



**ALCOHOL AND SUBSTANCE USE AMONG STUDENTS AT UNIVERSITY OF
KWAZULU-NATAL, SOUTH AFRICA: THE PROTECTIVE ROLE OF PSYCHOLOGICAL
CAPITAL AND HEALTH PROMOTING LIFESTYLE**

BY

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DECLARATION

I hereby declare that this dissertation, *Alcohol and substance use among students at University of KwaZulu-Nata South African: The protective role of psychological capital and a health promoting lifestyle* is my own original work. All citations, references and borrowed texts have been duly acknowledged. This research has not previously been submitted to any other institution for degree or examination purposes.

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Abstract

Alcohol and substance use prevalence has been high among youth and more alarmingly high among university students globally. The South African university students are not different from other students around the globe. Alcohol in particular is a widely used psychoactive substance with dependence properties. Alcohol and other substance use and abuse are associated with serious physical and psychological consequences. It is therefore important to explore possible protective factors that may decrease the likelihood of substances use behaviours with detrimental consequence on the health and well-being of students. This study therefore aims to investigate the prevalence of substance use and abuse, the association between demographic and the likely protective role of psychological capital and the engagement in a health promoting lifestyle against substance use to gain a better understanding of the severity of substance use among students and possible substance use interventions for students at the University of KwaZulu-Natal in Durban, South Africa.

The study utilized a cross-sectional survey design and collected data from a convenient sample of 515 students. The survey questionnaire included demographic, Psychological Capital (PsyCap), Health Promotion Lifestyle Profile II (HPLP II) and Alcohol, Smoking and Involvement Screening Test (ASSIST) measurements. Statistical Package for Social Sciences (SPSS 22) is used to analyse the data. Frequency and descriptive statistics were used to describe and understand prevalence of alcohol and substance use. Associations between variables were explored using Pearson's and Spearman's rho correlation coefficients, chi-square, independent sample t-test and ANOVA tests were used to assess difference among demographic groups and the measures while step wise logistic regression models were fitted to determine the best predictors of risky alcohol use and smoking behaviors.

The study found that alcohol, smoking and cannabis use were as the most common substances used. Even though the life time alcohol usage (68%) and usage within the past three months (57%) was high, 17.5% of the students were found to be engaged on hazardous alcohol drinking. Male students were more at risk for risky substance use, and significantly different on smoking and cannabis use from female students. White and Coloured students were also found to be risky alcohol and smoking users. Association were found between most of the substances used. The students' general Psychological capital (PsyCap) was high, but scores were low in self-efficacy. Male students' PsyCap was significantly higher than of female students. The students'

participation in health promoting lifestyle was poor with lowest in physical activity, nutrition, health responsibility and stress management. There was a significant association between the PsyCap and HPLS. The result of Spearman rho's showed significant and negative association between male students' alcohol and smoking use in terms of PyCap and HPLS. Males and lower levels of resilience were found to be best predictors of risky alcohol use, White and Coloured race students and having poor HPLS were predictors for smoking. The study concluded that students should be made aware of the negative consequences of substance on their health and wellbeing and interventions need to be directed at enhancing resilience and engagement in more health promoting lifestyles through supportive environments and skills building opportunities.

Limitation of the study pertain to convenient sampling and the inability to generalise the findings to all students at UKZN and therefore further studies could use representative samples to generalise, and qualitative studies to deepen the understanding of PsyCap and HPLS as protective factors against alcohol and substance use.

CHAPTER ONE

INTRODUCTION

1.1 Background stats

The World Health Organization (WHO, 2014) states that alcohol is a widely used psychoactive substance with dependence-producing properties. In addition, alcohol and substance misuse are associated with serious physical and psychological consequences, as well as imply a huge social and economic burden on societies. The WHO (2014) report that alcohol consumption results in approximately 3.3 million annual deaths globally despite the fact that low risk patterns of alcohol consumption have benefits on conditions such as cardiovascular diseases. In 2012, 5.9% (7.6% for men, 4.0% for women) global mortality was associated with alcohol and is greater than, for example, the percentage of deaths from HIV/AIDS (2.8%), violence (0.9%) or tuberculosis (1.7%). It is of concern that a 50% increase was found from the previous report in 2011 (WHO, 2014).

