

Master thesis

The link between social identity, sexual behavior and
the quality of life of people resident in Elandsdoorn,
South Africa

Lotte van der Heijden

4255828

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Supervisor: Prof. dr. Knijn

Second supervisor: Dr. Hoogenboom

Supervisor Ndlovu Care Group: Prof. dr. Devillé

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Abstract

Social identity and sexual behavior provide important insight into understanding the quality of life of the HIV positive population. Individuals living with HIV may be performing more risky sexual behavior and have a more negative social identity, which may result in a poorer quality of life. This study sought to examine this relationship by answering the following research question: “To what extent do social identity and sexual behavior relate to the experienced quality of life and does this relationship differ between HIV positive and HIV negative people in Elandsdoorn, South Africa?”. In total, 198 participants (HIV positive: $n = 53$, HIV negative: $n = 145$) filled out two questionnaires in order to assess their quality of life, sexual behavior and social identity. A Multiple Regression Analysis (MRA) was used in order to understand the influence of the independent variables, which are sexual behavior and social identity, on the dependent variable, which is the quality of life, whilst controlling for age, gender and partnership status. Overall, no difference was found in the experienced quality of life between the HIV positive and HIV negative population. Also, it was found that, for this specific sample, sexual behavior is not influencing the experienced quality of life of people who are HIV positive or HIV negative. When looking at social identity it becomes clear that this variable does have some influence on the experienced quality of life, but only for the HIV negative population.

This study was part of the Ndlovu Research Consortium, a collaboration of the Ndlovu Care Group (Elandsdoorn, South Africa), Utrecht University, The Netherlands (the Julius Center for Health Sciences and Primary Care, the Department of Internal medicine & Infectious diseases, the Department of Virology, the Department of Immunology and the Faculty of Behavioral and Social Sciences), and the University of Witwatersrand Johannesburg, South Africa (Reproductive Health and Research unit).

Introduction

South Africa has the highest rate of HIV and AIDS infected people and also has the highest rate of new HIV infections (Maurice, 2014). Moreover, South Africa has the highest number of HIV and AIDS infected people that survive their illness because of new forms of treatment. There are a lot of people who are able to live with their illness thanks to the development of treatment, but the amount of new HIV infections keeps increasing (Maurice, 2014). HIV is the abbreviation of the *Human Immunodeficiency Virus*. HIV causes the immune system to not being able to remove certain viruses out of the human body (AIDS.gov, n.d.). HIV attacks and destroys the body's CD4- cells, which have the function of fighting off infections and diseases. HIV actually invades the CD4- cells and starts to multiply in the sick cells. When the viruses have multiplied they will start to destroy the CD4- cells. AIDS is the abbreviation of the *Acquired Immunodeficiency Syndrome* and actually is the end result of the HIV infection (AIDS.gov, n.d.). The immune system of people with AIDS has been so intensely damaged that their CD4- cells cannot fight off infections anymore (AIDS.gov, n.d.). When the CD4- cell count is below 200 cells/mm³, one can speak of AIDS. A normal healthy person has a CD4- cell count of 500—1200 cells/mm³ (AIDS.gov, n.d.).

There are several possibilities as to how someone can get infected with HIV. HIV is transmittable through sexual intercourse, injections, child birth, blood transfusions and organ transplantations (AIDS.gov, n.d.). In South Africa most HIV infections are spread by sexual intercourse (Human Science Research Counsel, 2005). Sexual activity is thus connected with HIV infection. Most people who reported to have had unprotected sexual intercourse have a higher risk of getting infected with HIV (Human Science Research Counsel, 2005).

When HIV and AIDS first appeared in the early 1980s, people infected with the virus did not have a long life expectancy. However, this changed with the introduction of Highly Active Antiretroviral Therapy (HAART) (Clayson, Wild, Quarterman, Duprat-Lomon, Kubin & Coons, 2006). HAART is a form of medication aimed to combat the HIV and AIDS infection. HAART cannot cure HIV and AIDS, it just slows down the virus and prevents it from growing. The introduction of HAART has increased the life expectancy of people living with HIV/AIDS, but HAART does have some downsides. HAART therapy involves the usage of different kinds of medication. It is very important that all medication use is being monitored. People need to take the right amount of medication at the right time. Also, a lot of times ingestion of food is required when taking the medication and there is a chance of becoming resistant. Since the introduction of HAART HIV and AIDS are being viewed as

chronic diseases since people are living longer and do not die as a direct consequence of the disease (Basavaraj, Navya & Rashmi, 2010; Clayson et al., 2006). HIV and AIDS are more and more being viewed as manageable diseases. However, even though the quality of life of people living with HIV/AIDS has greatly improved through the introduction of HAART, people are still facing numerous problems that can also affect the quality of life (Basavaraj et al., 2010). These social problems are often related to stigmas, poverty, depression, and risky behavior such as substance abuse (Basavaraj et al., 2010). This often limits the capabilities of people with HIV/AIDS to participate in daily life.

This study will focus on the quality of life of residents of Elandsdoorn, which is a rural settlement situated on the border of the provinces Limpopo and Mpumalanga in South Africa. Research shows that only 17% of the people suffering from HIV/AIDS, who are living in Sub-Saharan Africa, have access to HAART. This means that a lot of people are not receiving the proper care they need (Barth, van der Meer, Hoepelman, Schroeders, van der Vijver, Geelen & Tempelman, 2008). However, residents of Elandsdoorn do have access to HAART because of the care provided by the Ndlovu Care Group that operates in this area. This is what makes Elandsdoorn an interesting location for research. Given the conditions for HAART therapy and the social problems related to life-long HIV/AIDS treatment, the problem this thesis focuses on is the quality of life of HIV positive residents of Elandsdoorn, South Africa. In general, people who are HIV negative have a better quality of life than people who are HIV positive (The WHOQOL-HIV Group, 2003). However, because of the presence of the Ndlovu Care Group the HIV positive population in this specific area might have a higher quality of life as there is more access to HAART. The association between quality of life, social identity and sexual behavior will be studied. Research has shown that social identity and sexual behavior can influence the quality of life, but what has not yet been researched is how these relate to the situation of HIV positive people. In order to understand this specific relationship the HIV positive population will be compared with the HIV negative population. This is an innovative approach which has not been done yet. In addition, the study focuses on a region that has not yet been studied, and in which a well-developed health and community oriented Non-Governmental Organization operates, namely the Ndlovu Care Group.

