ask the nurse to explain difficult concepts or questionnaire instructions. Upon completion of the test battery, the nurse briefly scanned over the questionnaires to make sure that all questions had been answered and then sealed the test battery in an envelope. The primary researcher collected all completed questionnaires from the nurse at her office, Tygerberg medical campus. There were no uncompleted questionnaires.

3.6.3 Somerset West

The Philippi Trust, situated in Somerset West, is a non-profit organization dedicated to providing counselling and training to the public, including persons living with HIV and AIDS. The primary researcher met with the patient advocate co-ordinator, Mr Izak Mofokeng, who indicated his organization's willingness to assist in recruiting participants for the study.

The Philippi Trust informed all PAs, employed at the time of data collection, about the study. Those PA's who indicated that they were interested in assisting in the data collection process were invited to meet with the researcher where they were further informed about the study. The PA's who agreed to assist in the study were invited to complete two compulsory training session as to ensure that a similar data collection procedure was followed at all three sites of data collection. More detail with regard to the PAs training is discussed in section 3.7. 1

Each of the PAs provide psychosocial services and support to between 10 and 20 clients, who are referred to the Philippi Trust by clinics in and around Somerset West. The PAs visited their clients at their homes a few times a month. During one of their monthly visits the PAs informed their patients about the study and invited them to participate. Those patients who indicated their willingness to participate in the study were then informed about the study, after which they were asked to sign an informed consent form (See Appendix H).

After the consent form was signed by each participant, the PAs administered the test battery to him or her. The length of the test battery may have been experienced as overwhelming and tiring to complete in one home visit. For this reason, the respondents had the option of completing the questionnaires over two home visits. However, all respondents elected to complete the test battery in one home visit. The total test battery could be completed in approximately 60 minutes. The questionnaires were completed in a quiet private room in the participant's home. Participants who indicated that they did not feel comfortable completing the test battery on their own, could ask for assistance from the PA. Assistance included explaining difficult concepts or instructions of how to complete the questionnaires. Upon completion, each test battery was sealed in a separate envelope in order to keep responses confidential and to safeguard anyone other than the researcher viewing the responses. The PAs returned all completed test batteries to the Philippi Trust offices after their respective home visits. The researcher collected the completed questionnaires as soon as they had been brought to the Philippi Trust. Upon completion of data collection at the Philippi Trust, the PAs were asked to hand over all uncompleted test batteries and consent forms.

3.7 Study Procedure

3.7.1 Training for the data collection procedure

Training was necessary to ensure that all three data collection procedures at the different sites would be as similar as possible and to provide the patient advocates (PAs) with the required preparation to correctly administer the test battery. The following training was compulsory for all PA's who assisted in data collection.

A total of 18 PAs attended both training sessions. During the training sessions role play was used to: (1) inform the PAs about the background of the study, variables investigated and what each measure assessed; (2) demonstrate how to correctly administer the informed consent form and test battery; (3) discuss any terminology that might be unknown to the patients; (4) explain the important ethical requirements that had to be adhered to when conducting research.

Only 16 of the 18 PAs who completed the training were selected to assist in data collection. Selection necessitated that the PAs showed a clear understanding of the study background, content of the measures, regard for ethical requirements and genuine interest in assisting in the study. Two PAs did not display all of these criteria.

3.7.2 Token of gratitude

Upon completion, participants were thanked for taking the time to complete the test battery. In addition, each participant received a R30 voucher redeemable at Shoprite Checkers, as a token of gratitude for their participation. Similarly, Mr Bokako and the nurse, who assisted in data collection, each received a R150 voucher to thank them for recruiting a large number of participants for this study. The PAs who assisted in recruitment and administration of tests

batteries each received an R80 voucher. The value of the voucher was not disclosed before completion of the study as to ensure that the vouchers were not used as an incentive, but rather as a token of gratitude.

3.7.3 Psychosocial support leaflet

Due to the sensitive nature of the test battery it was recommended to participants that they seek psychosocial support if they were distressed by responding to the questionnaire. The study itself did not aim to provide social support, but rather to examine the experiences of IPV, HIV-related stigma and associated mental health issues. Therefore, upon completion of the test battery, each participant was handed a pamphlet containing numbers of local psychosocial support services. In addition, the research team and PAs agreed to immediately inform the primary researcher if a participant became distressed as a result of participation in the study. No participant reported becoming distressed whilst completing the test battery.

3.8 Data collection measures

The next section will provide information regarding the test battery used for data collection from the sample. The test battery consisted of a demographic questionnaire, one scale measuring intimate partner violence, one scale measuring perceived HIV-related stigma, one scale measuring social support and 4 scales measuring mental health.

3.8.1 Demographic questionnaire

The first questionnaire in the test battery was included to provide some information with regard to the demographic characteristics of the sample (See Appendix A). Participants were asked to select their gender, fill in their name, age, first language and ability to speak/read other

languages. Subsequent questions required the participant to select one of a few possible options enquiring about race, marital status, level of education, work situation at the time, and approximate annual income.

3.8.2 Conflict Tactics Scale – Revised (CTS2)

The Revised Conflict Tactics Scale (CTS2) was used to measure intimate partner violence, during the past twelve months and before (a copy of this scale is not provided in the appendixes due to copyright restrictions, therefore the authors of this scale should be contacted for a copy of the scale) (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The CTS2 scale is a 39-item scale that measures severity of symptoms on an 8-point frequency scale. The paired items ask respondents to report acts of abuse from their partner (victimization) as well as their own acts of abuse toward a partner (perpetration).

The CTS2 does not measure attitudes toward violence (Straus et al., 1996). Instead, the different subscales measure the severity of abuse as well as the degree of reasoning used to deal with conflict (Straus et al., 1996). The CTS2 consist of subscales that measure physical assault, psychological aggression, and supplemental scales that measure sexual coercion and injury. The physical assault (e.g. slapped my partner, and choked my partner), psychological aggression (e.g. insulted or swore at my partner) and sexual coercion (e.g. used threats to make my partner have sex) subscales were used in this study.

The subscales and supplemental scales may be scored in a number of different ways in order to assess prevalence, frequency, and chronicity. The physical assault, sexual coercion, and psychological aggression scale and injury scale may be scored according to prevalence by assigning a score of 1 to every subject who reported one or more items associated with the

specific scale (Strauss, 2004). Frequency is totalled by adding the midpoints of the response categories selected by the respondent. The chronicity score is the sum of the number of times a respondent selected items associated with the specific scale (Strauss, 2004). In this study the subscales were scored according to prevalence.

Internal consistency reliability for the CTS2 subscales ranges from .79 to .95 (Straus et al., 1996). For example, cross-sectional research was conducted to compare the reliability and validity of the CTS2 with a sample (n = 6, 700) of 33 universities from 17 countries across Asia and Middle East, Australia and New Zealand, Europe, Latin America, and North America (Strauss, 2004). The internal consistency reliability was reported to be high, with alpha coefficients ranging between .74 and .89 for the respective scales (Strauss, 2004). The differences in reliability between male and female participants were reported as small with a slightly higher reliability for male students (Strauss, 2004). The measure demonstrated adequate construct validity across samples, suggesting that the CTS2 is appropriate for measuring violence in partner relationships cross-culturally (Strauss, 2004).

The CTS2 has been used by Spies (2011), to measure experiences of IPV among 130 HIV-positive women who visited HIV clinics/infectious disease units located in the Boland, Khayelitsha, and Tygerberg Eastern health district in the Western Cape. According to Spies, the CTS2 demonstrated very good internal consistency of .92.

3.8.3 HIV-related stigma scale

The HIV-related stigma scale was used to measure perceived HIV-related stigma on a 4 point Likert-type scale (Berger, Ferrans, & Lashley, 2001) (See Appendix B). The scale consists

of 40-items that divide into four subscales, namely disclosure, negative self-image, public attitudes, and personalized stigma.

First, the disclosure subscale includes twelve items concerned with controlling information, keeping one's HIV status a secret, and worrying that others who knew the respondent's status would tell others (Berger et al., 2001). Items related to this subscale include "I am very careful who I tell I have HIV", "I work hard to keep my HIV a secret", and "Telling someone I have HIV is risky" (Berger et al., 2001. p. 525). Second, the negative self-image subscale contains nine items relating to feelings of "being unclean", "not being as good as others", or "like a bad person because of HIV" (Berger et al., 2001, p. 525).

Third, the public attitudes subscale consists of twelve items that refer to what 'most people' think about people living with HIV or what 'most people' living with HIV can expect when others learn that they have HIV (Berger et al., 2001). Other items relate to general consequences of others knowing a person had HIV. Items belonging to this subscale include, "most people think that a person with HIV is disgusting", "people with HIV are treated like outcasts", and "people with HIV lose their jobs when their employers find out" (Berger et al., 2001, p. 525).

Fourth, the personalized stigma subscale consists of eighteen items that address perceived consequences of others knowing that the respondent is living with HIV. Possible consequences include feelings that people were avoiding him/her, regrets for telling some people about their status, and losing friends (Berger et al., 2001). Two examples of possible consequences are, "Some people who know I have HIV have grown more distant", and "Most people with HIV are rejected when others find out" (Berger et al., 2001, p. 524-525).

In a convenience sample of 318 adults from across the United states, the reliability coefficient alpha for the total set of items was .96, and 2-3 week test-retest correlation ranged from .89 to .92 (Berger et al., 2001). Coefficient alphas between .90 and .93 for the subscales have been reported by the scales' authors (Berger et al., 2001). Construct validity was demonstrated by a moderate to strong negative correlation between the Rosenberg Self-esteem Scale and the stigma sub-scales, a strong correlation between Centre for Epidemiological Studies Depression Scale (CES-D) and stigma sub-scales, a moderate to strong negative correlation to social support measures and a moderate positive correlation to social conflict (Holzemer et al., 2009).

Scores for the scale or subscale depend on the number of items that comes into play. Total scores were calculated by summing participant responses to each specific item in a scale or subscale, ranging from 1(strongly agree), 2 (agree), 3 (disagree), to 4 (strongly disagree). Higher scores on the total scale or on any of the subscales are indicative of greater perceptions of HIV-related stigma.

The public attitudes subscale of the HIV stigma scale was used among 120 black South African Xhosa-speaking women residing in the Western Cape at the time of the study (Wingood et al., 2008). The findings from the study demonstrated very good internal consistency (α =.91) for the public attitudes subscale of the HIV stigma scale (Wingood et al., 2008). Moreover, the HIV stigma scale was used to measure HIV-related stigma among a sample of 237 men and women residing in Northern Mozambique at the time of the study (Massicotte, 2010). The findings demonstrated good internal consistency for the overall HIV-stigma scale (α = .97), personalized stigma- (α = .96), disclosure- (α = .95), Negative self-image- (α = .88), and public attitudes subscale (α = .96) (Massicotte, 2010).

3.8.4 Beck Depression Inventory – Second Edition (BDI-II)

Symptoms of depression were measured with the second edition of the Beck Depression Inventory-II (BDI-II) (See Appendix C). The BDI-II is a 21-item multiple-choice, self-report inventory intended to measure the presence and severity of symptoms of depression. Total scores are calculated for the BDI-II by summing the score for each item on a 4-point Likert-type scale ranging from 0 to 3. The total score is used to categorize the severity of symptoms as minimal (0-13), mild (14-19), moderate (20-28), and severe (29-63).

In the United States, internal consistency is reported to be high, with alpha coefficients of .92 and .93 for outpatients and college students respectively. A test-retest correlation of .93 was found for 26 Philadelphia outpatients with approximately 1 week between tests. The test displayed good construct-, convergent- and discriminant validity for a sample of Kentucky and New Jersey outpatients (Beck, Steer, & Brown, 1996).

Moreover, the BDI-II was translated into Xhosa and administered among a sample of 122 Xhosa respondents from the Eastern Cape. Psychometric properties were found to be comparable to the original English versions (Steele & Edwards, 2008). In this South African sample, the translated version of the BDI-II demonstrated an excellent internal consistency with alpha coefficient of .93. Furthermore, the values for inter-item correlation range from .48 to .70, which compares well to the original validation studies by Beck et al. (1996).