In South Africa, alcohol use and smoking are related to increasing levels of morbidity and mortality. Several studies have found alcohol to be the most used substance among South African adolescents and adults (average use by 25% - 30%), followed by tobacco, cannabis and mandrax (Flisher, Parry, Evans, & Lombard, 2003; Pengpid, Peltzer, & van Der Heever, 2013; Pettiford et al., 2004; Reddy et al., 2010). Alcohol abuse and illegal drug use are linked to the epidemics of violence, tuberculosis and HIV/AIDS (Cooper, 2002; Hingson, 2009; Parks, 2012; Schneider, Norman, Parry, Bradshaw, & Plüddemann, 2007; Seedat, Van Niekerk, Jewkes, Suffia, & Ratele 2009; Taylor, Junabhai, Naidoo, Kleinschmidt & Diamini, 2003). Alcohol use also impacts mental health through depression and other mental disorders (Squeglia, 2012) and has negative social outcomes as mentioned above but also include academic difficulties (Hingson, 2009). The global concern about drug use and its public health dimensions have been discussed on the 9th of February 2016 by the Executive Board of the WHO to be addressed later in the Special Session of the United Nations General Assembly in April 2016 (Management of substance abuse, WHO, http://www.who.int/substance_abuse/en/).

There is a compelling evidence of a high prevalence of alcohol use among youth and more alarming among university students globally (Norman, Conner & Stride, 2012; Palmer, Kilmer, Ball & Larimer, 2010; Wicki, Kuntsche & Gmel, 2010). The South African university students are not different from other students around the globe (Kyei & Ramagona, 2013; Pengpid, Peltzer & Van

Der Heever, 2013; Young & Klerk, 2008, 2010). It is therefore important to identify psychosocial and behavioural protective factors that may decrease the likelihood of substances use behaviours with detrimental consequences on the health and well-being of students. In addition, better understandings of protective factors may inform interventions to reduce morbidity and mortality in later years that are associated with alcohol and substance use patterns established during youth. This study therefore seek to investigate demographic and psychosocial and behavioural determinates of alcohol and other substances use behaviours among South African university students which have not been given adequate attention as most studies focused on determining the prevalence of alcohol and substance use among youth.

The age at which students enter university (most probably 18-24 for undergraduate students) is a critical stage as students experience greater independence and freedom from parental regulations and intimate communities for the first time (Rozmus, Evans, Wysochansky, & Mixon, 2005; Windle, 2003). It is also likely to be a challenging time as students' responsibilities increase e.g. students have to decide on their own and find a balance between the increasing demands of academic work and social relationships and interactions (Laska, Pasch, Lust, Story, & Ehlinger, 2009). It is also a time in which many students may start and continue with health risk practices that could be lasting as alcohol and substance use are among the predominant risk behaviours students engaged in and this is also linked to unprotected sex, violence and injuries.

Young and Klerk (2008) indicted that almost half of all the students at Rhodes University in South Africa were involved in unsafe alcohol use. Young and Klerk (2010) repeated their study in the same university where students living in residences reported an increased prevalence of 59% for unsafe alcohol consumption. Similarly, another South African study by Kyei and Ramagona (2013), found that 49% of university students engaged in unsafe alcohol use.