Theoretical framework

As noted earlier, research shows that the quality of life of people living with HIV/AIDS went up as they have a longer life expectancy resulting from HAART (Basavaraj et al., 2010). However, people who are infected with the virus still face problems that affect their quality of life (Basavaraj et al., 2010). Quality of life is a very broad concept and is defined by The WHOQOL Group (1995: 1405) as “the individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”. The concept contains several elements such as physical health, psychological wellbeing, social relationships, and the level of independence (The WHOQOL Group, 1995). Research by the WHOQOL-HIV Group (2003) shows that people who are HIV positive have a poorer quality of life than people who are HIV negative, especially when looking at physical health and the level of independence. The WHOQOL-HIV Group (2003) argues that this is due to the fact that people who are HIV positive have a poorer self-image and more negative feelings about their personal relationships than people who are HIV negative.

The WHOQOL-HIV Group (2003) shows that sexual activity is an important variable of the experienced quality of life of people who are living with HIV/AIDS. It is important to note that in this research it is hard to determine causal relationships between these two variables since behavioral changes are not being measured. So only current sexual behavior resulting from one’s HIV status will be measured. There is not much literature available on the link between sexual activity or sexual behavior and the quality of life of people living with HIV/AIDS, but research by Topolski, Patrick, Edwards, Huebner, Connell and Mount (2001) shows that there is a link between risky health behavior and the quality of life people experience. They show that more risky health behavior leads to a lower quality of life. This will be discussed more extensively later on in this section. Kaighobadi, Knox, Reddy and Sandfort (2014) show that in South Africa there is a negative attitude towards the usage of condoms, and that this negative attitude predicts risky sexual behavior. Condoms are the most effective form of protection against an HIV/AIDS infection (Hendriksen, Pettifor, Lee, Coates & Van Rees, 2007) and risky sexual behavior is associated with an increased HIV/AIDS risk (Leigh & Stall, 1993). What is striking is that, according to Maurice (2014), the condom use of young men in South Africa dropped from 85% in 2008 to 68% in 2012. This might imply an increase of risky sexual behavior in South Africa. One reason might be the lack of knowledge about HIV/AIDS, the belief an individual has that he or she can engage in safe sex

behavior without infecting their sexual partner, the underestimation of the risk of getting infected with the virus (Hendriksen et al., 2007), or, concurrently, the awareness that the disease is no longer deadly.

There are several theories that explain HIV/AIDS preventive behavior, and thus safe sexual behavior. First of all, the Theory of Reasoned Action by Ajzen and Fishbein (1980) argues that our behavior and our intentions are driven by three kinds of beliefs: (1) behavioral intentions, (2) attitudes, and (3) subjective norms. This is schematically shown in Figure 1 below. One's behavioral intentions depend on the attitude about the subject and the common subjective norm (Ajzen & Fishbein, 1980). In this case, the subject is the performance of safe sex behavior. The element attitude contains the attitude a person has towards performing HIV/AIDS preventive behavior. The subjective norm is the perception of what other people think should be done regarding HIV/AIDS prevention. It contains elements of what other people think about the subject. For example, it can be linked to preventive altruism. Preventive altruism is defined by Nimmons (1998: 78) as "the values, motivations, and practices of caretaking in one's sexual behavior, which arise out of a concern for others". This concern will lead to lower risky sexual behavior, since people want to protect others from getting infected with HIV/AIDS (O'Dell, Rosser, Minder & Jacoby, 2008). When relating altruism to the Theory of Reasoned Action, one can argue that the subjective norm contains elements such as moral correctness and takes into account personal feelings about performing certain behavior (Rivis, Sheeran & Armitage, 2009).

The Theory of Reasoned Action implies a link between sexual behavior and one's social identity, since the subjective norm can be seen as a part of social identity. Social identity involves the knowledge that a person belongs to a social group or social category (Oyserman, Yoder & Fryberg, 2007). It is the knowledge that you, together with other people, have the same social identification. When one belongs to a certain group, he or she belongs to the so called 'in-group', when one does not belong to a certain group, he or she is in the 'out-group' (Oyserman et al., 2007). Turner (1978, as cited in Latkin & Knowlton, 2005) defines social identity as the identification of an individual with a certain group. This group will then become a part of the individual's self-concept. Because of this identification, the self of the individual will redefine itself and the person's behavior will become more congruent with the goals and actions of the perceived group (Turner, 1978, as cited in Latkin & Knowlton, 2005). Oyserman et al. (2007) argue that one's social identity has an influence on the beliefs about the in-group they belong to. Social identity can be related to the quality of life people experience. Research by Fuster-Ruizdeapodaca, Molero, Holgado and Mayordomo (2014)

shows that HIV positive people who are having troubles with their in-group experience a poorer quality of life than people who do not have these troubles. This will be discussed more extensively later on in this section. The Theory of Reasoned Action does have some limitations regarding HIV/AIDS preventive behavior. It only focuses on elements that affect motivation to perform HIV/AIDS preventive behavior – such as intentions and attitudes – but it does not take other factors – such as HIV/AIDS prevention information – into account (Fisher, Fisher, Williams & Malloy, 1994).

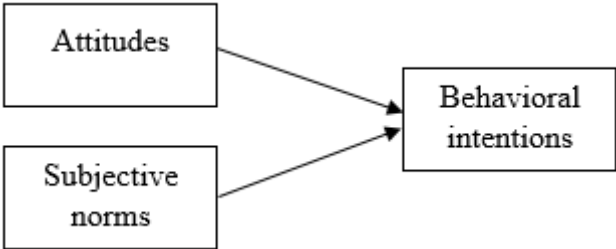


Figure 1: Theory of Reasoned Action (Ajzen & Fishbein, 1980).

Another theory that can be used regarding HIV/AIDS prevention is the Information-Motivation-Behavioral Skills model. This model argues that HIV/AIDS preventive information about safe sex behavior, motivation and behavioral skills determine HIV/AIDS preventive behavior (Fisher et al., 1994). In this model, motivation contains attitudes towards safe sex behavior and subjective norms on the subject. So it is in some way similar to the Theory of Reasoned Action by Ajzen and Fishbein (1980). Motivation can be seen as the motivation of a person to be able to perform HIV/AIDS preventive behavior. Behavioral skills contains the skillset a person has in order to be able to perform HIV/AIDS preventive behavior (Fisher et al., 1994). As can be seen in Figure 2, information and motivation influence a person’s behavioral skills. Also, information and motivation can have a direct effect on HIV/AIDS preventive behavior, i.e. sexual behavior (Fisher et al., 1994).

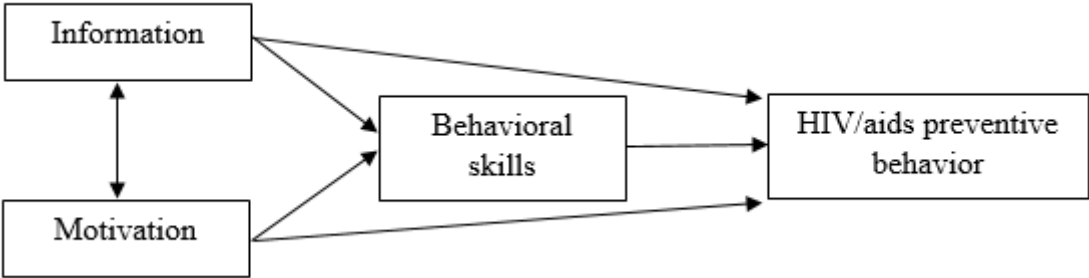


Figure 2: Information-Motivation-Behavioral Skills model (Fisher et al., 1994).