3.8.5 PTSD Symptom Scale – Self Report (PSS-SR)

Symptoms of PTSD were measured with the PTSD Symptom Scale, Self-Report Version (PSS-SR) (See Appendix D). Specifically the PSS-SR is used to measure the frequency and severity of PTSD symptoms (Stieglitz, Frommberger, Foa, & Berger, 2001). The scale consists

of 17 items and requires respondents to report how often the respective problems have bothered them during the past two weeks. Respondents are required to circle a response on a 4-point Likert-type scale ranging from 'not at all', 'once only' or 'almost always'. Responses are summed to yield a score for each of the three dimensions (re-experiencing, avoidance, and arousal) or an overall score. A total score of higher than 13 or more is indicative of the likelihood of PTSD.

The psychometric properties of the PSS-SR were assessed among a sample of 46 female rape victims and 72 female non-sexual assault participants (Foa, Riggs, Dancu, & Rothbaum, 1993). The PSS-SR demonstrated satisfactory internal consistency with an overall alpha coefficient of .91, high test-retest validity and excellent convergent validity against the Structured Clinical Interview for DSM-III-R PTSD Module (Foa et al., 1993).

The PSS-SR does not have standardized cut-off scores that can be generalized to all populations. Although the PSS-SR has not been validated in a South African context, the scale has been successfully used in a number of different studies (Farley, Wade, & Birchmore, 2003; Hollifield et al., 2008; Phillips, Rosen, Zoellner, & Feeny, 2006) indicating that it may be applied to other populations.

3.8.6 Alcohol Use Disorders Identification Test (AUDIT)

The Alcohol Use Disorders Identification Test (AUDIT) is used to screen for alcohol abuse and related problems (See Appendix E). The AUDIT consists of 10 items that assess 3 conceptual domains, namely recent hazardous alcohol consumption (1-3 items), alcohol dependence (4-6 items), and harmful alcohol use (7-10 items). A total score is calculated to reflect the respondent's level of risk related to alcohol use (Bohn, Babor, & Kranzler, 1995).

In a literature review, the authors of the scale discuss a large number of studies that offer empirical support for the psychometric properties of the AUDIT across a diverse array of populations and samples (Reinert & Allen, 2007). The AUDIT demonstrates high internal consistency across a variety of studies. A reliability generalization analysis of studies reported a median reliability coefficient of .83, with a range of .75 to .97 (Reinert & Allen, 2007). Moreover, the AUDIT has demonstrated good test-retest reliability among general population samples. For example, findings from a general US population demonstrated a coefficient of .87 among 102 participants who were screened by means of a telephone survey one week apart (Rubin et al., 2006). The AUDIT has performed equally well and at times with higher accuracy when compared to a wide variety of criterion measures (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). For example, findings reported a strong correlation of .88 between the AUDIT and the Michigan Alcohol Screening Test (MAST) among men and women (Babor et al., 2001).

The AUDIT has also been validated among subgroups that vary in gender, ethnicity, and age (Reinert & Allen, 2007). Furthermore, a large number of subpopulations have been successfully studied, including university students, drug-users, emergency room patients, elderly hospital patients, the unemployed, and people residing in low-socio-economic environments (Babor et al., 2001). In addition, the AUDIT has been used in many different countries and cultures suggesting that it could be described as an international screening test (Babor et al., 2001).

The AUDIT has also been tested within a South African sample, among 465 individuals enrolled in HIV care and treatment near Cape Town (Myer et al., 2008). Myer et al. (2008) compared results from the AUDIT with results from the Mini-International Neuropsychiatric Interview (MINI) by administering both measures within the same sample, in order to determine

its sensitivity and specificity. The AUDIT correctly identified all of the participants with MINI-defined alcohol abuse and correctly classified 79% of the participants who did not have alcohol abuse or dependence (Myer et al., 2008).

3.8.7 Drug Use Disorder Identification Test (DUDIT)

The Drug Use Disorders Identification test (DUDIT) was developed as a parallel instrument to the AUDIT for identifying harmful or hazardous use patterns and a variety of drug-related problems (See AppendixF). The DUDIT consists of 11 items with a maximum score of 44 points (11X4). A score of six or more for men and two or more for women indicates the likelihood of drug-related problems. The discrepancy between the respective cut off scores for men and women is associated with the difference in tolerance between men and women.

Evaluation of the DUDIT among a high prevalence Swedish sample provided evidence for good reliability with a high Cronbach alpha value of .80 for the total score (Berman, Bergman, Palmstierna, & Schlyter, 2005). The authors also stated that the DUDIT could predict drug dependence with a sensitivity of 90% for both DSM-4 and ICD-10 criteria.

The DUDIT has also been tested within a South African sample in a study by Kader, Seedat, Koch, and Parry (2012), among 43 HIV-positive participants who visited the Wallacedene Community Health Clinic (CHC) in Kraaifontein, Cape Town. Kader and colleagues compared the DUDIT to a biological marker (urine) from each patient, in order to test the sensitivity of the DUDIT (Kader et al., 2012). Kader and colleagues demonstrated that the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the DUDIT against biomarkers in the urine to detect harmful use or dependence of drugs in the participants were 100%, 66%, 10% and 100%, respectively. The authors concluded that the

accuracy of the DUDIT was very high compared to urine analyses in the detection of a drug related problem.

3.8.8 Childhood Trauma Questionnaire (CTQ)

Childhood trauma was measured with the Childhood Trauma Questionnaire short-form (CTQ-SF) (a copy of this scale is not provided in the appendixes due to copyright restrictions, therefore the authors of this scale should be contacted for a copy of the scale). The CTQ-SF is a 28-item self-report inventory purported to provide a brief and reliable overview for histories of abuse and neglect. Confirmatory analysis provided evidence for good internal consistency reliability for each of the CTQ-SF scales in a large community sample in the USA (Bernstein et al., 2003).According to Thombs, Bernstein, Lobbestael, and Arntz (2009) the Dutch version of the CTQ-SF demonstrates good reliability with a Cronbach alpha of .91 for physical abuse, .89 for emotional abuse, .95 for sexual abuse, .63 for physical neglect and .91 for emotional neglect. The CTQ will be administered so as to control for the influence of early life trauma in this sample.

The CTQ has also been used within the South African context in a study by Troeman et al. (2011), among 137 women who visited community health care facilities in and around the Cape metropole of South Africa between from 2008-2010. Troeman and colleagues reported that the CTQ demonstrated a satisfactory internal consistency ($\alpha = .70$).

3.8.9 Social Support Appraisal (SSA) scale

The Social Support Appraisal Scale (SSA) was used to measure the participants' subjective appraisals of support on different levels (See Addendum G). Specifically, the SSA

was developed to measure the extent to which individuals feel they are loved, esteemed by, and involved with their main support group consisting of friends, family and others (Vaux et al., 1986). The SSA include an overall total of 23 items that can be divided into 8 family items (e.g. I am loved dearly by my family), and 8 friend item subscale (e.g. I feel a strong bond with my friends). The remaining eight items refer to 'people' or 'others' in a general way (e.g. I am respected by other people). In responding to the SSA, respondents rate their perceived social support on a 4 point scale by selecting 1 (strongly agree), 2 (agree), 3 (disagree), or 4 (strongly agree). A total score can be calculated for the overall scale (sum of all 23 items) or the subscales (sum of the items associated with the subscale).

A total of 979 participants from five community and five student samples were recruited to provide data demonstrating the psychometric properties for the SSA. The internal consistency for the scale and subscales was consistently good across samples ranging from .81 to .90 (Vaux et al., 1986). Data on the convergence of the SSA with other support appraisal measures provides a good deal of evidence for the scale's convergent and divergent validity (Vaux et al., 1986). Significant correlations were found between the SSA and measures of social support and distress/well-being, for example perceived social support, life satisfaction, positive affect, negative affect (Vaux et al., 1986).

The SSA was successfully used to measure perceived social support among 198 Xhosa speaking participants residing in rural areas of the Eastern Cape Province (Somhlaba & Wait, 2008). Findings in this sample demonstrated an internal consistency of .79 for the SSA (Somhlaba, 2006).

3.9 Translation of questionnaires

The entire test battery of questionnaires was translated into Xhosa and Afrikaans. Xhosa translations of the BDI-II and SSA were obtained from Dr. Nzeba Somhlaba, a lecturer in the Psychology department at Stellenbosch University. The DUDIT, AUDIT, HIV-related stigma scale and PSS-SR had been translated for use in previous research studies by students in the Department of Psychology, Stellenbosch University. Accordingly, these questionnaires were obtained from the department for use in this study. Translation of the informed consent form, demographic questionnaire, CTQ and revised CTS2 into Xhosa were done with the help of a translator from the department of Psychiatry, Tygerberg medical campus, and the Language centre at Stellenbosch University.

The primary investigator translated all questionnaires from English to Afrikaans. Back-translations were done by a student in Languages at Stellenbosch University. The translated scales were found to be very similar to the English version with only minor differences with regard to meaning and content. Necessary modifications were made to ensure that the scales were semantically and culturally equivalent.

3.10 Quality control checks and data capturing

Quality checks on all completed questionnaires were performed on a regular basis and regular feedback meetings were convened with the nurse who helped with data collection as well as the PAs to deal with queries and missing data. During data collection at Gugulethu and Khayelitsha, the researcher who received the completed test batteries examined them for possible errors and missing data. In instances when missing data was discovered, participants were asked

to complete the missing items. The data were entered as missing responses in cases where more than one answer was provided for an item that allowed only one response.

The 210 questionnaires were entered into Statistical Package for the Social Sciences (SPSS) version 18.0. Two integrity checks were conducted on the data set to ensure that no mistakes were made during data capturing. Following the integrity checks one male participant was excluded after the researcher discovered that he did not meet the age requirements to be eligible for the study. Another participant was excluded because she decided to discontinue her participation in the study and did not complete the entire test battery. A further two participants were excluded because they omitted responding to a questionnaire containing 78 questions.

3.11 Data analyses

Data were analysed with the SPSS version18 for Windows. Analyses were performed to calculate (1) preliminary statistics, (2) measures of internal reliability, and (3) Pearson's correlation and Biserial correlation. Results for these analyses were reported in chapter four. Moreover, two quantitative methods of data analysis were used to investigate the three dimensions of the research question, namely hierarchical multiple regression analyses and product-term regression analyses. For this study, a significance level of less than .05 was used as a general rule that the independent variable makes a significant contribution to the dependent variable. The rest of this section provides some background information and steps followed with regard to the hierarchical multiple regression analysis as well as product-term regression analysis.

3.11.1 Multiple regression analysis

Multiple regression analysis was used to determine the extent to which the linear combination of the independent variables (IPV and perceived HIV-related stigma) was able to account for variance in the dependent variables (depression, PTSD, alcohol and drug abuse) (Field, 2009). For the two independent variables, HIV-related stigma was entered as a continuous variable, and IPV (timing and frequency) were entered as a categorical variables. The dependent variables, namely PTSD and depression, were both entered as continuous variables. Moreover, two control variables were included in the analysis namely gender and childhood trauma.

Hierarchical multiple regression analysis was used in order to enter the independent variables into the equation in an order specified by the researcher, which make it possible to assess each independent variable in terms of what it adds to the equation at its point of entry (Tabachnick & Fidell, 2001). The control variables were the first independent variables entered into the model which allows the researcher to partial out these variables before the other independent variables (i.e. IPV and perceived HIV-related stigma) were entered into the model (Hierarchical Multiple Regression in SPSS, 2012). The order in which the independent variables were entered was based on the availability of literature that supports their association with the dependent variables. The theoretical consideration regarding the use of hierarchical multiple regressions and the order in which the variables were entered, was confirmed by Mr Henry Steel who is an experienced statistician (personal communication, October 16, 2012). The order in which the variables were entered was as follows: gender was entered in step one; childhood trauma in step two; IPV (timing or frequency) in step three; and perceived HIV-related stigma in step four. This sequence was completed for PTSD as well as depression as outcome variables.

Following the hierarchical multiple regression analysis, product-term regression was used to explore the role of social support as a third variable.