Among university students, alcohol use seems to be motivated by socialising, the need for a sense of belonging, and peer pressure as "fitting in" with the group become important (Borsari & Carey, 2006). Perceptions and judgement of self (Helmer et al., 2014), social anxiety and individual's skills deficiency in coping (Buckner et al., 2008) have been risk factors for heavy drinking. Generally, alcohol use has been related to stress as people tend to drink when emotionally down and disturbed e.g. feeling stressed, anxious, angry and sad (Armeli, Tennen, Affleck, & Kranzler, 2000; Backer-Fulghum, Patock-Peckham, King, Roufa, & Hagen, 2012). Peltzer, Malaka and Phasawa (2001) reported significant positive associations between heavy alcohol consumption and anxiety and

depression among South African university students. Wild, Flisher, Bhana and Lombard (2004) found among South Africa adolescents that alcohol use, smoking and other drugs were associated with lower self-esteem. The clustering effect of risky health behaviours is evident as substance use may increase the likelihood of unprotected sexual behaviour, reckless driving, violence etc. as mentioned above and discussed in more detailed in the next chapter.

Against this background, it can be argued that should students have adequate inner resources e.g. higher level of psychological capital (PsyCap) and a health promoting lifestyle (HPLS), they may be less likely to abuse alcohol and substances or engage in other health risk behaviours. Psychological capital refer to inner resources to draw from in troubled times and comprise of self-efficacy (confidence and ability to attain desired change), optimism (positive attribution of being successful), hope (determination to achieve goals) and resilience (bouncing back from hardship and challenges) (Luthans, Youssef & Avolio , 2007). A health promotion lifestyle is a reflection of multidimensional health promoting motivations, approaches and views that motivate the engagement in enhancing thinking and behaviours linked to health and wellbeing e.g. physical health, self-actualization and fulfilment of the individual (Walker, Sechrist & Pender, 1995, 1987). The health promoting life style inventory has six components namely; spiritual growth, interpersonal relationships, stress management, health responsibility, physical activity and balanced nutrition.

There seems however to be a lack of detailed information regarding the association between available psychological resources and health promoting lifestyle behaviours among students in Institutions of Higher Learning (IHL) to inform targeted health promoting interventions directed at students. This topic has not received much attention in South African literature. Psychological capital and the practice of a health promoting lifestyle may be argued to be protective against substance use and abuse among students. In this study, the substances of interest include alcohol use but also the use of other substances e.g. tobacco, cannabis, cocaine, heroin as well as “whonga”, common in KwaZulu-Natal.

To sum up, risky (harmful) alcohol use and other substances use impacts health and wellbeing negatively. The concern about the increasing alcohol consumption among students in particular with its negative psychosocial consequences including lack of academic progress, necessitates a better understanding of factors i.e. psychological capital and health promoting life style that may protect students from harmful behaviour.

1.2 Research aim

The aim of this study was to gain a better understanding of the prevalence of alcohol and substance use as well as to explore the protective role of psychological capital and a health promoting lifestyle against substance use among students at the University of KwaZulu-Natal in Durban, South Africa.

1.2.1 Research objectives:

- To determine prevalence and patterns of substances use among university students.
- To investigate the association of alcohol and substance use, psychological capital and a health promoting life style.
- To examine demographic, psychosocial and health promoting behaviors as predictors of alcohol and substance use among university students.

1.2.2 Research Questions

- What is the prevalence of alcohol and other substances use among university students in South Africa?
- What are the relationships between alcohol and substance use, psychological capital and health promoting lifestyles among university students in South Africa?
- What are the protective psychosocial and health promoting behavioral predictors of alcohol use and tobacco use (smoking) among university students in South Africa?

1.3 Ethical Consideration

Ethical approval for the study was obtained from the Human and Social Sciences Ethics Committee of University of KwaZulu-Natal (Protocol reference number is HSS/0880/015M). Detailed information about the ethical procedures followed in the study will be discussed in the Methodology chapter.

1.4 Overview of the Chapters

Chapter One – Introduction

The first chapter addressed the background and rational of the study. The research gap was outlined as little information exist about the likely protective role of psychological capital and a health

promoting lifestyle in substance use behaviours among students. The chapter is concluded by the research aims and objectives.