Both models described above argue that there is a link between sexual behavior and social identity. This link is also confirmed by Metzler, Noell, Biglan, Ary and Smolkowski (1994). Their research shows that there is a link between one's social identity and performed risky sexual behavior. They argue that peers and the people closest to the individual have the most influence regarding the extent to which someone performs (un)safe sexual behavior (Metzler et al., 1994). So social identity has an influence on one's sexual behavior. However, it remains unclear whether or not this is also the case in situations that are HIV/AIDS related.

Another model that can be applied to the concepts sexual behavior and social identity is the Health Belief Model. This model argues that risky sexual behavior reflects risk assessment, so it reflects the way people perceive risks (Rosenstock & Strecher, 1997 as cited in Bailey & Hutter, 2006). The Health Belief Model implies that a motivator to perform HIV/AIDS preventive behavior is plain self-interest to stay uninfected. According to this model, behavior can be changed when the assessment of risk is being changed. What is important is that risk assessment is not only an individual process: it is also part of a broader social system (Rosenstock & Strecher, 1997 as cited in Bailey & Hutter, 2006). The culture a person lives in plays an important role. Again, we can see a link with one's social identity, i.e. the in-group they belong to, and their sexual behavior. Bailey and Hutter (2006) show that people fall back on the group they belong to when assessing sexual risk. A person's culture seems to be playing an important role in the decision making process. This can be linked to research by Jewkes and Morrell (2007). Their research shows that South Africa is a country that has a male-dominated culture and that identity is often gender based. This means that men ideally are strong, dominant and have a lot of sexual success (Jewkes & Morrell, 2007; Slabbert, Knijn & de Ridder, 2015). Women, on the other hand, are generally the ones being controlled by men. According to Jewkes and Morrell (2007) this means that women, most of the time, agree with men and do not challenge them. This might imply that women follow the dominant sexual behavior of men. This is the result of women not being able to have control in relationships (Jewkes & Morrell, 2007). Research by Jewkes and Morrell (2007) thus shows that culture is important. It shows that people fall back on the cultural norms that the group they belong to have implemented. So sexual choices made by South Africans might be made based on the ruling gender based identities.

Even though there are people who want to protect themselves and others from getting infected with HIV (Nimmons, 1998; O'Dell et al., 2008), there are also a lot of people who do not disclose their HIV status to their sexual partners (Benotsch, Rodrigues, Hood, Perschbacher Lance, Green, Martin & Thrun, 2012; Kalichman, Rompa, Luke & Austin,

2002; Rosser, Horvath, Hatfield, Peterson, Jacoby & Stately, 2008). The percentage of HIV positive people who do not disclose their HIV status to their sexual partners is relatively high. Research by Rosser et al. (2008) has shown that 30% of HIV positive men who had sex with men did not disclose their HIV status to their sexual partners. Other research has shown that 22% of HIV positive men and women did not disclose their HIV status to their regular sexual partners, and 46% did not disclose their HIV status to casual sexual partners (Kalichman et al., 2002). This is due to fears of social exclusion, rejection, violence, the loss of social support and missing out on sexual experiences (Benotsch et al., 2012).

But how are the concepts social identity and sexual behavior related to the quality of life people experience? As noted earlier, research by Fuster-Ruizdeapodaca et al. (2014) showed that one's social identity can influence the quality of life. Their research showed that people with HIV/AIDS, who are having troubles with their in-group, experience a poorer quality of life than those who do not have these troubles. They also found that people with HIV/AIDS, who experience a high level of internalized stigma, are at risk of developing negative feelings for belonging to their in-group and this might lead towards a poorer quality of life. Positive in-group identification can be associated with a higher level of self-esteem, lower levels of depression and an increase in overall psychological wellbeing (Outten, Schmitt, Garcia & Branscombe, 2009; Schmitt & Branscombe, 2002). As described earlier, research by Topolski et al. (2001) shows that there is a link between risky health behavior and the quality of life people experience. Adolescents who participated in their research and who engaged in at least more than one health risk behavior scored low on their perceived quality of life (Topolski et al., 2001; Zahran, Zack, Vernon-Smilely & Hertz, 2007). Valois, Zullig, Huebner, Kammermann and Drane (2002) also argue that more risky sexual behavior will lead to a lower quality of life. Sexual behavior was influenced by life satisfaction, gender and ethnicity. What also influenced the quality of life was the age when people had sexual intercourse for the first time, the number of sexual partners they had in the last 90 days, and substance use (Valois et al., 2002).

The conclusion that can be drawn from the theoretical framework described above is that sexual behavior and social identity are two concepts that are intertwined. This study will link these concepts and investigate the influence of these concepts on the perceived quality of life of people living with HIV/AIDS. Recent research has shown a relationship between sexual behavior and social identity (Bakker, 2014; Slabbert et al., 2015). This study will expand these findings by comparing that relationship for HIV positive with HIV negative people, and relate it to the quality of life. The research question to be answered reads as

follows: “To what extent do social identity and sexual behavior relate to the experienced quality of life and does this relationship differ between HIV positive and HIV negative people in Elandsdoorn, South Africa?”.

Research design

Participants and procedures

The participants of this study are both HIV positive as HIV negative people in the age of 19 until 65, and are residing in the Moutse area in and near Elandsdoorn, South Africa.

Participants of this study are already involved in the Cohort study conducted by the Ndlovu Care Group (Ndlovu Research Consortium, 2015). The Cohort study compares the prevalence of chronic diseases, such as diabetes and cardiovascular diseases among HIV positive and HIV negative individuals (Julius Center, n.d.; Ndlovu Research Consortium, 2015). The Social Science study is a sub study of the Cohort study. This means that participants of the Social Science study are also participating in the Cohort study. People who are participating in the Cohort study have been asked to also participate in the Social Science study and to fill out the social science questionnaire. In compensation they will receive a small fee for both questionnaires.