3.11.2 Product-term regression analysis

Product-term regression analysis was used to examine to what extent social support, as a third variable, mediates or moderates the relationship between IPV (timing or frequency), perceived HIV-related stigma and mental health. There are four possible pathways through which a third variable can influence the relationship between an independent and dependent variable, namely direct effect, indirect effect, moderating effect, and mediating effect (Pretorius, 2007). A full discussion of all these pathways is beyond the scope of this study. However, this study focused on whether or not social support, as a third variable, moderates the relationship between the independent variables and the dependent variables.

Generally the term moderator is understood as a variable that in some way alters the direction or strength of the relationship between the independent variable and the dependent variable (Baron & Kennedy, 1986; Holmbeck, 1997; James & Brett, 1984). In addition, Frazier, Tix and Barron (2004) explain that the moderating effect is merely the interaction whereby the effect of the independent variable on the dependent variable depends on the level of the third variable. The example they used was based on a study conducted by Corning (2002) who found that perceived discrimination was positively related to psychological distress only among those participants who reported low levels of self-esteem and not those who reported high levels of self-esteem.

While moderator variables are concerned with the ‘when’ and ‘for whom’ the independent variable predicts the dependent variable, the mediator variable attempts to address

the ‘how’ or ‘why’ one variable predicts the dependent variable (Frazier et al., 2004). Moreover, a mediator aims to explain the relationship between the independent and dependent variable (Baron & Kennedy, 1986; Holmbeck, 1997; James & Brett, 1984). For example, findings from a cross-sectional study demonstrated that higher levels of relationship abuse were associated with lower levels of social support (Thompson et al., 2000). The effect of relationship abuse on social support, in turn, negatively impacts the wellbeing of those who experienced such abuse (Beeble et al., 2009). In this regard, mediators serve as the mechanism through which the independent variable predicts change in the dependent variable (Baron & Kennedy, 1986).

The product-term analysis used to explore the role of social support as a third variable consists of two sets of hierarchical multiple regressions analyses each including three steps (Pretorius, 2007). For the first hierarchical multiple regression, the independent variable is entered in step one, the independent variable and third variable together in step two, and the product of the independent variable and third variable in step three (Pretorius, 2007). The distinction between the two sets of analysis is based on step one of each analysis. This means, for the second analyses, the third variable is entered in step one, while step two and three are entered in the same way as described in the first set of analysis. The two sets of analyses were performed separately for each dependent variable (i.e. PTSD or depression). Based on the results from the regression it is possible to establish whether social support plays a moderating or mediating role as a third variable. Results for all analyses are presented in Chapter 4.

CHAPTER 4

RESULTS

4.1 Preliminary analysis

4.1.1 Demographic characteristics of the sample

Table 1 provides an overview of the sample demographic characteristics. Specifically, the table provides information with regard to number of respondents, percentage of responses, mean and standard deviation scores for participant gender, age, ethnicity and marital status. Furthermore, Table 2 provides information with regard to language, education, work-status at the time of the study and approximate monthly income.

The sample consisted of 210 participants of which 60% were men (n = 126) and 40% were women (n = 84). The participants were on average 36 years old while the age of the participants ranged from 19 to 63 years (Mean = 35.78, SD = 9.28). With regard to the sample ethnicity, 85.2% classified themselves as Black, and 14.3% as Coloured, whilst only one participant reported her race as Indian. There were no White participants in the sample. Regarding marital status, 69.5% of the sample stated they were single at the time of the study whereas 24.8% stated they were married or living with an intimate partner.

As can be seen in Table 2, the majority (80.5%) of participants reported Xhosa as their first language. In addition, 12.9% of the sample reported Afrikaans, whilst 2.4 % of the sample reported English as their first language. With regard to education, 37.6% reported that they attended high school but did not complete high school whereas 20% stated that they completed matric. Most of the participants reported that they were unemployed (61.4%) at the time of the

study and more than half (54.3%) reported an approximate monthly household income of R1000 or less.

Table 1

Demographic Summary of Sample Gender, Age, Ethnicity, and Marital Status

	[a]Number of respondents	% of total sample	Mean	SD
Gender				
Male	126	60		
Female	84	40		
			35.78	9.28
Age (years)				
18-30	61	29		
31-40	85	40.5		
41-50	50	23.8		
51-65	12	5.7		
Ethnicity				
Black	179	85.2		
Coloured	30	14.3		
Indian	1	.5		
Marital status				
Single	146	69.5		
Widowed	7	3.3		
Divorced	5	2.4		
Married/Living together	52	24.8		

Note. [a]N = 210; Two participants did not report their age.

Table 2

Demographic Summary of Sample Language, Education, Work Status and Income

	[a]Number of respondent	% of total sample
First Language		
English	5	2.4
Afrikaans	27	12.9
Xhosa	169	80.5
Other	8	3.8
Education		
Completed Primary school	38	18.1
Attended high school but did not finish	79	37.6
Completed matric	42	20
Attended university, college or technikon but did not graduate	10	4.8
Graduated from university, college or technikon	6	2.9
Work status at the time of the study		
Employed part-time	24	11.4
Student (Full-time)	4	1.9
Unemployed	129	61.4
Dependent on disability grant	7	3.3
Homemaker	4	1.9
Retired	2	1.0
Approximate monthly household income		
R1000 or less	114	54.3
R1001-R2000	18	8.6
R2001-R3001	9	4.3
R3001- R5000	6	2.9
R5001 or more	5	2.4
Don't know	58	27.6

Note. [a]N = 210; One participant did not report their age and twenty-four participants did not provide a response to current work status at the time of the study.

4.1.2 Number of participants' responses to the self-report measures

As can be seen in Table 3, response classification categories were used to provide a broad overview of participants' responses to the revised Conflict Tactics Scale (CTS2) subscales, the second edition of the Beck depression inventory (BDI-II), the PTSD Symptom Scale self-report

version (PSS-SR), alcohol use identification test (AUDIT), and the drug use disorder identification test (DUDIT). In addition, the table provides summed scores for the number of responses, percentage of responses, and percentage scores for male and female respondents respectively. With regard to the male and female responses, it is important to note that the 'percentage' scores are proportionate to the respective number of men and women in the sample. This means, percentages with regard to responses from women are calculated out of 84, which is the number of women in the sample. Likewise, percentages with regard to responses from men are calculated out of 126, which is the number of men in the sample. The mean and standard deviation scores for all measures are reported in Table 5.

Three subscales of the CTS2 were included in the study in order to measure IPV, namely *physical assault* (i.e. violent acts), *sexual coercion* (i.e. verbal instance or physical force used to compel the partner to engage in unwanted sex), and *psychological aggression* (i.e. nonviolent aggressive acts). The classification categories for the CTS2 subscales were calculated according to *never*, *timing* and *frequency*. Categories for *IPV timing* in turn were classified as *recent* (IPV only during the last 12 months), *remote* (IPV only before the last 12 months) and both *recent and remote* (IPV during the last 12 months as well as prior to the last 12 months) (Straus et al., 1996). However, categories for *IPV frequency* were classified according to *once* (in the last year), and *twice or more* (in the last year). Participant responses with regard to *timing* of IPV will first be reported, after which *frequency* responses will be reported.

Of those participants who reported *recent IPV*, 45.2% reported *physical assault*, 39% *sexual coercion*, and 50% *psychological aggression*. Among those who reported remote IPV, 5.7% reported *physical assault*, 8.1% *sexual coercion*, 5.7% *psychological aggression*. With regard to the gender of the participants, more men compared to women reported *recent*

experiences of *physical assault* (49.2% vs. 39.3%), *sexual coercion* (42.1% vs. 34.5%), and *psychological aggression* (54.8% vs. 42.9%). Similarly, more men compared to women reported *remote* experiences of *physical assault* (6.3% vs. 4.8%), *sexual coercion* (9.5% vs. 6%), and *psychological aggression* (4.8% vs. 7.1%).

Among those participants who reported *physical assault*, 15.2% reported that this happened only once in the past year while 30% reported experiencing *physical assault twice or more* in the past year. For *sexual coercion*, 16.7% of participants reported being s*exually coerced* on one occasion whereas 22.4% *two or more* experiences of *sexual coercion*. With regard to *psychological aggression*, 17.6% of the participants reported that this happened only *once* in the last year, while 32.4% reported *two or more* experiences. With regard to *once-off* experiences, men reported higher rates of *physical assault* (18.3% vs. 10.7%), *sexual coercion* (19% vs. 13.1%), and *psychological aggression* (20.6% vs. 13.1%) compared to women. Likewise, of those participants who reported *two or more* experiences of IPV more men compared to women reported *physical assault* (31% vs. 28.6%), *sexual coercion* (23% vs. 21.4%), and *psychological aggression* (34.1% vs. 29.8%).

The BDI II classification categories were as follows: minimal (1-4); mild (15-20); moderate (21-29); and severe (30-63) (Beck et al., 1996). A large portion (34.3%) of participants had scores that fell in the minimal depression range. Of these, 39.3% of women and 31% of men reported minimal depression. The least (16.7%) of responses fell into the mild depression category. With regard to mild depression, 19% of female participants and 15.1% of male participants reported scores that fell in this range. For severe depression 29% of the sample reported scores that fell in this range of which 32.5% of men and 23.8% of women reported severe depression.

For the PSS-SR, scores of 12 and below were classified as low symptoms of PTSD, whilst a score of 13 and above was classified as high symptoms of PTSD (likelihood of PTSD) (Foa, Cashman, Jaycox, & Perry, 1997). Approximately half (47.1%) of the sample reported high-PTSD symptoms. Furthermore, 51.2% of female participants and 44.4% of male participants had scores that fell in the high-PTSD range.

A score of 8 or more for the AUDIT indicated harmful drinking. In addition, a score of 13 or more for women, and a score of 15 or more for men indicated alcohol dependence. Of the entire sample, 35.2% reported harmful alcohol use. Furthermore, slightly larger portion of female (24.8%) than male 22.9% participants obtained a score which is considered to be indicative of possible alcohol dependence.

With regard to the DUDIT, a score of 2 or more for women, and 6 or more for men indicated some drug-related-problem. In total 16.7% of male participants reported scores considered to be indicative of some drug-related-problem while 4.8% of female participants reported drug-related problems.

No standardized classification scores could be obtained for the HIV-related stigma scale and the Social Support Appraisal Scale (SSA). As an alternative, the total number of respondents, minimum, maximum, mode, and median scores were calculated (See Table 4). For the total HIV-related stigma scale, the scores may range from 40 to 160. The majority of participants reported a score of 83 for the HIV-related stigma scale. With regard to the SSA, the scores may range from 23 to 92. The majority of participants reported a score of 64 for the SSA.

Table 3

Total Number of Responses to Self-report Measures

Measure	[a]Classification categories	N	[b]%	N Men	[b]% Men	N Women	[b]% Women
CTS2		210		126		84	
PA							
	Never	79	37.6	41	32.5	38	45.2
	Recent	95	45.2	62	49.2	33	39.3
	Once	32	15.2	23	18.3	9	10.7
	Twice or more	63	30	39	31	24	28.6
	Remote	12	5.7	8	6.3	4	4.8
	Recent and Remote	24	11.4	15	11.9	9	10.7
SC							
	Never	90	42.9	47	37.3	43	51.2
	Recent	82	39	53	42.1	29	34.5
	Once	35	16.7	24	19	11	13.1
	Twice or more	47	22.4	29	23	18	21.4
	Remote	17	8.1	12	9.5	5	6
	Recent and Remote	21	10	14	11.1	7	8.3
PsyA							
	Never	66	31.4	34	27	32	38.1
	Recent	105	50	69	54.8	36	42.9
	Once	37	17.6	26	20.6	11	13.1
	Twice or more	68	32.4	43	34.1	25	29.8
	Remote	12	5.7	6	4.8	6	7.1
	Recent and Remote	27	12.9	17	13.5	10	11.9
BDI-II							
Minimal	0 - 13	72	34.3	39	31	33	39.3
Mild	14 - 19	35	16.7	19	15.1	16	19
Moderate	20 - 28	41	19.5	26	20.6	15	17.9
Severe	29 - 63	61	29	41	32.5	20	23.8
PSS-SR							
Low-PTSD	0 - 12	110	52.4	69	54.8	41	48.8
High-PTSD	13 - 51	99	47.1	56	44.4	43	51.2
AUDIT	Alcohol use	115	54.8				
Harmful	None to 7	136	64.8				
	8 or more	74	35.2				
Dependence	13 or above (women)					52	24.8
	15 or more (men)			48	22.9		

Measure	[a]Classification categories	N	[b]%	N Men	[b]% Men	N Women	[b]% Women
DUDIT							
	Have used	36	17.1				
	2 or more					4	4.8
	6 or more			21	16.7		

Note. N = number of respondents; % = percentage of respondents; CTS2 = Revised Conflict Tactics Scale; PA = Physical Assault; SC = Sexual Coercion; PsyA = Psychological Assault; BDI-II = Beck Depression Inventory – second edition; PSS-SR = Posttraumatic Symptom Scale-self report; AUDIT = Alcohol Use Disorder Identification Test; DUDIT = Drug Use Disorder Identification Test.
[a]Classification for response categories of measures. [b]Percentages are proportional according to gender.