Chapter Two – Literature Review and theoretical frame work

The chapter engaged with relevant literature for the study focusing on the prevalence of alcohol use and other substance use particularly among university students. Substance use is conceptualised within a framework of psycho-social and health risk behaviours. The PsyCap and Health promotion Lifestyle Profile (HPLP II) and their components are also outlined followed by the theoretical frame work, namely the wellness model.

Chapter Three – Research Methodology

In chapter three, the research methodology is presented and includes the research design and paradigm, sampling method, research instrument, data collection procedures and the ethical considerations of the study as well as the analyses and statistical techniques used.

Chapter Four – Results

Results from all the statistical analyses techniques utilized in this study are presented in this chapter. First a description of the demographic characteristics of the sample is followed by psychometric properties of the measurements i.e. Psychological Capital and Health Promotion Lifestyle Profile (HPLP II) and the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). The results of the descriptive analysis (e.g. frequency, mean, standard deviation, skewness etc.) are presented. The results of alcohol and substance use prevalence among students, and non-parametric tests to assess demographic difference for alcohol and substances use by gender, age and race were outlined. Correlation analysis e.g. Pearson's and Spearman's (rho) correlation coefficients between the measurements and substance use are presented. The results of the logistic regression models fitted to determine the best predictors (demographic factors, psychological capital and health promoting lifestyle) for alcohol and smoking concluded the chapter.

Chapter Five – Discussion of Results

In the fifth chapter, the results are discussed in relation to the literature reviewed and the theoretical frame work. Alcohol and substance use prevalence results are compared with previous South African and other studies, students' PsyCap and HPLS results and their implications are discussed followed by the best predictors of alcohol use and smoking behaviour among students.

Chapter Six – Conclusion, Limitation and Recommendations

Lastly, conclusions of the study are presented, followed by the limitations of the study and finally recommendations for interventions and further study are presented.

1.5 Chapter summary

In this chapter, the rationale for the study is outlined using relevant literature on the prevalence of alcohol and substance use among university students and their consequences. In preventing and reducing the negative effects of alcohol and substance use, the role of protective factors such as psychological capital and health promoting lifestyle (PsyCap and HPLS) are argued. Better insight into these protective factors could play an important role when informing health promoting intervention for students. Lastly, the aim of the study, objectives and research questions are presented followed by an overview of the study chapters.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMWORK

2.1 Introduction

This chapter consists of two sections; the first section provide a review of the literature on alcohol and substance use prevalence in South African, and more specifically, alcohol and substance use among South African university students. This is followed by a discussion on health risk behaviors, an explanation of the etiology of health risk behaviors as well as psychosocial determinants of alcohol use and general health risk behavior among youth. Psychological Capital (PsyCap) and health promoting lifestyle (HPLS) are both discussed in relation to alcohol use and health risk behavior. An emphasis was placed on the protective effect of the psychosocial and life style orientation factors. The second section in this chapter refers to the theoretical frame work of the study namely the wellness model.

2.2. Prevalence of alcohol and substance use among South Africans

Alcohol and substance use prevalence remains high among the youth in South Africa and especially among university students. From a general house hold survey, Van Heerden et al., (2009) found high prevalence of alcohol use (38.7%) followed by tobacco (30%), cannabis (8.2%) and the use of other substances (2%). Similarly, previous studies (e.g. Flisher et al., 2003; Pengpid et al., 2013; Pettiford et al., 2004; Reddy et al., 2010) have found alcohol as the most often used substance among South African adolescents and adults (average use by 25%- 30%), followed by tobacco, cannabis and mandrax.

Few studies have been conducted among South African university students. In an earlier study among fist year students of the University of North in the Limpopo Province, Peltzer, Malaka and Phaswana (2001) examined the prevalence of substance use as well as the relationships between substance use and psychological variables among randomly selected 799 students aged 16 to 49 years old. Results from the study indicated that smoking cigarettes (13%) was the most commonly used substance followed by alcoholic drinks (11%), other opiate type drugs (10%), and cannabis (6%) in the past month.