In total, 202 respondents participated in the study. Four participants were excluded from the sample as they only filled out the baseline questionnaire and not the social science questionnaire. From the 198 participants that were included in the sample 156 are female and 42 male with an average age of 40. When looking at the HIV status of the participants one can see that 145 people are HIV negative, from which 117 are female and 42 male. There are 53 participants who are HIV positive, from which 39 are female and 14 male. In total, 7,1% of the participants have not completed any form of education, 25,3% completed primary school, 32,5% completed secondary school, 23,2% completed matric, 8,6% completed technicon/college, and 3% completed university. When looking at the partnership status of the participants it becomes clear that 29,3% of the participants are married, 31,8% have a life partner, 8,1% of the participants are living together, 24,2% are single, 3% are divorced and 3,5% are widowed. Of all participants, 14,6% is employed, 2,5% is self-employed, 70,2% is unemployed, 6,1% is studying, 3,5% is retired, and 6% has another employment status.

The questionnaires were conducted by counsellors of the Ndlovu Care Group. They assisted the participants with filling out the questionnaires, as most of the participants were

unable to speak and/or write in English. The counsellors translated the English questionnaires to the native language of the participant, which is Zulu, Sotho or Ndbele.

Operationalization

There are several variables that will be measured in this study. As described above, the independent variables are safe sex behavior and social identity and the dependent variable is the quality of life.

Safe sex behavior

The independent variable safe sex behavior has been measured by using statements based on the scale by designed by Dilorio, Parsons, Lehr, Adame and Carlone (1992), which consists of six items. The scale measuring safe sexual behavior consists of a list of sexual practices where the participants are asked to answer their degree of use of these practices. The participants have four answering options which vary from (1) never, (2) sometimes, (3) most of the time, to (4) always. Examples from the statements are: “I insist on condom use when I have sexual intercourse”, and “I initiate the topic of safer sex with my potential sexual partner”.

Cronbach’s alpha for the 6-item safe sex behavior scale was .888. This is considered to be quite good for research purposes. No items were deleted from the safe sex behavior scale.

Social identity

The second independent variable, social identity, will be measured by using questions and statements based on the scale by Oyserman, adapted for CHAMP (Slabbert, 2010), which consists of 18 items. This scale firstly examines the person’s self-categorization within the dominant social identities in South Africa by using two questions about how the participant would describe him/herself. Answering options vary for both questions. An example of a question is: “How would you describe yourself?”. After this, there are five questions that cover elements about how connected the participant feels to others. An example of one of these questions is: “How connected do you feel to people who are the same gender?”.

Answering options vary per question that is being asked. Lastly, the participants will answer 11 statements about what is typical behavior regarding the in-group they belong to. An example of a statement is: “It is typical of people in my group to be faithful to one partner”. All the answering options for these statements are the same, they vary from (1) strongly disagree, (2) disagree, (3) neither disagree nor agree, (4) agree, to (5) strongly agree.

First of all the Cronbach’s alpha of the 11 statements of the Social identity scale was determined. However, this Cronbach’s alpha was insufficient as the alpha level was .48. To

investigate the underlying structure of the scale, data that was collected from the 198 participants was subjected to a factor analysis with oblique rotation. First of all the normality of every item was tested. Even though not every variable was normally distributed, the skewness was not considered to be problematic regarding the robustness of the factor analysis. Five factors with Eigenvalues exceeding 1 were identified and these accounted for 60.3% of the explained variance. However, the decision was made to reduce to three factors because the Cronbach's alpha of Factor 4 (.05) and Factor 5 (.30) were not sufficient. The three factor model still explains 46.6% of the variance. Factor 1 contains the questions 48, 49, 50, 52 and 56 and the Cronbach's alpha of this factor was .83. Questions 41, 42, 43 and 44 load on Factor 2 with a Cronbach's alpha of .81. Factor 3 contains the questions 46, 47, 51 and 55 and has a Cronbach's alpha of .67. The questions 39, 40, 45, 53 and 54 did not load on one specific factor and therefore will be analyzed separately.

Quality of life

Quality of life is the dependent variable of this study. The WHOQOL-HIV scale will be used in order to measure the quality of life. This scale consists of 13 items and contains questions on health related quality of life, psychological related quality of life, social relationships, the level of independence, and the overall quality of life the participants experience. For the first 11 question the participants have to indicate how satisfied they are with certain aspects of their life. Answering options for these questions vary from (1) very dissatisfied, (2) dissatisfied, (3) neither satisfied nor dissatisfied, (4) satisfied, to (5) very satisfied. An example of a question being asked in the survey is: "How satisfied are you with your access to health services?". For the last two questions about the general quality of life the participants have answering options varying from (1) very poor, (2) poor, (3) neither poor nor good, (4) good, to (5) very good. An example of a question is: "How would you rate your quality of life?". The Cronbach's alpha for this 13 item quality of life scale was .79. This is considered to be quite good for research purposes. No items were deleted from the quality of life scale.

Control variables

There are several control variables that need to be taken into account. The variables that will be controlled for in this research are gender, age, level of education, partnership status, and employment status. These variables were chosen as they provide more background information and might influence the quality of life people experience. All these variables are asked in the baseline questionnaire. When filling out the variable level of education the participant has 6 answering options, namely: (1) none, (2) primary school completed, (3)

secondary school completed, (4) matric, (5) technicon/college, and (6) university. For partnership status the participant has 8 answering options, varying from (1) married, (2) life partner, (3) living together > 50% of the time, (4) single, (5) divorced, (6) widowed, (7) multiple partners, to (8) other. When looking at employment status there are 9 answering options, namely: (1) yes, employed, (2) yes, self-employed, (3) no, unemployed, (4) no, student, (5) no, retired, (6) no, disabled, (7) no, other, (8) refused, and (9) don't know.

Hypotheses and expectations

In order to answer the research question presented above, two hypotheses were stated. The first hypothesis is: “There is a difference in the quality of life between HIV positive and HIV negative people, and this difference is influenced by sexual behavior”. The second hypothesis involves the variable social identity, which will be measured by one’s identification with the in-group, as explained above. The in-group beliefs about sexual behavior and substance use will be tested in order to measure the quality of life. The second hypothesis is: “There is a difference in quality of life between HIV positive and HIV negative people, and this difference is influenced by the beliefs of the in-group one identifies with”. The dependent variable in this equation is the quality of life. The independent variables are sexual behavior and the beliefs of the in-group the participant belongs to. Both hypotheses are shown schematically below in Figure 3. This research will compare HIV positive and HIV negative people in order to find out if the relationship between social identity, i.e. the beliefs of the in-group, sexual behavior, and quality of life differs between both groups.