Table 4

Minimum, Maximum, Mode and Median Scores for the Social Support Appraisal Scale and HIV-Related Stigma Scale

Measures	N	Minimum	Maximum	Mode	Median
HIV-related stigma	209	48	131	83	87.00
SSA	208	41	92	64	69.00

Note. N = number of respondents; SSA = Social Support Appraisal Scale.

4.1.3 Reliability of measures

Table 6 displays the Cronbach's alpha coefficients, mean and standard deviation scores for all of the scales and their associated subscales. The Cronbach alpha coefficients for the overall HIV-related stigma scale (α = .94), BDI II (α = .91), PSS-SR (α = .91), AUDIT (α = .92), and DUDIT (α = .95) all demonstrated excellent internal consistency. Furthermore, the total SSA (α = .85) and CTQ (α = .82) both demonstrated good reliability. An overall Cronbach alpha coefficient cannot be calculated for the CTS2. Cronbach alpha coefficient for all of the subscales ranged between acceptable, good and excellent.

However, with regard to the CTQ subscales, the physical neglect subscale (α = .29) demonstrated an unacceptable internal consistency. According to Field (2009), the internal

consistency could be improved by deleting certain items as illustrated in the '*Cronbach Alpha if Item Deleted'* box. However, after deleting items from the subscale the internal consistency increased to α = .39. Therefore, the physical neglect subscale was excluded from further analyses because deleting any of the items did not improve the internal consistency to an acceptable level.

Table 5

Cronbach Alpha Coefficients, Mean, Standard Deviation of Continuous Measures

Measure	N	A	Mean	SD
HIV-related stigma	209	.94	90.14	20.05
Disclosure subscale	210	.77	23.8	5.50
Negative self-image subscale	209	.84	28.4	7.08
Public attitudes subscale	209	.91	45.4	11.3
Personalized stigma subscale	209	.91	39.8	10.3
CTS2:				
Physical assault subscale	209	.91	11.3	15.57
Sexual Coercion subscale	210	.79	5.73	7.91
Psychological aggression subscale	210	.82	9.36	10.60
Injury subscale	208	.85	4.98	7.85
BDI-II	209	.91	20.21	12.78
PSS-SR	209	.91	12.67	10.53
AUDIT	208	.92	7.05	9.36
DUDIT	210	.95	2.04	5.97
SSA	208	.85	45.13	9.65
Family subscale	210	.75	14.95	4.33
Friends subscale	210	.71	13.61	3.55
Other support subscale	208	.61	16.21	3.646
CTQ	207	.82	62.44	15.37
Physical abuse subscale	210	.77	8.26	4.24
Physical neglect subscale	210	.29	10.29	3.62
Emotional abuse subscale	209	.67	8.52	4.07
Emotional neglect subscale	210	.84	12.64	6.21
Sexual abuse subscale	210	.83	7.22	3.90

Note. N = number of respondents. CTS2 = Revised Conflict Tactics Scale; PA = Physical Assault; SC = Sexual Coercion; PsyA = Psychological Assault; BDI-II = Beck Depression Inventory – second edition; PSS-SR = Posttraumatic Symptom Scale-self report; AUDIT = Alcohol Use Disorder Identification test; DUDIT = Drug Use Disorder Identification test; SSA = Social Support Appraisal Scale; CTQ = Childhood Trauma Questionnaire.

4.1.4 Bivariate correlation

In Table 6 results are reported for the bivariate correlations. Pearson's correlation coefficients were calculated for the normally distributed continuous variables. However, Pearson's product-moment correlation coefficient could not be used to assess bivariate correlation for the CTS2 subscales (physical assault, sexual coercion, psychological aggression) that were coded into dichotomous timing and frequency variables. Instead, Biserial correlations were used to calculate the correlation between dichotomous measures of the CTS2 and the other variables. Missing values were excluded pairwise for all the correlation calculations.

Table 6

Pearson Correlations for Continuous Variables and Biserial Correlation for Dichotomous Variables

	PAt	SCt	PsyAt	PAf	SCf	PsyAf	HIVs	PSS-SR	BDI II	SSA	Gender	CTQ
Pat	1											
SCt	.048	1										
PsyAt	-.056	.203	1									
PAf	-.583***	.052	-.461**	1								
SCf	-.395***	.752***	-.399*	.263*	1							
PsyAf	-.394***	-.050	-.791***	.509***	.102**	1						
HIVs	.058	.222	.121	-.071	.011	.012	1					
PSS-SR	.019	.081	-.04	.449***	.119**	.047***	.149*	1				
BDI-II	.141	-.135	.15	.221	-.053	.045***	.234**	.335***	1			
SSA	.118	.004	.138	-.208	.085*	-.013	-.236**	-.216**	-.292***	1		
Gender	-.076	-.075	-.035	-.103	-.019	-.075	-.018	-.025	.101	-.073	1	
CTQ	.018	.077	.135	.384**	.143***	.041**	.046	.293***	.282***	-.285***	.062	1

Note. IPV timing is coded as 0 = remote; 1 = recent. IPV frequency is coded as 0 = once; 1 = twice or more times. PAt = Physical Assault timing; SCt = Sexual Coercion timing; PsyAt = Psychological Aggression; PAf = Physical Assault frequency; SCf = Sexual Coercion frequency; PsyAf = Psychological Aggression frequency; HIVs = HIV-related stigma; PSS - SR = Posttraumatic Symptom Scale-self report; BDI-II = Beck Depression Inventory - second edition; SSA = Social Support Appraisal Scale; CTQ = Childhood Trauma Questionnaire.

*p < 0.05 (two-tailed). **p < 0.01 (two-tailed). ***p < 0.001 (two-tailed).

4.2 The assumption of normality

The Kolmogorov-Smirnov test and Shapiro-Wilk test in SPSS may be used to assess for normality of the distribution for each measure. However, Field (2009) suggest that some caution is necessary when using these tests to assess for normality in large samples. This is because it is easy to get significant results from small deviations from normality among large samples but these significant results do not necessarily demonstrate if the deviation from normality is enough to bias the statistical procedure (Field, 2009). Therefore, Field (2009) recommends that for large samples (200 or more) it is more important to look at the shape of the distribution visually and to consider the values of skewness and kurtosis when assessing normality. The values of skewness and kurtosis as well as normal p-p plots were calculated for each questionnaire. Based on the findings the decision was made that the HIV-relates stigma scale, BDI-II, PSS-SR, SSA, and CTQ did not significantly deviate from normality as to bias the statistical procedure. However, the CTS2, AUDIT, and DUDIT were positively skewed and could not be used as continuous variables in the analyses. Two experienced statisticians namely Mr Henry Steel (personal communication, May 28, 2012) and Mr Justin Harvey (personal communication, April 3, 2012) were consulted in order to confirm the decisions made with regard to the assumption of normality of the measures.

4.3 Sample size

As a rule of thumb, a sample size of 15 participants per predictor is recommended for regression analysis (Field, 2009). In the present study there were four predictors in each hierarchical multiple regression analysis which means that a minimum sample size of 60

participants was required for each analysis. The sample sizes included in the hierarchical multiple regression analyses ranged from 78 to 115 participants.

It is important to note that IPV could not be analysed using product-term regression although this was one of the study's aims. The reason for this is because an adequate sample size of participants reporting IPV could not be recruited for this study. According to Frazier et al. (2004) it is necessary to recruit a minimum sample of 200 participants in order to achieve sufficient statistical power (greater than .80) for the analysis. However, as can be seen in Table 3, the IPV subscales namely physical assault (n = 141), sexual coercion (n = 121), and psychological aggression (n = 164) did not include a minimum of 200 participants.

4.4 Multicollinearity

According to Field (2009) it is important to check for multicollinearity when using multiple regression analysis. This is necessary, as very high collinearity among independent variables may bias the regression model. There are two ways of identifying multicollinearity namely the variance inflation factor (VIF) and the tolerance statistic. Field (2009) suggests that a VIF value of 10 and more or a tolerance statistic below .1 is cause for concern. The VIF values and tolerance statistics for this study were all within these limits, indicating that multicollinearity was not to be considered a problem in these analyses.

4.5 Multiple regression analyses

Multiple regression analysis was used to examine the linear combination between the independent variables (i.e. IPV timing and frequency and HIV-related stigma) and variance in symptoms of the dependent variable (i.e. PTSD and depression). The hierarchical method of

entry was used so that the order in which the independent variables were entered could be controlled on the basis of previous research findings. A separate set of analysis was completed for symptoms of PTSD and depression. However, the independent variables as well as the order of entry were identical for PTSD and depression.

Key changes had to be made to the dataset to prepare it for multiple regression analysis. In their original form, dimensions of IPV scores were continuous. However, due to the non-parametric nature of the data, two different categorical variables were created for each of the IPV subscales. The first categorical variable was named *timing* and consisted of four categories namely *recent* (experienced IPV only in the last twelve months), *remote* (experienced IPV only before the last twelve months), *recent and remote* (experienced IPV before and during the last twelve months) and *never* experienced IPV. The second categorical variable was named IPV *frequency* and included five categories namely *once* (experienced IPV only once during the last twelve months), *twice or more* (having experienced IPV twice or more in the last year), experienced IPV *once or more* in the last year as well as *before* the last year, and IPV *never* experienced. *Timing* and *frequency* variables were created for each of the IPV subscales (*physical assault, sexual coercion and psychological aggression*).

For all subsequent analyses with regard to IPV subscales only participants who reported the experiences related to the specific subscale under investigation were included in the analysis. With regard to *timing*, only those participants who fell in the *recent* or *remote* categories were included in the analysis. Likewise, for the *frequency* category, only those participants who fell in the *once* and *twice or more* category were included in the analysis. The decision was made to include all IPV variable in the hierarchical multiple regression even though the IPV *timing* variables and some of the IPV *frequency* variables did not correlate significantly with PTSD or

depression as shown in section 4.1.4. This decision was made based on previous research that has suggested that IPV *timing* and *frequency* may explain some variance in symptoms of common mental health disorders.

4.5.1 Physical assault timing and HIV-related stigma on symptoms of PTSD

As can be seen in Table 7, hierarchical multiple regression analysis was used to analyse to what extent a combination of *recent* or *remote physical assault* experiences and *HIV-related stigma* account for the variance in symptoms of PTSD. The independent variables included *gender* in step one, *childhood trauma* in step two, *physical assault timing* in step three, and *HIV-related stigma* in step four.

Results from the regression analysis demonstrate that *childhood trauma* was significant at explaining 10.4% of the variance in symptoms of PTSD in step two of the model, $F(2,102) = 11.826$, $p < .01$. The model did not explain a significant proportion of variance in symptoms of PTSD when *physical assault timing* was entered in step three or when *HIV-related stigma* was entered in step four ($p > .05$). The final model demonstrates that *childhood trauma* with a beta value of .330 was the only predictor that made a significant contribution to the variation in PTSD symptoms, $t(100) = 3.515$, $p < .001$.