Young and Klerk (2008) undertook a two year survey among students at Rhodes University commonly referred to as the “drinking university” due to the high prevalence and frequent use of alcohol by students. The researchers argued that although the prevalence was not different from other universities, alcohol consumption remained a serious problem among the students. In the first study

conducted in 2007, 2049 students participated and in 2008, 1119 students participated. The purpose of the study was to determine the prevalence and distribution of safe, hazardous, harmful and dependent drinking using the Alcohol Use Disorder Identification Tests (AUDIT) developed by the WHO which categorise drinking patterns as hazardous drinking (cut-off scores of 8-15), harmful drinking (scores of 16-19), and alcohol dependence (scores of 20-40) (WHO, 2001). The substance use prevalence was similar for both years, where half of the students who completed the questionnaire exceed the clinical cut-off score for safe drinking (eight), indicating they were at risk for alcohol drinking. In 2007, 29.4% females and 37% males were classified as hazardous drinkers, 6.3% females and 11.8% males as harmful drinkers, and 6.8% females and 14.1% males were alcohol dependent. Similarly, in 2008, females (29.8%, 6.2%, 5.9%) and males (38.3%, 9.9% and 13.3%) were categorised as hazardous, harmful and alcohol dependent respectively.

In the same South African University, Young and Mayson (2010) studied the drinking norms of students living in the university's residences. The study indicated that 42.1% of the sample drink safely (women = 42.1% and men = 42.2%) and a more compelling and alarming finding from the research was that 57.9% of the sample of residence students drank at least hazardously.

In a more recent cross sectional study by Pengpid, Peltzer, and van Der Heever (2013) among a sample of 722 undergraduate public university students living in residences; a lower alcohol use prevalence rate was found than reported at Rhodes University. It was reported that 22.2% of the university students (Males = 23.1% and Females = 7.2%), were hazardous or harmful drinkers (using a cut-off, 8-9), while using a cut-off, 20 and more 9.2% male students and 1.3% female students classified as probable alcohol dependent. Regarding smoking and cannabis use among the university students, 14.2% and 11.6% were current (past month) smoking and cannabis users respectively (Pengpid et al., 2013). A study conducted among students of the University of Venda (Kyei & Ramagoma, 2013), indicated a higher prevalence rate among a comparatively smaller sample of students (N =209), where over 65% of the students use alcohol of which 49% of those students abuse it.

The above mentioned studies, even though few, showed discrepancy regarding the alcohol prevalence rate among students at South African universities; it was very high at Rhodes University, with a rate of more than 57% at least classified as hazardous drinkers (Young & Mayson, 2010), at Venda University, 49% reported alcohol abuse (Kyei & Ramagoma, 2013), and a much lower rate of abuse was found at the University of Limpopo (22%) (Pengpid et al., 2013). These rates are much higher than what was reported in an earlier study, where 11% of students at the University of the

North (Peltzer et al., 2001) were drinking hazardously. Currently, no literature offers a discussion on the possible reasons for these differences across university students. However, the likelihood of disposable income might play a role among students in different universities.

Furthermore, several other studies on the African continent indicated high prevalence rates of alcohol and substance use among university students. Atwoli, Mungla, Ndung'u, Kinoti, and Ogot (2011) found a life time prevalence rate of 51.9% for alcohol and 42.8% for tobacco use among students at the University of Kenya. In a recent study in Nigeria, prevalence for alcohol use in the past month was found to be 49.1% among males and 24.3% among females (Abayomi, Onifade, Adelufosi, & Akinhanmi, 2013). Zverev (2008) found a harmful and hazardous drinking prevalence of 54.1% among males and 16.5% among female university students in Malawi. A study among Ethiopian university students found that current prevalence rates for alcohol drinking was 32.8%, cigarette smoking 9.3% and khat chewing (chewing tobacco) was 27.9% (Gebreslassie, Feleke & Meles, 2013).