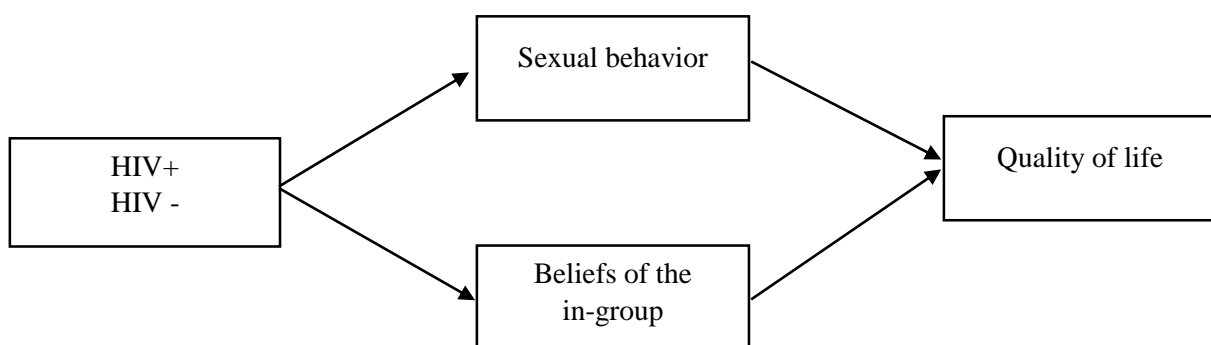


Figure 3: Stated hypotheses for the research.

For hypothesis one it is expected that people who are HIV positive perform more risky sexual behavior and therefore have a poorer quality of life than people who are HIV negative. This is

expected because research has shown, as noted earlier, that there are a lot of HIV positive people who do not disclose their HIV status to their sexual partners (Kalichman et al., 2002; Rosser et al., 2008). Expected is that people who are HIV negative perform more safe sex behavior and therefore will have a higher quality of life. For hypothesis two it is expected that the in-group people who are HIV positive identify with have a more negative attitude about safe sex behavior and substance use. Leigh and Stall (1993) show in their research that there is a positive link between risky sexual behavior and substance use. People who use drugs and drink alcohol are more likely to perform risky sexual behavior. It is expected that the in-group of people who are HIV negative identify with do have a negative attitude about these subjects, whilst the in-group of people who are HIV positive do not.

Research method and analysis

In order to test the stated hypotheses and to answer the research question presented above, a quantitative research method will be used. Because this research aims to investigate the influence of sexual behavior and social identity, i.e. the beliefs of the in-group the participant identifies with on the perceived quality of life, a Multiple Regression Analysis (MRA) will be used.

Multiple regression aims to predict the dependent variable, which in this case is the quality of life, by using several independent variables, which are sexual behavior and the beliefs on the in-group the participant belongs to. Multiple regression helps to understand the relative contribution of each of the independent variables and it shows how much of the variance is explained by the independent variables (Gravetter & Wallnau, 2009). So it will show how the quality of life of the participants can be explained by sexual behavior and the beliefs of the in-group the participant identifies with. Control variables as described above will also be accounted for by adding them into the model as independent variables. This way other variables that might interfere with the relationship, such as gender or age for example, will be eliminated. The variables will be placed ENTERWISE into the models. This means that even though variables might not be significant, they will be forced into the model. So it will show which variables are significant and which ones are not.

Results

Analysis of sexual behavior and quality of life

To test whether or not the quality of life differs between HIV positive and HIV negative people and if this difference is influenced by sexual behavior, a standard multiple regression analysis was performed. In order to start with the MRA, a few assumptions were tested. First of all was the assumption of normality. This showed that the variables quality of life and sexual behavior are normally distributed when looking at their skewness. The scatterplot indicates that the assumptions of normality, linearity and homoscedasticity were met. Thirdly, Mahalanobis distance did not exceed the critical χ^2 for $df = 2$ (at $\alpha = 0.01$) of 13.82 for any cases in the data file. This means that there were no multivariate outliers. The last assumption concerns multicollinearity. Both predictors in the regression model have a relatively high tolerance indicating that multicollinearity will not interfere with the interpretation of the MRA outcomes.

First of all the quality of life of HIV positive and HIV negative people was assessed by using MRA. The quality of life was not found to be different between HIV negative and HIV positive people. HIV status accounted for only 0.6% of the variability of the quality of life, $R^2 = 0.006$, adjusted $R^2 = 0.001$, $F(1, 196) = 1.109$, $p = 0.294$. When controlling for the variables age, gender, education level, employment status and partnership status, the model actually became significant with $\Delta R^2 = 0.063$, Δ adjusted $R^2 = 0.043$, $\Delta F(4, 193) = 3.231$, $p = 0.014$. However, when looking at the significance of the separate indicators one can see that HIV status became less significant ($p = 0.329$). The significance of the whole model can be explained by the control variables age ($p = 0.058$), gender ($p = 0.010$) and partnership status ($p = 0.042$). Education level and employment status were found to be non-significant, therefore these variables were removed out of the model. Even though age was found to be non-significant, it was chosen to keep this variable in the analysis in order to control for possible differences between the two groups of respondents and possible interactions with other determinants. The results of this analysis show that there is no difference found in the quality of life of people who are HIV negative compared to people who are HIV positive. Gender and partnership status, on the other hand, do influence the experienced quality of life.

Secondly, MRA was used to test the effect of sexual behavior on the quality of life. Three models were made, as can be seen in Table 1 below. The first model measures the effect of the control variables age, gender and partnership status on the quality of life. This model accounted for 5.8% of the explained variance with $R^2 = 0.058$, adjusted $R^2 = 0.044$,

$F(3, 194) = 3.990, p = 0.009$. In the second model, sexual behavior was added by using the ENTER-method and was found to be non-significant with $p = 0.570$. This model explained an additional 0.02% of the variance explained with $\Delta R^2 = 0.060, \Delta_{\text{adjusted}} R^2 = 0.040, \Delta F(4, 193) = 3.062, p = 0.018$. In the last model HIV status was also added to the equation by using the ENTER-method. The third model was found to be significant with $\Delta R^2 = 0.065, \Delta_{\text{adjusted}} R^2 = 0.040, \Delta F(5, 192) = 2,624, p = 0.025$. Even though the overall model was found to be significant, sexual behavior, HIV status, and age are not significant, while gender and partnership status are, as can be seen in Table 1 below. Unstandardized (B) and standardized (β) regression coefficients for each predictor on each of the hierarchical MRA model are reported in Table 1 below. The results of this analysis indicate that sexual behavior differs between men and women and between partnership status, which might influence the quality of life they experience. The quality of life of the participants, when looking at sexual behavior, differs between men and women and their partnership status. HIV status does not influence the quality of life that participants experience.

Table 1

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life (N = 198).