Table 7

Hierarchical Multiple Regression Predicting PTSD from Physical Assault Timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						13.833		7.303	.000
	.000	.000	-.010	.005	.943	-.167	-.007	-.071	.943
Step 2						4.108		1.225	.223
						-.575	-.024	-.258	.797
	.104	.104	.086	11.826	.001	.257	.323	3.439	.001
Step 3						3.257		.730	.467
						-.570	-.024	-.255	.799
						.256	.322	3.420	.001
	.105	.001	.078	.084	.772	.968	.027	.291	.772
Step 4						-4.041		-.616	.539
						-.325	-.014	-.146	.884
						.262	.330	3.515	.001
						.636	.018	.192	.848
	.125	.020	.090	2.284	.134	.081	.142	1.511	.134

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, physical assault timing; Step 4 = (constant), gender, childhood trauma, physical assault timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.2 Sexual coercion timing and HIV-related stigma on symptoms of PTSD

Table 9 illustrates the results for the hierarchical multiple regression that explored the linear contribution of *gender*, *childhood trauma*, *sexual coercion timing* and *HIV-related stigma* in symptoms of PTSD. The model became significant at predicting 9.7% of the variance in symptoms of PTSD when *childhood trauma* was entered in step two, $F(2, 94) = 10.161$, $p < .01$, Therefore, by including *sexual coercion* in step three and *HIV-related stigma* in step four, the model was not significantly ($p > .05$) better at predicting symptoms of PTSD. *Childhood trauma* with a beta value of .335 ($p < .01$) was the only predictor to explain a significant proportion of the variance in symptoms of PTSD, $t(92) = 1.241$, $p <. 01$.

Table 8

Hierarchical Multiple Regression Predicting PTSD from Sexual Coercion Timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						12.606		6.217	.000
	.006	.006	-.005	.529	.469	1.816	.074	.727	.469
Step 2						2.473		.664	.508
						1.861	.076	.781	.437
	.103	.097	.083	10.161	.002	.263	.311	3.188	.002
Step 3						4.907		1.163	.248
						1.732	.071	.728	.469
						.281	.332	3.357	.001
	.117	.014	.088	1.479	.227	-3.661	-.120	-1.216	.227
Step 4						-1.823		-.266	.791
						1.819	.075	.766	.446
						.283	.335	3.393	.001
						-3.351	-.110	-1.112	.269
	.131	.015	.093	1.541	.218	.073	.121	1.241	.218

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, sexual coercion timing; Step 4 = (constant), gender, childhood trauma, sexual coercion timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.3 Psychological aggression timing and HIV-related stigma on symptoms of PTSD

Table 9, demonstrates the results when *gender*, *childhood trauma*, *psychological aggression timing* and *HIV-related stigma* were entered in the hierarchical multiple regression with PTSD as the outcome variable. The combination of *gender* and *childhood trauma* was significant in explaining 8.1% of the variance in PTSD, $F(2,113) = 9.592$, $p < .01$. In the final step when all of the independent variables were included, the model significantly explained 11.7% of the variance in symptoms of PTSD in the sample, $F(4,109) = 4.294$, $p < .05$. *Childhood trauma* with a beta value of .226 ($p < .05$) and *HIV-related stigma* with a beta value of .178 ($p <$

.05) were the only significant predictors in the model with childhood trauma being the strongest predictor.

Table 9

Hierarchical Multiple Regression Predicting PTSD from Psychological Aggression Timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F change	*B*	β	t	Sig.
Step 1						14.049		8.202	.000
	.002	.002	-.006	.273	.602	-1.116	-.049	-.523	.602
Step 2						4.490		1.283	.202
						-.837	-.037	-.406	.685
	.081	.079	.065	9.592	.002	.249	.281	3.097	.002
Step 3						5.432		1.254	.213
						-.756	-.033	-.363	.717
						.251	.284	3.105	.002
	.082	.001	.057	.138	.711	-1.213	-.034	-.372	.711
Step 4						-3.394		-.563	.575
						-.472	-.021	-.230	.819
						.252	.284	3.159	.002
						-1.707	-.048	-.529	.598
	.117	.034	.085	4.294	.041	.103	.187	2.072	.041

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, psychological aggression timing; Step 4 = (constant), gender, childhood trauma, psychological aggression timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.4 Physical assault frequency and HIV-related stigma on symptoms of PTSD

Table 10 demonstrates the results for the hierarchical multiple regression when *gender* was entered in step one, *childhood trauma* in step two, *physical assault frequency* in step three, and *HIV-related stigma* in step four. The linear combination of *gender* and *childhood trauma* entered in step two predicted 12.2% (p < .01) of the variance in PTSD for the sample, F(2, 90) = 12.482, p < .01. Furthermore, by including *physical aggression frequency* in step three, the model explained a further 6.6% (p < .01) of the variance in PTSD, F(3, 89) = . 7.250, p < .01.

However, by including *HIV-related stigma* in step four, the model did not account for a significant increase in variation of PTSD symptomatology, $F(4,88) = 2.300$, $p > .05$.

Childhood trauma demonstrated a beta value of .268, and was the most important predictor of variation in symptoms of PTSD, $t(90) = 3.533$, $p < .01$. *Physical assault frequency* was also an important predictor in PTSD and reported a beta value of .282, $t(89) = -2.502$, $p < .01$. The positive beta value suggested that participants who reported more *frequent physical assault* were also more likely to report higher symptoms of PTSD.

Table 10

Hierarchical Multiple Regression Predicting PTSD from Physical Assault Frequency and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						13.562		6.482	.000
	.000	.000	-.011	.029	.866	.438	.018	.169	.866
Step 2						2.237		.594	.554
						.303	.012	.124	.901
	.122	.122	.103	12.482	.001	.293	.349	3.533	.001
Step 3						-.126		-.034	.973
						1.196	.049	.503	.616
						.222	.265	2.640	.010
	.188	.066	.161	7.250	.008	6.774	.273	2.693	.008
Step 4						-8.452		-1.275	.206
						1.545	.063	.652	.516
						.227	.270	2.708	.008
						7.010	.282	2.801	.006
	.209	.021	.173	2.300	.133	.087	.145	1.517	.133

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, physical assault frequency; Step 4 = (constant), gender, childhood trauma, physical assault frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.5 Sexual coercion frequency and HIV-related stigma on symptoms of PTSD

Table 11 displays the results for the regression analysis when *gender* was entered in step one, experiences of *childhood trauma* in step two, *sexual coercion frequency* in step three, and *HIV-related stigma* in step four. The model significantly explained 18% of the variance in PTSD when only *gender* and *childhood trauma* were entered in step two, $F(2,77) = 16.107$, $p < .001$. Likewise, when *sexual coercion frequency* was included in step three, the model explained an additional 4.9% of the variance in symptoms of PTSD, $F(3,76) = 4.789$, $p < .05$. However, when *HIV-related stigma* was entered in step four, the model did not explain a significant portion of the variation PTSD. *Childhood trauma* with a beta value of .303 ($p < .01$) was the most important predictor in the model explaining symptoms of PTSD, followed by *sexual coercion frequency* with a positive beta value of .248 ($p < .05$). The positive beta value for *sexual coercion* indicates that more *frequent* experiences of *sexual coercion* accounted for more symptoms of PTSD.

Table 11

Hierarchical Multiple Regression Predicting PTSD from Sexual Coercion Frequency and HIV-related stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						12.000		5.254	.000
	.008	.008	-.005	.620	.433	2.231	.089	.788	.433
Step 2						-2.151		-.525	.601
						2.471	.098	.953	.344
	.180	.172	.158	16.107	.000	.354	.414	4.013	.000
Step 3						-2.232		-.558	.579
						3.035	.121	1.192	.237
						.260	.304	2.691	.009
	.228	.049	.198	4.789	.032	6.011	.248	2.188	.032

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 4						-6.051		-.877	.383
						3.190	.127	1.244	.217
						.259	.303	2.675	.009
						6.000	.248	2.177	.033
	.233	.005	.192	.463	.498	.043	.069	.681	.498

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, sexual coercion frequency; Step 4 = (constant), gender, childhood trauma, sexual coercion frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.6 Psychological aggression frequency and HIV-related stigma on symptoms of PTSD

Table 12 displays the results for the hierarchical multiple regression analyses where *gender* was entered in step one, *childhood trauma* in step two, *psychological aggression frequency* step three and *HIV-related stigma* in step four. The combination of *gender* and *childhood trauma* entered in step two was highly significant in explaining 9.7% of the variance in PTSD, $F(2,100) = 10.723$, $p < .01$. Furthermore, when *psychological aggression frequency* was entered in step three, the model explained a further 6.1% ($p < .01$) of the variance in PTSD. The linear combination of *gender*, *childhood trauma*, *psychological aggression frequency*, and *HIV-related stigma* did not explain a significant proportion in symptoms of PTSD ($p > .05$). *Psychological aggression frequency* was the most important predictor for symptoms of PTSD with a positive beta of .259 ($p < .01$), which indicated that more *frequent* experiences of *psychological aggression* accounted for more symptoms of PTSD, $t(99) = 2.679$, $p < .01$. *Childhood trauma* was also an important predictor with a beta value of .234 ($p < .05$).

Table 12

Hierarchical Multiple Regression Predicting PTSD from Psychological Aggression Frequency and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						13.429		7.009	.000
	.000	.000	-.010	.010	.920	-.237	-.010	-.101	.920
Step 2						2.540		.669	.505
						.059	.002	.026	.979
	.097	.097	.079	10.723	.001	.281	.311	3.275	.001
Step 3						.734		.196	.845
						.578	.024	.263	.793
						.216	.239	2.481	.015
	.158	.061	.132	7.176	.009	6.090	.259	2.679	.009
Step 4						-7.900		-1.322	.189
						.956	.040	.439	.662
						.211	.234	2.458	.016
						6.108	.259	2.719	.008
	.186	.028	.153	3.387	.069	.096	.169	1.840	.069

Note. Dependent variable = PTSD.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, psychological aggression frequency; Step 4 = (constant), gender, childhood trauma, psychological aggression frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.7 Physical assault timing and HIV-related stigma on symptoms of Depression

In Table 13, results are demonstrated for the hierarchical multiple regression analysis when *gender* is entered in step one, *childhood trauma* in step two, *physical assault timing* (recent or remote experiences) in step three, and *HIV-related stigma* in step four. The linear combination of *gender* and *childhood trauma* in step two explained 6.7% (p < .01) of the variance in depression scores. Furthermore, the overall model predicted 13.6% of the variance in scores of depression, F(4,99) = 5.042, p < .05. *Childhood trauma* with a beta value of .264 (p < .01) was the most important predictor of depression, t(101) = 2.815, p < .01. However, *HIV-related*

stigma with a beta value of .211 ($p < .05$) also made an important contribution to the model, $t(99) = 2.245$, $p < .05$).

Table 13

Hierarchical Multiple Regression Predicting Depression from Physical Assault timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						21.972		10.202	.000
	.003	.003	-.007	.269	.605	1.381	.051	.518	.605
Step 2						13.234		3.383	.001
						.962	.036	.371	.712
	.067	.065	.049	6.994	.009	.231	.255	2.645	.009
Step 3						7.700		1.503	.136
						1.007	.037	.392	.696
						.228	.252	2.642	.010
	.092	.025	.065	2.732	.101	6.319	.158	1.653	.101
Step 4						-4.597		-.619	.538
						1.401	.052	.554	.581
						.239	.264	2.815	.006
						5.748	.143	1.530	.129
	.136	.044	.101	5.042	.027	.137	.211	2.245	.027

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, physical assault timing; Step 4 = (constant), gender, childhood trauma, physical assault timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.8 Sexual coercion timing and HIV-related stigma on symptoms of Depression

Table 14, display results for the hierarchical multiple regression analysis where depression is entered as the dependent variable. Independent variables included *gender* in step one, *childhood trauma* in step two, having experienced either *recent* or *remote sexual coercion* in step three and *HIV-related stigma* in step four. The linear combination of *gender* and *childhood trauma* were the only independent variables that predicted a significant 10% of the variance in depression scores, $F(2,93) = 9.753$, $p < .01$. Likewise, *childhood trauma* with a beta value of

.314 was the only predictor to make a significant contribution to the model, t(93) = 3.123, p < .01.