Studies from national surveys in South Africa have reported lower substance use prevalence among the general population, even though these rates are alarming, than found among university students. This confirms the general high norm of substance use among university students. Nationwide prevalence of current alcohol use (past week or past month) are similar across different representative and population based surveys as they fluctuate between 20-30% from 1998 through 2011. For example, the Demographic and Health Survey found a prevalence of 28% and 20% for the years 1998 and 2003 respectively (DHS, 1998; DHS 2003); the South Africa World Health Survey (WHS, 2003) reported a rate of 29.9%. The South African National HIV prevalence, Behaviour and Communication Survey of 2005 found a prevalence of 24.5% (Peltzer, 2009) while the survey in 2008 reported a prevalence of 27.7% [alcohol use in past months for males (41.5%) and (17.1%) for females] (Peltzer, Davids and Njuho, 2011). Concerning is that the WHO reported that South Africans have among the highest per capital alcohol consumption rates in the world and also scored a four out of five for high risk drinking patterns (WHO, 2014).

In the first national South African Youth Risk and Behaviour Survey it was reported that 32.8% of secondary school learners used alcohol (Reddy et al., 2003). In the follow-up survey in 2008, it was found that 49.6% of learners used alcohol, followed by cannabis (12.8%), heroin (11.2%), cocaine (6.4%), and mandrax (6%) (Reddy et al., 2010).

2.2.1 Drinking Patterns

As previously stated, several kinds of drinking patterns have been identified, such as those stipulated by the World Health Organization (WHO, 2001), where alcohol drinking is categorized as safe, hazardous, harmful and dependent (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). Each category differs by the quantity of alcohol intake and is related to the consequences; for example hazardous drinking puts individual at risk for negative health effects due the amount or pattern of alcohol they consume. If alcohol consumption is likely to result in physical and psychological harm, it is called harmful drinking (Reid, Fiellin & O’Conner, 1999). The International Classification for Diseases (ICD) defines dependent drinking as a cluster of symptoms, including; a strong desire to have alcohol, reduced physiological withdrawal during alcohol consumption, and greater tolerance for alcohol and a loss of interest in alternative pleasures (WHO, 2007). Another kind of harmful risky alcohol consumption has been conceptualised as “Binge drinking” that is drinking five or more alcoholic beverages in a single occasion for men, and four or more alcoholic beverages for women (Freeborn, Polen, Hollis, & Senft, 2000; WHO, 2004).

As in many developing sub regions, South Africa is also characterised as having hazardous drinking patterns (WHO, 2002). This is supported by national surveys that report prevalence of hazardous or harmful alcohol drinking among the population of South Africa. The DHS reported 17.2% of the population as hazardous or harmful alcohol users in 1998, but this rate decreased in 2003 to 13.7%. Furthermore a lower level of hazardous or harmful drinking of 6.2% was reported in SABSSM II in 2005. While, Peltzer et al. (2011) reported a 9% overall prevalence of hazardous and harmful drinking in a national survey study, but the prevalence for hazardous and harmful drinking was very high among current drinkers - 31.5%. It was particularly the younger age group of 20-24 years old who engaged in the highest levels of hazardous or harmful drinking (12.6%) as well as engaged in binge drinking (12.5%). In terms of binge drinking, other surveys have found prevalence of 7.4% (SABSSM II of 2005) and 10.8% (WHO 2003). In the SABSSM II 2005, binge drinking among male Coloured (23%) was significantly higher than the other ethnic groups, and it was 16% among white race followed by Black African (13%) and Indian/Asian (7%) (Peltzer & Ramlagan, 2009).