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4,011	,166		24,103	,000
	Gender	,246	,092	,191	2,677	,008*
	Partnership status	-,054	,027	-,142	-1,977	,049*
	Age	-,005	,003	-,137	-1,949	,053
2	(Constant)	3,948	,200		19,717	,000
	Gender	,240	,093	,186	2,578	,011*
	Partnership status	-,055	,027	-,145	-2,008	,046*
	Age	-,005	,003	-,124	-1,672	,096
	Sexual behavior	,022	,039	,042	,568	,570
3	(Constant)	3,864	,220		17,586	,000
	Gender	,235	,093	,183	2,526	,012*
	Partnership status	-,057	,027	-,149	-2,068	,040*

Age	-,005	,003	-,123	-1,659	,099
Sexual behavior	,019	,039	,037	,497	,620
HIV Status	,079	,084	,066	,937	,350

a. Dependent Variable: Quality of life

* $p < 0.05$

Since safe sex behavior and HIV status don't seem to be influencing the quality of life, another MRA was used to assess the influence of all separate items that are composing the sexual behavior scale on the quality of life. This is displayed in Table 2 below. Model 1 in this equation is the same as model 1 described above which accounted for 5.8% of the explained variance with $R^2 = 0.058$, adjusted $R^2 = 0.044$, $F(3, 194) = 3.990$, $p = 0.009$. Secondly, all six items that measure sexual behavior were separately entered in model 2. This model explained an additional 1.9% of the variance explained with $\Delta R^2 = 0.077$, Δ adjusted $R^2 = 0.033$, $\Delta F(9, 188) = 1.748$, $p = 0.081$. In the third model HIV status was added. The last model explained an extra 0.4% of the explained variance with $\Delta R^2 = 0.081$, Δ adjusted $R^2 = 0.033$, $\Delta F(10, 187) = 1.649$, $p = 0.096$.

Table 2

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life (N = 198)

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4,011	,166		24,103	,000
	Gender	,246	,092	,191	2,677	,008*
	Partnership status	-,054	,027	-,142	-1,977	,049*
	Age	-,005	,003	-,137	-1,949	,053
2	(Constant)	4,035	,209		19,337	,000
	Gender	,205	,097	,159	2,126	,035*
	Partnership status	-,056	,028	-,148	-2,024	,044*
	Age	-,006	,003	-,139	-1,852	,066
	Q72.	-,010	,048	-,026	-,221	,826
	Q73.	,020	,044	,048	,454	,651
	Q74.	,080	,045	,199	1,783	,076

	Q75.	-,020	,048	-,049	-,427	,670
	Q76.	-,041	,049	-,102	-,841	,401
	Q77.	-,009	,040	-,018	-,221	,825
3	(Constant)	3,953	,229		17,287	,000
	Gender	,203	,097	,158	2,103	,037*
	Partnership status	-,058	,028	-,153	-2,082	,039*
	Age	-,006	,003	-,138	-1,836	,068
	Q72.	-,018	,048	-,044	-,369	,712
	Q73.	,024	,044	,056	,534	,594
	Q74.	,079	,045	,196	1,751	,082
	Q75.	-,021	,048	-,051	-,443	,658
	Q76.	-,037	,049	-,091	-,749	,455
	Q77.	-,010	,040	-,021	-,250	,803
	HIV Status	,075	,086	,063	,880	,380

a. Dependent Variable: Quality of life

* $p < 0.05$

None of the items are separately influencing the quality of life. However, question 74 “If I know an encounter may lead to sexual intercourse, I carry a condom with me” was found to be almost significant with $p = 0.076$, and when adding HIV status to the equation this changed to $p = 0.082$. Because question 74 is almost significant another model was made that only includes the (almost) significant items and this model was analyzed by HIV status, as can be seen in Table 3 below. This table shows that question 74, when analyzing for HIV status, remains insignificant for both HIV negative people ($p = 0.216$) as for HIV positive people ($p = 0.176$). This question thus might not influence the quality of life people experience.

Table 3

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life Analyzed by HIV Status (N = 198)

		Coefficients ^a					
		Unstandardized Coefficients		Standardized Coefficients			
HIV_TOTAL	Model	B	Std. Error	Beta	t	Sig.	
HIV	1	(Constant)	3,756	,151		24,906	,000

Negative		Gender	,244	,119	,176	2,054	,042*
		Partnership status	-,047	,033	-,121	-1,419	,158
	2	(Constant)	3,701	,157		23,592	,000
		Gender	,211	,122	,151	1,730	,086
		Partnership status	-,050	,033	-,127	-1,484	,140
		Q74.	,045	,036	,106	1,242	,216
HIV	1	(Constant)	3,951	,220		17,933	,000
Positive		Gender	,191	,140	,187	1,363	,179
		Partnership status	-,063	,047	-,185	-1,353	,182
	2	(Constant)	3,857	,229		16,841	,000
		Gender	,161	,141	,157	1,144	,258
		Partnership status	-,077	,047	-,227	-1,628	,110
		Q74.	,067	,048	,193	1,372	,176

a. Dependent Variable: Quality of life

* $p < 0.05$

Analysis of social identity and quality of life

Another MRA was used to test whether or not the quality of life differs between HIV positive and HIV negative people and to test if this difference is influenced by the beliefs of the in-group the participants identify themselves with, i.e. social identity. Several assumptions were tested prior to the MRA analysis. The first assumption was the assumption of normality. Quality of life is normally distributed when looking at its skewness. The normal distribution of social identity, on the other hand, differs since this variable has been split up into 3 components and 5 separate items, as explained earlier. Component 2 and question 39 were found to be not normally distributed, all other components and items were. The scatterplot shows that the assumptions for these items regarding normality, linearity and homoscedasticity were met. The third assumption regarding Mahalanobis distance was violated with χ^2 for $df = 2$ (at $\alpha = 0.001$) of 13.82, which might imply that there are multivariate outliers. All the predictors in this regression model have a high tolerance which indicates that multicollinearity probably will not interfere with the MRA outcomes.

As noted earlier, the quality of life does not differ between both HIV-groups, also when controlling for the variables age, gender, and partnership status. Consequently, MRA was used to test the relationship between the beliefs of the in-group the participants identify with and the quality of life they experience. Three models were made, as can be seen in Table 4 below. First of all the control variables age, gender and partnership status were entered into

the first model. As mentioned above, gender and partnership status were found to be significant whilst age was not. This model accounted for 5,8% of the explained variance with $R^2 = 0.058$, adjusted $R^2 = 0.044$, $F(3, 194) = 3.990$, $p = 0.009$. In the second model the three components and five items were entered. This showed that gender, age, partnership status, question 39, question 45 and component 2 are significantly related to the quality of life. This model accounted for an additional 7,6% of the explained variance, $\Delta R^2 = 0.134$, Δ adjusted $R^2 = 0.083$, $\Delta F(11, 186) = 2.613$, $p = 0.004$. As HIV-status remained non-significant, this model accounted for only an extra 0.04% of the variance explained by the model, $\Delta R^2 = 0.138$, Δ adjusted $R^2 = 0.082$, $\Delta F(12, 185) = 2.468$, $p = 0.005$. Unstandardized (B) and standardized (β) regression coefficients for each predictor on each of the hierarchical MRA model are reported in Table 4 below.

Table 4

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life (N = 198).