Table 14

Hierarchical Multiple Regression Predicting Depression from Sexual Coercion Timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						22.000		10.324	.000
	.006	.006	-.005	.551	.460	1.952	.076	.742	.460
Step 2						11.491		2.921	.004
						1.937	.076	.770	.443
	.100	.094	.081	9.753	.002	.273	.307	3.123	.002
Step 3						14.552		3.286	.001
						1.754	.069	.701	.485
						.296	.333	3.355	.001
	.121	.021	.092	2.168	.144	-4.661	-.146	-1.472	.144
Step 4						4.704		.658	.512
						1.871	.073	.755	.452
						.300	.338	3.434	.001
						-4.218	-.133	-1.343	.183
	.149	.028	.112	3.041	.085	.106	.169	1.744	.085

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, sexual coercion timing; Step 4 = (constant), gender, childhood trauma, sexual coercion timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.9 Psychological aggression timing and HIV-related stigma on symptoms of Depression

Table 15 demonstrates the results for the hierarchical regression analysis when *gender* is entered in step one, *childhood trauma* in step two, *psychological aggression timing* (*recent* or *remote* experiences) in step three and *HIV-related stigma* in step four. The linear combination of *gender, childhood trauma, psychological aggression timing,* and *HIV-related stigma* explained a significant 7.3% of the variance in symptoms of depression. *HIV-related stigma* was the only significant predictor of depression with a beta value of .228, t(109) = 2.462, p < .05.

Table 15

Hierarchical Multiple Regression Predicting Depression from Psychological Aggression Timing and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F change	*B*	β	t	Sig.
Step 1						21.463		11.552	.000
	.002	.002	-.007	.176	.675	.975	.040	.420	.675
Step 2						16.863		4.279	.000
						1.087	.044	.470	.640
	.017	.015	-.001	1.748	.189	.120	.125	1.322	.189
Step 3						14.879		3.063	.003
						.918	.037	.393	.695
						.114	.119	1.255	.212
	.021	.004	-.005	.492	.484	2.567	.067	.702	.484
Step 4						3.205		.477	.634
						1.281	.052	.560	.577
						.116	.121	1.302	.196
						1.905	.050	.531	.596
	.073	.052	.039	6.059	.015	.136	.228	2.462	.015

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, psychological aggression timing; Step 4 = (constant), gender, childhood trauma, psychological aggression timing, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.10 Physical assault frequency and HIV-related stigma on symptoms of depression

Table 16, reports the results for the hierarchical multiple regression analysis when *gender* is entered in step one, *childhood trauma* in step two, *physical assault frequency* in step three and *HIV-related stigma* in step four. The linear combination of *gender* and *childhood trauma* predicted 8.5% of the variation depression scores, $F(2,89) = 8.007$, $p < .01$. The inclusion of *physical assault frequency* in step three and *HIV-related stigma* in step four did not account for a significant increase, from step 2, of the variance explained in symptoms of depression. Therefore, *childhood trauma* was the only significant predictor with a beta value of .258 in the model predicting depression, $t(89) = 2.461$, $p < .05$).

Table 16

Hierarchical Multiple Regression Predicting Depression from Physical Assault Frequency and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						22.719		9.739	.000
	.003	.003	-.009	.229	.634	1.381	.050	.478	.634
Step 2						12.314		2.857	.005
						1.190	.043	.427	.670
	.085	.082	.064	8.007	.006	.269	.287	2.830	.006
Step 3						11.070		2.495	.014
						1.612	.059	.575	.567
						.235	.251	2.363	.020
	.098	.013	.068	1.315	.255	3.415	.122	1.147	.255
Step 4						-.876		-.112	.911
						2.096	.076	.755	.452
						.242	.258	2.461	.016
						3.782	.136	1.284	.202
	.133	.034	.093	3.428	.067	.125	.186	1.852	.067

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, physical assault frequency; Step 4 = (constant), gender, childhood trauma, physical assault frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.11 Sexual coercion frequency and HIV-related stigma on symptoms of depression

Table 17, demonstrates the results for the hierarchical multiple regression when *gender* is entered in step one, *childhood trauma* in step two, *frequency* of experiencing *sexual coercion* in step three and *HIV-related stigma* in step four. The linear combination of *gender* and *childhood trauma* that were entered in step two predicted 9.4% of the variance in scores of depression, $F(2,76) = 7.840$, $p < .01$. However, *sexual coercion frequency* entered in step three, and *HIV-related stigma* entered in step four did not make a significant ($p > .05$) contribution to the model. *Childhood trauma* was the only significant predictor of depression with a beta value of .279, $t(76) = 2.800$, $p < .05$).

Table 17

Hierarchical Multiple Regression Predicting Depression from Sexual Coercion Frequency and HIV-related stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F Change	*B*	β	t	Sig.
Step 1						22.750		9.684	.000
	.000	.000	-.013	.000	.991	.034	.001	.012	.991
Step 2						12.034		2.710	.008
						.136	.005	.049	.961
	.094	.094	.070	7.840	.006	.268	.306	2.800	.006
Step 3						11.997		2.688	.009
						.265	.010	.094	.926
						.246	.280	2.291	.025
	.096	.003	.060	.228	.634	1.460	.059	.478	.634
Step 4						4.190		.550	.584
						.577	.022	.204	.839
						.245	.279	2.289	.025
						1.444	.058	.475	.636
	.115	.019	.067	1.592	.211	.089	.139	1.262	.211

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, sexual coercion frequency; Step 4 = (constant), gender, childhood trauma, sexual coercion frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.5.12 Psychological aggression frequency and HIV-related stigma on symptoms of Depression

As can be seen in Table 18, the results are illustrated for the hierarchical multiple regression for depression as the dependent variable. The independent variables were included in the following order, *gender* in step one, *childhood trauma* in step two, *frequency* of experiencing *psychological aggression* in step three, and *HIV-related stigma* in step four. The linear combination of *gender*, *childhood trauma*, and *psychological aggression frequency* did not make a significant (p > .05) contribution to symptoms of depression. However, when *HIV-related stigma* was included in step four, the model predicted a significant 6.7% of the variance in

depression, F(4,97) = 5.702, p = < .05. *HIV-related stigma* was the only significant predictor of symptoms of depression with a beta value of .235, t(97) = 2.388, p < .05).

Table 18

Hierarchical Multiple Regression Predicting Depression from Psychological Aggression Frequency and HIV-related Stigma

Variable	R^2	R^2 Change	Adj. R^2	F Change	Sig. F change	*B*	β	t	Sig.
Step 1						21.743		10.728	.000
	.002	.002	-.008	.166	.685	1.018	.041	.407	.685
Step 2						18.641		4.407	.000
						1.086	.043	.434	.666
	.009	.007	-.011	.699	.405	.080	.084	.836	.405
Step 3						18.147		4.199	.000
						1.211	.048	.480	.632
						.064	.067	.637	.525
	.012	.004	-.018	.364	.548	1.582	.063	.603	.548
Step 4						5.408		.795	.429
						1.757	.070	.710	.479
						.058	.060	.592	.555
						1.626	.065	.635	.527
	.067	.055	.029	5.702	.019	.142	.235	2.388	.019

Note. Dependent variable = Depression.
Step 1= (constant), gender; Step 2 = (constant), gender, childhood trauma; Step 3 = (constant), gender, childhood trauma, psychological aggression frequency; Step 4 = (constant), gender, childhood trauma, psychological aggression frequency, HIV-related stigma.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.6 Product-term regression analyses

Product-term regression analysis was used to demonstrate the pathway through which social support as a third variable may influence the relationship between the independent and dependent variable. Specifically, regression analysis was used to examine whether or not *social support* plays a moderating or mediating role in the relationship between *HIV-related stigma* and mental health.

Two key changes were made to the dataset to prepare it for product-term regression analysis (Pretorius, 2007). The first change made was done to create standardized continuous variables for the adverse condition (*HIV-related stigma*) and the third variable (*social support*) (Pretorius, 2007). This was done by subtracting the sample mean, for *HIV-related stigma* and *social support* separately, from each respondent's total score (Frazier et al., 2004; Pretorius, 2007). According to Frazier et al. (2004) it is necessary to calculate the standardized scores because the independent variable and third variable are generally highly correlated with the product-term created from them. However, by creating the standardized variables reduces the problem associated with multicollinearity among the variables (Frazier et al., 2004). The second change made to the database was to calculate the product of the deviation scores for *HIV-related stigma* and *social support* in order to create a product-term variable.

Following these changes, a set of two regression analyses was conducted to examine the role of *social support* in the relationship between *HIV-related stigma* and common mental health disorders (i.e. PTSD and depression). One set of analyses was performed separately for PTSD and depression. Each set of analyses consisted of two regression analyses. In the first regression analysis, only *HIV-related stigma* was entered at step one, *HIV-related stigma* and *social support* together in step two, and the product-term *of HIV-related stigma* and *social support* in step three. The second regression analysis is identical except for step one. In the second analysis, *social support* was entered in step one, *social support* and *HIV-related stigma* together in step two and the product-term in step three.

4.6.1 Product-term regression with PTSD as the outcome variable

Table 19 demonstrates the results for PTSD as the dependent variable. The relationship between *HIV-related stigma* and PTSD was significant in step one of the first analysis, t (1, 206) = 2.14, $p < 0.05$. Furthermore, step one of the second regression in Table 19 reports that the relationship between *social support*, as the third variable, and PTSD was also significant, t(1, 206) = -3.231, $p < .001$. These findings suggest that the independent variable, *HIV-related stigma*, as well as the third variable, *social support*, were significantly associated with symptoms of PTSD. However, the significant relationship between *HIV-related stigma* and PTSD (step one, Table 21) became non-significant in step two when *social support* was entered simultaneously with *HIV-related stigma*, t (1, 203) = 1.45, $p > .05$. This change in significance from step one to step two is indicative of a mediating effect for *social support*, i.e. that the relationship between *HIV-related stigma* and symptoms of PTSD is mediated by *social support*. Furthermore, the product term of *HIV-related stigma* and *social support* was non-significant, t (1, 205) = 1.45, $p > .05$. This indicated that *social support* did not play a moderating role in the effect of *HIV-related stigma* on symptoms of PTSD.

Table 19

Product-term Regression Analyses Predicting the Role of Social Support as a Third Variable

Nr. of step in regression	Model	Unstandardized Coefficients		Standardized coefficients		
		B	Std. error	Beta	t	Sig.
[a]Step 1 of first regression	1 (Constant)	5.693	3.361		1.694	.092
	HIV-related stigma	.080	.037	.148	2.137	.034
Step 1 of second regression	1 (Constant)	29.497	5.248		5.621	.000
	Social support	-.240	.074	-.221	-3.231	.001

Nr. of step in regression	Model	Unstandardized Coefficients		Standardized coefficients		
		B	Std. error	Beta	t	Sig.
Step 2 of first regression	2 (Constant)	22.855	6.950		3.289	.001
	HIV-related stigma	.055	.038	.102	1.452	.148
	Social support	-.214	.076	-.197	-2.807	.005
Step 3 of first regression	3 (Constant)	22.566	6.971		3.237	.001
	HIV-related stigma	.055	.038	.101	1.446	.150
	Social support	-.208	.077	-.191	-2.706	.007
	HIVs_SS (product-term)	.003	.004	.047	.686	.493

Note. Dependent variable = PTSD.
[a]The first step of the second regression analysis to explore of social support is significantly associated with symptoms of PTSD.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.6.2 Product-term regression with depression as the outcome variable

Table 20 reports the results for depression as an outcome variable. In the first regression analysis *HIV-related stigma* was a significant predictor for symptoms of depression in step one, t (1, 206) = 3.48, p<0.01. Likewise, the relationship between *social support* and depression was significant in step one of the second regression, t(1,206) = -4.325, p>.001.This means that the independent variable as well as the third variable significantly explained variance in symptoms of depression. This result illustrates that social support has a direct effect on symptoms of depression. Moreover, as can be seen in Table 20, the relationship between *HIV-related stigma* and depression remained significant even when *social support* was entered simultaneously in step two, t(1, 205) = 2.627, p<.01. This demonstrates that *social support* did not play a mediating role in the relationship between *HIV-related stigma* and *social support*. Furthermore, the product term was non-significant t(1, 206) = 1.81, p>.05, indicating that *social support* did not play a moderating role in the relationship between *HIV-related stigma* and symptoms of depression.