When considering the youth survey, it seems that alcohol use at a university level may already have been established at school level. South African studies reported a high percentage of students involved in alcohol and substance use during their high school years (Ghuman, Meyer-Weitz & Knight, 2013; Peltzer & Ramlagan, 2009; Reddy et al., 2007; Reddy et al., 2010). Reddy et al. (2010) reported from the National Youth Risk Behaviour Survey that 59% of grade 11 learners, 54.9% grade

10 and 38.7% of grade 8 learners have ever used alcohol. Flisher et al. (2003) found in a study among 2779 high school students in Cape Town that alcohol use in the past month to be (31%), tobacco (27%), and cannabis (7%). The survey also reported the younger age group (13 and younger) had a lower prevalence of ever using alcohol (38.4% of learners) than the older age group (16 and older) with a rate of 53% (Flisher et al., 2003). Over all 28.5% of the school going adolescents were binge drinkers, significantly higher among male students (33.5%) than female students (23.7%) (Flisher et al., 2003). Similarly, in a later study, Onya, Tessler, & Flisher, (2012) found comparatively lower prevalence among rural high school students – with an overall lifetime use of alcohol among 22.4% of learners with less than 10% of the students reported ever smoking a cigarette. More recently Ghuman et al. (2012) investigated the prevalence of alcohol use among southern KwaZulu-Natal secondary school students. They found a higher life time alcohol use prevalence of 53.8% among learners, for alcohol use in the previous month a rate of 40.8% and 31.8% of learners reported binge drinking in the previous month.

Several studies revealed that adolescents who start alcohol consumption as early as 15 years of age have 5 times more probability in developing alcohol dependence in later stages than those adolescents who do not drink before the age of 21 (National Survey on Drug Use and Health, 2004; Bonnie & O'Connell, 2004). This was supported in a study by Hingson, Zha and Weitzman (2009) that found an association between adolescents' early and middle stage alcohol use and the probability of developing alcohol problem in later life.

The WHO (2011) highlight that alcohol is a key contributing factor to death, disease and injury globally and is responsible for almost 4% of global mortality. Alcohol use accounts for 7% of the deaths in South Africa due to cancers, cardiovascular diseases, injuries (44% traffic injuries) and violence including homicides (Schneider, Norman, Parry, Bradshaw, Plüddemann, 2007). Alcohol is also related to immediate health problems such as high-risk sexual behavior (Parks, 2012; Cooper, 2002), depression, and mental disorders (Squeglia, 2012), as well as other social outcomes such as academic difficulties (Hingson, 2009).

2.3. Health Risk behaviours (HRB)

Alcohol and substance use are among the risk behaviours (unprotected sex, drunk-driving, physical inactivity, unbalance diet etc.) that result in massive adverse health and wellbeing outcomes that are preventable through adhering to a health promoting life style or behaviour change efforts to reduce risky substance use behaviours.

The WHO (1998) health promotion glossary defines health risk behaviour as “specific forms of behaviours which are proven to be associated with increased susceptibility to a specific disease or ill-health” (p. 18). Other scholars, such as Keeler and Kaiser (2010) have defined HRB as an activity that results in adverse health consequences. Steptoe and Wardle (2004) also defined HRB as an activity that is carried-out consistently by people that negatively affects their health and increase disease or injury. These definitions underscore the adverse health effect of activities such as alcohol misuse, unprotected sexual activity, unhealthy eating, drunk-driving and physical inactivity, that is carried out frequently and irresponsibly by individuals.

2.3.1 Health risk behaviour clustering

Another important aspect in the literature pertaining to risk behaviours are the co-occurrence of risk behaviours. Individuals who drink alcohol are more likely to smoke, use illicit substances or engage in unplanned and unprotected sex (Gebreslassie et al., 2013) that multiplies the consequences of the risk. For example, a strong association was found between alcohol use and cigarette smoking among Ethiopian university students (Gebreslassie et al., 2013). Similarly, Tavoracci, Ladner, Grigioni, Richard, Villet and Dechelotte (2013) found a positive relationship between perceived stress and new risk behaviours like eating disorder and cyber addiction in addition to strong association between perceived stress and alcohol misuse among France university students. Among South African university students, cannabis use was found to be associated with hazardous or harmful alcohol use (Pengpid et al., 2013), but there was no association between tobacco and hazardous alcohol use.