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	4,011	,166		24,103	,000
	Gender	,246	,092	,191	2,677	,008*
	Partnership status	-,054	,027	-,142	-1,977	,049*
	Age	-,005	,003	-,137	-1,949	,053
2	(Constant)	1,107	1,080		1,026	,306
	Gender	,244	,092	,189	2,661	,008*
	Partnership status	-,069	,028	-,181	-2,485	,014*
	Age	-,008	,003	-,200	-2,664	,008*
	Q39.	,648	,261	,173	2,487	,014*
	Q45.	-,049	,022	-,165	-2,242	,026*
	Q53.	-,019	,030	-,052	-,636	,525
	Q54.	-,023	,028	-,058	-,827	,409
	Q40.	,014	,018	,054	,772	,441
	SOCIAL_IDENTITY_COMP1	,037	,036	,079	1,033	,303
	SOCIAL_IDENTITY_COMP2	,161	,080	,150	2,018	,045*
	SOCIAL_IDENTITY_COMP3	,019	,038	,038	,513	,609

3	(Constant)	1,136	1,080		1,052	,294
	Gender	,236	,092	,183	2,562	,011*
	Partnership status	-,071	,028	-,188	-2,566	,011*
	Age	-,008	,003	-,197	-2,617	,010*
	Q39.	,630	,262	,168	2,408	,017*
	Q45.	-,051	,022	-,172	-2,328	,021*
	Q53.	-,023	,030	-,062	-,761	,448
	Q54.	-,022	,028	-,054	-,768	,443
	Q40.	,013	,018	,051	,726	,468
	SOCIAL_IDENTITY_COMP1	,039	,036	,082	1,078	,283
	SOCIAL_IDENTITY_COMP2	,154	,080	,144	1,919	,057
	SOCIAL_IDENTITY_COMP3	,020	,038	,038	,517	,605
	HIV Status	,080	,085	,067	,943	,347

a. Dependent Variable: Quality of life

* $p < 0.05$

Consequently, the first two models as described above were analyzed by HIV status, as can be seen in Table 5 below. This showed that model 1, where the control variables were entered, is non-significant for both HIV negative as for HIV positive people. For HIV negative people the first model accounted for 4,6% of the explained variance with $R^2 = 0.046$, adjusted $R^2 = 0.026$, $F(3, 141) = 2.267$, $p = 0.083$. Model 1 for HIV positive people accounted for 12.5% of the explained variance with $R^2 = 0.125$, adjusted $R^2 = 0.072$, $F(3, 49) = 2.338$, $p = 0.085$. The second model, where the control variables, the three components, and five items were entered, was also divided between HIV negative and HIV positive people. This showed that model 2 for HIV negative people accounted for an extra 10.8% of the explained variance with $\Delta R^2 = 0.154$, Δ adjusted $R^2 = 0.083$, $\Delta F(11, 133) = 2.193$, $p = 0.018$. For HIV positive people model 2 accounted for an additional 13% of the explained variance with $\Delta R^2 = 0.255$, Δ adjusted $R^2 = 0.077$, $\Delta F(10, 42) = 1.435$, $p = 0.199$. Important to note is that question 39 was not included in the analysis of model 2 for HIV positive people, as there was no variance in the participant's answers.

Table 5

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life Divided by HIV status (N = 198).

		Coefficients ^a					
		Unstandardized		Standardized			
		Coefficients		Coefficients			
HIV_TOTAL	Model	B	Std. Error	Beta	t	Sig.	
HIV Negative	1	(Constant)	3,930	,201		19,596	,000
		Gender	,256	,119	,184	2,153	,033*
		Partnership status	-,054	,034	-,138	-1,598	,112
		Age	-,004	,003	-,109	-1,312	,192
	2	(Constant)	1,018	1,159		,879	,381
		Gender	,290	,121	,208	2,399	,018*
		Partnership status	-,076	,035	-,193	-2,182	,031*
		Age	-,008	,003	-,196	-2,205	,029*
		Q39.	,654	,275	,195	2,378	,019*
		Q45.	-,067	,026	-,223	-2,573	,011*
		Q53.	-,021	,037	-,057	-,570	,570
		Q54.	-,017	,037	-,040	-,463	,644
		Q40.	,014	,022	,052	,629	,531
		SOCIAL_IDENTITY_COMP1	,063	,044	,136	1,438	,153
	SOCIAL_IDENTITY_COMP2	,173	,092	,167	1,894	,060	
	SOCIAL_IDENTITY_COMP3	,005	,048	,009	,107	,915	
HIV Positive	1	(Constant)	4,336	,300		14,448	,000
		Gender	,211	,137	,206	1,535	,131
		Partnership status	-,055	,046	-,162	-1,206	,234
		Age	-,011	,006	-,248	-1,839	,072
	2	(Constant)	4,065	,838		4,849	,000
		Gender	,110	,151	,107	,727	,471
		Partnership status	-,025	,050	-,073	-,498	,621
		Age	-,011	,007	-,251	-1,660	,104
		Q45.	-,003	,043	-,012	-,081	,936
		Q53.	-,004	,056	-,012	-,077	,939
		Q54.	-,093	,051	-,268	-1,805	,078
		Q40.	,002	,034	,007	,047	,962
		SOCIAL_IDENTITY_COMP1	-,087	,070	-,172	-1,255	,217

SOCIAL_IDENTITY_COMP2	,091	,179	,073	,512	,612
SOCIAL_IDENTITY_COMP3	,120	,066	,286	1,823	,075

a. Dependent Variable: Quality of life

* $p < 0.05$

Lastly, a new model was made that only analyzes the items and components that were found to be significant, analyzed by HIV status, as is shown in Table 6 below. This analysis shows that being a man or a woman has an influence on the quality of life people experience ($p = 0.013$). Also the partnership status ($p = 0.033$) and the age ($p = 0.034$) have an influence on the quality of life. Question 39 “How would you describe yourself?” ($p = 0.017$) and question 45 “If you are asked what group you belong to, which of the following would best describe you?” ($p = 0.020$) are found to be significant with a positive β . This might imply that people who are HIV negative have a clearer identity and therefore a better quality of life. When looking at the results of the HIV positive sample one can see that there are no significant items or components, and therefore are not influencing the quality of life.

Table 6

Unstandardized (B) and Standardized (β) Regression Coefficients For Each Predictor Variables on Each Step of a Hierarchical Multiple Regression Predicting the Quality of Life Analyzed by HIV status (N = 198).