Table 20

Product-term Regression Analyses Predicting the Role of Social Support as a Third Variable

Nr. of step in regression	Model	Unstandardized Coefficients		Standardized coefficients		
		B	Std.error	Beta	t	Sig.
Step 1 of first regression	1 (Constant)	6.439	3.999		1.610	.109
	HIV-related stigma	.155	.044	.237	3.4811	.001
[a]Step 1 of second regression	1 (Constant)	46.702	6.226		7.501	.000
	Social support	-.382	.088	-.290	-4.325	.000
Step 2 of first regression	2 (Constant)	32.592	8.157		3.996	.000
	HIV-related stigma	.116	.044	.179	2.627	.009
	Social support	-.326	.090	-.248	-3.646	.000
Step 3 of first regression	3 (Constant)	31.705	8.126		3.902	.000
	HIV-related stigma	.116	.044	.178	2.629	.009
	Social support	-.308	.090	-.234	-3.434	.001
	HIVs_SS (product term)	.008	.005	.120	1.811	.072

Note. Dependent variable = Depression.
[a]The first step of the second regression analysis to explore of social support is significantly associated with symptoms of depression.
*p < 0.05, **p < 0.01, ***p < 0.001.

4.7 Summary of findings

Table 21 demonstrates a summary of the main finding of the hierarchical multiple regression. The findings from the hierarchical multiple regression analyses demonstrated that IPV timing (i.e. *physical assault, sexual coercion, and psychological aggression*) did not explain a significant (p > .05) portion of the variance in symptoms of PTSD or depression when controlling for *gender* and *childhood trauma*. The combination of more *recent physical assault* and *HIV-related stigma* accounted for a significant portion of the variance in symptoms of depression but not PTSD. The combination of more *recent sexual coercion* and *HIV-related stigma* did not significantly explain variance in symptoms of PTSD or depression. More *recent*

experiences of *psychological aggression* combined with *HIV-related stigma* accounted for a significant portion of the variance in symptoms of PTSD and depression.

The results from the hierarchical multiple regression analyses demonstrated that more *frequent* experiences of *physical assault* ($p < .01$), *sexual coercion* ($p < .05$), and *psychological aggression* ($p < .01$) significantly predicted symptoms of PTSD but not depression. Furthermore, the combination of more *frequent* experiences of *physical assault or sexual coercion*, and *HIV-related stigma* did not explain a significant portion of the variance in symptoms of PTSD or depression. Likewise, the combination of more *frequent* experiences of *psychological aggression* and *HIV-related stigma* did not explain a significant portion of the variance in symptoms of PTSD. However, the combination of more *frequent psychological aggression* and *HIV-related stigma* explained a significant portion of the variance in symptoms of depression but not symptoms of PTSD.

The findings from the product-term regression analyses illustrated that *social support* played a mediating role in the relationship between *HIV-related stigma* and symptoms of PTSD but not symptoms of depression. Moreover, *social support* did not play a moderating role between *HIV-related stigma* and symptoms of PTSD or depression.

Table 21

Summary of the findings for the hierarchical multiple regression analyses

Analysis	Independent variables	PTSD		Depression	
		Sig.	%	Sig.	%
HMR	Physical assault timing	NS		NS	
	HIV-related stigma			p<.05	4.4
	Combination			p<.05	13.6
HMR	Sexual coercion timing	NS		NS	
	HIV-related stigma				
	Combination				

Analysis	Independent variables	PTSD		Depression	
		Sig.	%	Sig.	%
HMR	Psychological aggression timing	NS		NS	
	HIV-related stigma	p<.05	3.4	p<.05	5.2
	Combination	p<.05	3.5	p<.05	5.6
HMR	Physical assault frequency	p<.01	6.6	NS	
	HIV-related stigma	NS			
	Combination	NS			
HMR	Sexual coercion frequency	p<.05	4.9	NS	
	HIV-related stigma	NS			
	Combination	NS			
HMR	Psychological aggression frequency	p<.01	6.1	NS	
	HIV-related stigma	NS		p<.05	5.5
	Combination	NS		p<.05	6.7

CHAPTER 5

DISCUSSION

5.1 Introduction

There were three aims to the present study. Firstly, the relationship between *recent* or *remote* experiences of intimate partner violence (IPV), *HIV-related stigma*, and common mental health disorders (PTSD or depression) was examined among people living with HIV while controlling for gender and childhood trauma. Secondly, the relationship between *a greater number* of IPV experiences, *HIV-related stigma* and common mental health disorders (PTSD or depression) was examined among people living with HIV while controlling for gender and childhood trauma. Finally, the mediating or moderating role of social support in the relationship between perceived HIV-related stigma and common mental health disorders (PTSD or depression) was examined. This chapter provides a discussion with regard to the findings related to these three aims, the importance of these findings, study limitations, and makes recommendations for future research.

5.2 Relationship between IPV timing and HIV-related stigma and common mental health disorders

5.2.1 Relationship between IPV timing and common mental health disorders

Based on the findings from the biserial correlations, the IPV timing variables (i.e. *physical assault, sexual coercion*, and *psychological aggression*) did not correlate significantly with PTSD, measured by the PSS-SR, or depression, measured with the BDI-II. Likewise, the hierarchical multiple regression analysis demonstrated that none of the IPV timing subscales (i.e.

physical assault timing, *sexual coercion timing*, and *psychological aggression timing*) were significant predictors of PTSD or depression when they were entered into respective regression models which considered *gender* and *childhood trauma* as control variables. Therefore, findings from this study suggest that *recent* or *remote* experiences of *physical assault, sexual coercion* or *psychological aggression* did not significantly predict symptoms of PTSD or depression respectively.

As discussed in chapter two, the relationship between experiences of IPV and mental health may be theoretically understood by considering the individual within the micro-, meso-, exo-, and macro systems of Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). It is important to remember that all of these systems form a nested structure that influences the individual's behaviour and experiences. Findings from the present study that *recent* or *remote* experiences of IPV did not significantly predict symptoms of common mental health disorders were not in keeping with previous international studies (Bonomi et al., 2009; Escribă-Agüir et al., 2010). Likewise, studies conducted within the South African context demonstrate an association between *recent* or *remote* experiences of IPV and poor mental health outcomes (Seedat et al., 2009; Wong et al., 2008). For example, findings from a cross-sectional study with a sample of 395 participants from South African townships in the vicinity of Cape Town demonstrated that experiences of IPV during the last six months were associated with increased reports of depression among women and not men (Wong et al., 2008).

Based on the theoretical conceptualization of Bronfenbrenner's ecological systems theory, and the findings from previous research in townships with similar demographic characteristics as the rural areas included in this sample, it is surprising that findings from this study did not demonstrate a relationship between experiences of IPV timing and common mental

health disorders. The discrepancy between findings from this study compared to others may relate to the type of IPV measured across studies. The present study assessed different types of IPV (i.e. *physical assault, sexual coercion and psychological aggression*) whereas the studies discussed in this section did not assess the relationship between different types of IPV and mental health.

5.2.2 Combined relationship between IPV timing, HIV-related stigma and common mental health disorders

Findings from the Pearson's correlation demonstrated a positive association between *HIV-related stigma* and PTSD as well as depression. Moreover, results from the hierarchical multiple regression analysis found that by entering *HIV-related stigma* in the final step, together with *recent physical assault,* the model made a significant ($p < .05$) contribution of 6.9% to the variance in symptoms of depression. Similarly, the model that included *recent psychological aggression* and *HIV-related stigma* in the final step significantly ($p < .05$) explained 5.6% of the variance in symptoms of depression. Likewise, the final step of the hierarchical regression analysis, which considers *recent psychological aggression* and *HIV-related stigma,* demonstrated that the model explained 3.4% ($p < .05$) of the variance in symptoms of PSTD.

The findings from this study illustrate that *greater perceived HIV-related stigma* alone, and in combination with some of the IPV timing subscales (*physical assault and psychological aggression*), are associated with poor mental health outcomes among people living with HIV. As can be seen from Chapter two, the relationship between HIV-related stigma and mental health can be understood with the help of all the levels of Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). Likewise, the findings from the present study are in keeping with

previous empirical studies that suggest greater perceived HIV-related stigma is associated with PTSD (Simbayi et al., 2007; Young, 2011).

No studies could be found that assessed the combined relationship between *IPV timing*, *HIV-related stigma* and common mental health disorders. However, the findings from the present study illustrate that the combination of more *recent experiences of IPV* together with *greater perceived HIV-related stigma* significantly predict symptoms of common mental health disorders. Therefore, the null hypothesis that the combination of more *recent experiences of IPV*, and *greater perceived HIV-related stigma* does not account for significant variance in symptoms of common mental health disorders is rejected.

5.3 Relationship between IPV frequency and HIV-related stigma and common mental health disorders

5.3.1 Relationship between IPV frequency and common mental health disorders

The biserial correlation coefficients demonstrated that IPV frequency variables (i.e. *physical assault, sexual coercion*, and *psychological aggression)* were significantly correlated with symptoms of PTSD. However, only the *psychological aggression frequency* variable was significantly correlated with symptoms of depression. The finding from the hierarchical multiple regression analyses demonstrated that more frequent experiences of *physical assault*, *sexual coercion*, and *psychological aggression* were significant predictors of symptoms of PTSD but not depression.

The relationship between more frequent experiences and symptoms of PTSD may be understood with the help of Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). For example, on a microsystem level more frequent experiences of IPV may serve as a constant

reminder of the victimization, which may play a role in maintaining symptoms of PTSD (McFarlane, 2000). However, it is important to keep in mind that this relationship may also be influenced by other systems of Bronfenbrenner's ecological systems theory as these systems form a nested structure. The findings from the present study are in keeping with empirical research that suggests a relationship exists between more frequent IPV experiences and PTSD (Martinez-Torteya et al., 2009). In addition, Martinez-Torteya and colleagues demonstrated that more frequent experiences of IPV were associated with symptoms of depression (Martinez-Torteya et al., 2009). Discrepancies between the findings from this study and other studies may be attributed to inconsistency in the calculation of dichotomous frequency variables. For example, in this study dichotomous frequency variables were calculated for *once* and *twice or more*, whereas other research studies assessed frequency by asking participants to choose whether IPV was experienced 'often', 'sometimes', 'rarely', or 'never'.

5.3.2 Combined relationship of IPV frequency and common mental health disorders

Based on findings from the Pearson's correlation, a positive association exists between *HIV-related stigma* and PTSD as well as depression. The hierarchical multiple regression analysis demonstrated that the combination of more *frequent psychological aggression* together with *greater perceived HIV-related stigma* significantly explained 6% ($p<.05$) of the variance in symptoms of depression.

The findings from the present study demonstrated that *HIV-related stigma* alone and combined with more frequent experiences of *psychological aggression* were associated with symptoms of depression. As discussed in Chapter two, these findings may be conceptualised with the help of Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1979). Moreover,

findings from an empirical study by Simbayi et al. (2007) demonstrated that job loss and feelings of shame or guilt related to their HIV-status was associated with a higher level of depression among men living with HIV in Cape Town.

No studies were found that examined the combined effect of *HIV-related stigma* and experiences of *IPV*, on symptoms of common mental health disorders. However, based on the findings from this study, a combination of more *frequent IPV (i.e. psychological aggression)* combined with *greater perceived HIV-related stigma* explained a significant portion of the variance in symptoms of common mental health disorders (i.e. depression). Therefore, the null hypothesis that the combination of more *frequent IPV* and *greater self-perceived HIV-related stigma* does not account for significant variation in symptoms of common mental health disorders is rejected.

5.4 Mediating or moderating role of social support between HIV-related stigma and common mental health disorders

5.4.1 Posttraumatic stress disorder (PTSD)

The results from the Pearson's correlations demonstrated a significant positive association between *HIV-related stigma* and PTSD. The first step in the regression analysis showed that *HIV-related stigma* significantly predicted symptoms of PTSD. However, the significant relationship between *HIV-related stigma* and PTSD became non-significant in step two when social support was entered simultaneously. Based on the findings from the product-term regression analysis, the relationship between greater perceived *HIV-related stigma* and PTSD, but not depression, was mediated by *perceived social support*. These findings suggest that

HIV-related stigma attenuated the experiences of social support which led to an increase in symptoms of PTSD.

The findings from the present study are in keeping with various theoretical perspectives that hold that *social support* plays a protective role in the relationship between stigma and negative mental health outcomes (Cohen & Wills, 1985). Findings from a South African empirical research study demonstrated that people living with HIV who experienced discrimination and isolation related to their HIV-status were correlated with mental health disorders (Freeman et al., 2007). Moreover, findings from the study by Freeman and colleagues showed that individuals who are part of a social support group were significantly less likely to report symptoms of mental health disorders, compared to those who were not part of a social support group (Freeman et al., 2007).

HIV-related stigma did not play a moderating role in the relationship between *HIV-related stigma* and PTSD. These findings are not in keeping with theoretical studies suggesting that social support plays a buffering role in the relationship between stigma and mental health (Cohen & Wills, 1985). The buffering role of social support entails that social support interacts with the *HIV-related stigma* to weaken the negative effect of stigma on mental health disorders (Frazier et al., 2004). However, these findings are in keeping with an international study by Katz and Nevid (2005) which demonstrated that social support did not moderate the relationship between *HIV-related stigma* and PTSD. No studies conducted in the South African context could be found in order to compare with findings from the present study.

The discrepancy in the findings of my study and other research may be because of differences in measurement, sample size (Frazier et al., 2004), and gender of the participants (Pretorius, 2007). The measures used for social support assess general *perceived social support*

and are not specific to people living with HIV or people who are experiencing HIV-related stigma. Larger sample sizes make it easier to detect the effect of *HIV-related stigma* and *social support* on poor mental health. A detailed discussion about sample size will not be provided here, but see Frazier et al. (2004) for a detailed discussion with regard to sample size in mediation and moderation analysis.

Findings from this study demonstrate that *perceived social support* may play a mediating role in the relationship between *HIV-related stigma* and mental health. Therefore, the null hypothesis that *perceived social support* does not mediate the relationship between *perceived HIV-related stigma* and common mental health disorders is rejected.

5.4.2 Depression

Based on the Pearson's correlation coefficients, *social support* was inversely correlated with symptoms of depression. Likewise, regression analysis demonstrated that *social support* was negatively associated with depression. This finding illustrates that *social support* as a third variable has a direct effect on symptoms of depression. This means that *social support* has an effect on symptoms of depression regardless of the level of *HIV-related stigma*. Specifically, these findings demonstrate that *lower perceived social support* significantly accounted for increased symptoms of depression independent of the variance in HIV-related stigma. However, subsequent steps in the regression analysis demonstrated that *social support* did not mediate or moderate the negative effects of *greater perceived HIV-related stigma* on symptoms of depression.

The direct relationship between social support and symptoms of depression is in keeping with the literature (Grav, Hellzen, Romild, & Stordal, 2012). However, the finding that *social*

support did not mediate or moderate the relationship between *HIV-related stigma* and symptoms of depression was somewhat unexpected. Based on the stress buffering hypothesis, social support may serve to mitigate the negative effects of *HIV-related stigma* on depression (Cohen & Wills, 1985). According to Frazier and colleagues, the buffering interaction whereby *social support* weakens the effect of *HIV-related stigma* on mental health may also be referred to as the moderating effect of *social support* (Frazier et al., 2004). No research studies could be found that investigate the mediating or moderating role of *social support* between *HIV-related stigma* and depression. However, based on the theoretical perspective that *social support* may play a protective role in the relationship between *HIV-related stigma* and mental health, it is surprising that *social support* was not found to play a mediating or moderating role.

It is possible that *social support* did not play a mediating or moderating role. However, as discussed in section 5.4.1, the measures used and the study sample size may have introduced bias in examining the role of *social support* in the relationship between *HIV-related stigma* and mental health. Based on these findings the null hypothesis that *perceived social support* does not mediate or moderate the relationship between perceived *HIV-related stigma* and depression cannot be rejected.

5.5 Importance of the findings

Several studies have shown that IPV is associated with symptoms of PTSD (Escribă-Agüir et al., 2010) and depression (Bonomi et al., 2006; Tolman & Rosen, 2001). Likewise, a number of studies have provided support for the notion that HIV-related stigma is associated with symptoms of common mental health disorders (Adewuya et al., 2009; Katz & Nevid, 2005; Simbayi et al., 2007). However, no studies have examined the combined relationship between

experiences of IPV, HIV-related stigma and symptoms of common mental health disorders. The findings from this study are of particular importance because they offer some support for the notion that the combination of IPV (timing or frequency) experiences and HIV-related stigma explain a greater proportion of the variance in symptoms of mental health compared to each individually. Moreover, the findings from the present study demonstrate that social support plays a protective role in the relationship between HIV-related stigma and symptoms of PTSD.

Therefore, HIV-related intervention and treatment programs should address both IPV and HIV-related stigma when considering mental health. Moreover, it is important for intervention and treatment programs to consider the potential protective role of social support in the relationship between experiences of IPV, HIV-related stigma and common mental health disorders.

5.6 Limitations

This sample is not representative of people living with HIV in the communities from which this sample was recruited because this study made use of convenience sampling (Bless et al., 2006) from three different sites namely Somerset West, Guglethu and Khyelitsha. Moreover, studies have continually demonstrated that findings from community samples differ significantly from those of shelter-based or clinical based studies. Therefore, my study findings would at best be comparable with other community samples in these same areas.

It was not possible to examine whether social support mediates or moderates the relationship between experiences of IPV and poor mental health outcomes. This is because it is necessary to recruit a minimum of 200 participants for mediation and moderation analysis in order to achieve sufficient statistical power greater than .80 (Frazier et al., 2004). However, as

can be seen in Table 3, *physical assault* (n = 141), *sexual coercion* (n = 121), and *psychological aggression* (n = 164) did not include a minimum of 200 participants.

Gender was treated as a homogenous group in the mediation and moderation analysis because the sample size of 126 men and 84 women included in this study was not large enough to meet the minimum requirement of 200 participants needed for mediation and moderation analyses (Frazier et al., 2004). According to Pretorius (2007) it is important to interpret the results from mediation and moderation analysis with some caution when analysing men and women together as one homogenous group. This is because findings from previous studies have established that men and women differ with regard to adversities experienced as well as subsequent reports of PTSD (Randle & Graham, 2011) and depression (Kumar, Clarks, Boudreaux, & Camargo, 2004; Nolen-Hoeksema, 2001).

It was not possible to draw conclusions about the direction of causality in the predicted relationships. This is because a non-experimental, cross-sectional research design was used in this study in order to collect data at one point in time. This means it is not possible to establish whether any given variable preceded another or caused the observed change in one or more variables.

The study findings are based on retrospective self-report measures. Consequently the results may be affected by recall bias or nondisclosure which in turn may permit a misleading presentation of the relationship between IPV, HIV-related stigma and mental health. Moreover, as it was not possible to discuss the severity or significance of specific symptoms with participants, it is possible that the self-report measures overestimate the symptoms related to PTSD or depression (Green et al., 1998).

Likewise, the measure for social support used in this study asked questions about general social support. Consequently, questions about social support focused more on general social support satisfaction and did not necessarily uncover social support with regard to experiences of IPV or HIV-related stigma. The current study only assessed HIV-related stigma in general and did not specifically explore stigma related to disclosure, negative self-image, public attitudes or behaviours, and personalized stigma respectively.

The participants were not screened with regard to level of literacy. Therefore, it is possible that some participants did not fully understand all of the questions in the test-battery. However, the informed consent form and questionnaires were appropriate for participants at grade 5 level. Moreover, participants were encouraged to ask the researchers for assistance if anything was unclear. In addition, the researchers reviewed the completed questionnaires for any items that were not answered or filled in according to the written instructions provided before each questionnaire was to be answered.

The data obtained from the self-report AUDIT measuring alcohol use, and the DUDIT measuring drug use, was completely positively skewed toward the bottom half of the scale. This demonstrated that most of the participants reported none to very low levels of alcohol or drug use. On the one hand, it is possible that the participants did not have an alcohol or drug use problem. On the other hand, it is possible that the AUDIT and DUDIT were not accurate measures of the true nature of alcohol or drug use among this sample. Furthermore, the use of alcohol and recreational drugs was strongly discouraged by the staff from the Philippi Trust who assisted in recruitment of participant from one of the data collection sites, namely Somerset West. Therefore, it is possible that participants recruited through the help of the Philippi Trust underreported their use of alcohol or drugs.

Although the sample consisted of participants who are living with HIV, we did not administer an HIV test nor did we ask that participants to provide proof of their HIV status. However, all of the patients at some point made use of social support resources exclusively for persons living with HIV. Given the stigma related to an HIV diagnosis, it is unlikely that participants would make use of these support resources if they were not living with HIV.

5.7 Recommendations

To the researcher's knowledge, this is the first study to explore the combined relationship between experiences of IPV, HIV-related stigma and common mental health disorders. Therefore, it is necessary that other research studies replicate this study in order to gain confidence in the findings within a South African context. For a more generalizable sample, it is recommended that cluster sampling or multistage sampling is used. Cluster sampling may be used to randomly sample members from social support groups, IPV resource services, or HIV clinics within a given area as to increase the probability of recruiting a representative sample within these communities. It is also recommended that these sampling techniques be used to recruit a larger sample size with an adequate number of participants (i.e. minimum of 200) who report experiences of IPV in order to conduct a product-term regression analysis of the role of social support in the relationship between experiences of IPV and mental health.

Although gender was not a significant predictor in the present study, there is empirical evidence in support of the notion that men and women differ with regard to experiences of common mental health disorders. Likewise, men and women differ with regard to the type of IPV experienced and associated mental health disorders (Randle & Graham, 2011). Therefore, future research should consider these differences and conduct separate analyses (i.e. mediation

and moderation analysis) for men and women in order to gather more robust research findings (Pretorius, 2007).

Future research may elect to use a longitudinal or experimental research design in order to access causality in the relationship between variables. Likewise, qualitative research techniques (e.g. semi-structured interviews or focus groups) may be used to investigate the context in which IPV or HIV-related stigma is experienced as well as the associated mental health disorders among men and women respectively.

Literature proposes that social support may play a protective role between adverse life experiences and mental health disorders (Cohen & Wills, 1985). Likewise, the findings from the present study demonstrate a negative association between perceived social support and symptoms of mental health disorders. In addition, social support mediated the relationship between HIV-related stigma and PTSD. In light of these findings, future HIV-related intervention and treatment studies should consider the role of social support when addressing symptoms of mental health among people living with HIV. However, this study measured general social support which is not specifically associated with experiences among people living with HIV. Therefore, future research should consider the role of specific types of social support (i.e. support from family) when addressing mental health among people living with HIV. Likewise, general HIV-related stigma was assessed in this study. Future empirical studies should aim to contribute knowledge about the effects of specific types of HIV-related stigma on symptoms of common mental health disorders.

The present study could not assess if alcohol abuse, measured with the AUDIT, and drug use measured with the DUDIT, within this sample accurately represented the substance use in the population. Likewise, it is possible that participants underreported substance use. Therefore,

future studies should replicate the findings from this study in order to determine if the AUDIT and DUDIT accurately measure substance use within South African samples.

The present study offered some support for the notion that childhood trauma often co-occur with perpetration (Gass et al., 2010) or victimization of IPV in adulthood (Campbell, Greeson et al., 2008; Gomez, 2011; Kaminer et al., 2008; Seedat, Van Niekerk, Jewkes, Suffa, & Ratele, 2009). However, future research may benefit from assessing the occurrence of specific types of childhood abuse (e.g. physical abuse) associated with specific types of IPV (e.g. physical assault) experiences in adulthood.

5.8 Concluding remarks

Previous theoretical and empirical findings suggest that experiences of IPV as well as HIV-related stigma are associated with common mental health disorders respectively. However, no other studies have investigated the combined effects of IPV and HIV-related stigma on common mental health disorders. Likewise, no other studies have investigated the mediating or moderating effect of social support in the relationship between HIV-related stigma and common mental health disorders. Findings from this study provide some support for the notion that the combination of IPV (timing or frequency) experiences and HIV-related stigma account for some variance in symptoms of common mental health disorders. Moreover, the study findings suggest that social support may mediate the relationship between HIV-related stigma and symptoms of PTSD. The cross-sectional nature of the present study makes it difficult to generalize these findings or to establish causality between the variables. Therefore, the findings from this study should be replicated in order to gain confidence in their validity. Future research intervention and treatment studies may benefit from longitudinal or experimental research designs.

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