		Coefficients ^a					
		Unstandardized Coefficients		Standardized Coefficients			
HIV_TOTAL	Model	B	Std. Error	Beta	t	Sig.	
HIV Negative	1	(Constant)	3,930	,201		19,596	,000
		Gender	,256	,119	,184	2,153	,033*
		Partnership status	-,054	,034	-,138	-1,598	,112
		Age	-,004	,003	-,109	-1,312	,192
	2	(Constant)	1,077	1,138		,947	,345
		Gender	,292	,117	,210	2,506	,013*
		Partnership status	-,072	,033	-,183	-2,150	,033*
		Age	-,007	,003	-,188	-2,141	,034*
		Q39.	,661	,273	,197	2,418	,017*
		Q45.	-,060	,025	-,199	-2,361	,020*
	SOCIAL_IDENTITY_COMP2	,166	,091	,160	1,825	,070	
HIV	1	(Constant)	4,336	,300		14,448	,000

Positive	Gender	,211	,137	,206	1,535	,131
	Partnership status	-,055	,046	-,162	-1,206	,234
	Age	-,011	,006	-,248	-1,839	,072
2	(Constant)	4,027	,694		5,801	,000
	Gender	,185	,147	,181	1,259	,214
	Partnership status	-,057	,047	-,168	-1,227	,226
	Age	-,012	,006	-,274	-1,930	,060
	Q45.	-,014	,042	-,048	-,331	,742
	SOCIAL_IDENTITY_COMP2	,119	,181	,095	,657	,515

a. Dependent Variable: Quality of life

* $p < 0.05$

Conclusion/discussion

The aim of this study was to investigate the influence of sexual behavior and social identity on the quality of life of people who are HIV positive compared to people who are HIV negative by answering the following research question: “To what extent do social identity and sexual behavior relate to the experienced quality of life and does this relationship differ between HIV positive and HIV negative people in Elandsdoorn, South Africa?”. To answer this research question, two hypotheses were stated.

For hypothesis one this research showed that there is no difference in the experienced quality of life between people who are HIV positive and HIV negative. When looking at the influence of sexual behavior it becomes clear that sexual behavior does not influence the quality of life of the participants. This is also the case when controlling for HIV status. Gender and partnership status are influencing the quality of life, but further research is needed to investigate the exact influence of these variables on the experienced quality of life. The findings of this study are contradicting the literature as presented above. This literature showed that it was more likely for people who are HIV negative to perform more safe sexual behavior and therefore they would have a better quality of life than people who are HIV positive. Research by Topolski et al. (2001), Valois et al. (2002), and Zahran et al. (2007) showed that there is a link between risky health behavior, i.e. sexual behavior, and the experienced quality of life. This research, however, showed that there is no difference in sexual behavior between HIV positive and HIV negative people and that there is no difference in the experienced quality of life in this specific sample. The hypothesis “There is a difference

in the quality of life between HIV positive and HIV negative people, and this difference is influenced by sexual behavior” therefore can be rejected.

When looking at hypothesis two it can be concluded that the beliefs of the in-group the participants identify with, i.e. social identity, does have some influence on the experienced quality of life. When controlling for HIV status it becomes clear that question 39 “How would you describe yourself?” and question 45 “If you are asked what group you belong to, which of the following would best describe you?” do influence the quality of life of people who are HIV negative. This might imply that people who are HIV negative have a clearer identity and therefore experience a better quality of life. The control variables gender, partnership status and age are also influencing the quality of life of people who are HIV negative, but more research is needed to investigate the extent of this influence. When comparing these results to the literature as described above one can notice that there are some contradictions. As explained earlier, research by Fuster-Ruizdeapodaca et al. (2014) shows that people who are HIV positive and who are having troubles with their in-group experience a poorer quality of life. However, this research shows that there is, in this specific sample, no difference in the experienced quality of life between HIV positive and HIV negative people, although it seems that people who are HIV negative might have a clearer social identity. The hypothesis “There is a difference in quality of life between HIV positive and HIV negative people, and this difference is influenced by the beliefs of the in-group the participants identify with” cannot be fully rejected. There is no difference in the experienced quality of life between people who are HIV positive compared to people who are HIV negative, but the beliefs of the in-group one identifies with does seem to have some influence on the experienced quality of life of people who are HIV negative, as described above. More research is needed to investigate to what extent the two questions that were found to be significant influence the quality of life of people who are HIV negative.

All in all it can be concluded that sexual behavior does not influence the experienced quality of life and that there is no difference in the quality of life between people who are HIV positive and HIV negative in this specific sample. These results might have occurred due to the presence of the Ndlovu Care Group that is operating in Elandsdoorn, South Africa. When looking at social identity it can be concluded that only two questions that were asked influence the quality of life of people who are HIV negative. More research is needed in order to investigate the influence of these two questions on the quality of life. Also, more research is needed in order to investigate the influence of the control variables on the quality of life.

There are some challenges this research is faced with. First of all is the possible language barrier as the counsellors obtained the questionnaires in the native language of the participants. Because the questionnaires had to be translated from English into Zulu, Sotho, or Ndebele, some questions might have been interpreted in a different way, something that cannot be monitored. Also, because of the presence of the counsellors, social desirable answers might have been given by the participants as personal questions were being asked. Thirdly, there might be a biased sample population due to the fact that all the participants participated on voluntary basis. The questionnaires were filled out during working hours and there was a fee for participating. This might result in a biased population, as mostly unemployed people participated. Fourthly, the ratio between HIV positive and HIV negative participants in this study was shifted as there were a lot more participants with a negative HIV status. Also the ratio between men and women was shifted, as more women than men participated in the study. Fifthly, the results of this research are not generalizable as this specific sample only had 198 participants and the research took place in a very specific area with an operating NGO, namely the Ndlovu Care Group. The last challenge of this research concerns the knowledge of the participant about his or her HIV status. Most of the participants with a positive HIV status only found out about this a few days before filling out the questionnaires. This is not long enough to adjust certain behavior. Therefore maybe the old behavior of the participant was measured instead of new behavior.

For further research it is advised to include more participants in the study and to have a better balance between men and women and a better balance in the amount of HIV positive and HIV negative people. This will have a positive impact on the reliability of the results as it creates a broader research population. It is also important to look into the relationship of the control variables gender, age, and partnership status and the dependent variable, which is the quality of life of the participants, as this currently was not a part of the study. This might provide more insight in what is influencing the quality of life of the participants and what the contribution of the control variables are. Also, it is important that there is more time available between the moment that the participants learn about their HIV status and the moment when they fill out the questionnaires. By doing this the participants will have more time between the moment they learn about their HIV status and the moment they fill out the questionnaires. By giving the participants more time between these two moments current behavior that is adjusted to their HIV status will be measured instead of old behavior.

Despite the limitations as described above, this research provides important insight into the quality of life of the HIV positive population compared to the HIV negative

population in Elandsdoorn, South Africa. It showed that there is not much difference in the quality of life between these two groups in this specific area, which might be due to the presence of the Ndlovu Care Group that operates in this area. This is a very interesting result as it contradicts the existing literature.

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