As mentioned above, when under the influence of alcohol, young people are more likely to engage in high risk behaviour, such as unprotected sex (Pretorius & Rajmakers, 2006). Alcohol reduces the judgment and performance of people when engaging in activities that require concentration, quick reaction, and precise actions as it removes inhibitions and prompts risky sexual behaviours (Shobo, 2007). A recent study among UKZN students showed that more than 46% of the respondents younger than 30 years, reported alcohol use before their last sex while only 8% (30 years and older) reported alcohol use before sex (Mutinta, Govender, Gow & George, 2013). The study showed that students who reported alcohol use in the last 30 days were more likely in all cases to have engaged twice or more in the risky sexual practices (Mutinta et al., 2013).

In order to explain the co-occurrence of risk behaviours, Laska et al. (2009), in their study with US undergraduate students, used latent class analysis¹ to group participants' results based on risk behaviours namely - tobacco, alcohol use and risky sexual behaviour - and other known life style characters (diet, physical activity). Among the 68% of total female participants (from sample of 2026 students), 40% were grouped as having a “poor life style and low risk”. These participants have the highest likely of: not exercising, having poor diets and having poor sleep habits, however they are unlikely to engage in other risk behaviours. In the second class namely the group of “high risk” – 23% of female participants had high probability of smoking, binge drinking, intoxicated sex, and drunk driving, in addition to poor fruit and vegetable consumption as well as having inadequate sleep (Laska et al. 2009).

The first class of men consisting of 38% of the total sample namely having a “poor lifestyle, low risk” was characterised by poor diet and a lack of physical activity as well as low alcohol use, risky sexual behaviours, in addition to poor stress management and insufficient sleep. This class represents only 9% from the total male participants of 38%. However, the second class was represented by 36% for the “higher risk behaviour” characterised by smoking, alcohol drinking, intoxicated sex and drunk driving, notably with a 95% probability of binge drinking. Students were also classified in third group as “moderate lifestyle, low risk” and in the fourth group as “health conscious”. From this study Laska et al. (2009) concluded that approximately one out of four females and one out of three males to be in the high risk groups, showing higher risk for health compromising behaviours.

2.4 Psychosocial and contextual determinants of health risk behaviours

But, why do individuals engage in risk behaviour that put their health and wellbeing at risk? Factors have been identified that exacerbate as well as protect against risk behaviours; these include biological factors i.e. genetic predisposition for addictive behaviours, individual, interpersonal and contextual (socio-economic and/or environmental factors). However, within the health promotion framework, risk behaviour could be a possible response or mechanism of coping from stressful living conditions (WHO, 1998). The interaction between protective and risk factors determine the level of risk taking by adolescents and youth (Jessor, 1991). For example, a risk factor for a child could be a single-parent, while a protective factor could be a supportive parenting style that decreases the likelihood of engaging in risk behaviours (Gifford-Smith & Brownell, 2003). In a study conducted by

¹ Latent class analysis is a statistical tool used to identify homogeneous, mutually exclusive groups (or “classes”) that exist within a heterogeneous population (Laska et al., 2009).

Zweig, Phillips, and Lindberg (2002), students in the lowest risk profiles scored higher on protective factors, while those scored higher on vulnerability factors were found to have a high risk profile.

To understand more clearly why youth develop health risk behaviours, a recently developed Integrative Model of Adolescent Health Risk Behaviour (IMAHRB) provides us with an ecological perspective on the issue. After an extensive review of the literature, Keeler and Kaiser (2010) proposed the IMAHRB as a way nurses could understand what influences adolescents to either engage in health risk behaviour or refrain from these behaviours. They suggested mediators – that are “protective” and “escalatory factors”. The protective factors discourage the engagement in risk behaviours while the escalatory factors encourage the engagement in risk behaviours. These factors are organised across intrapersonal, interpersonal and cultural and environmental levels, each comprised of multiple factors that could possibly encourage or discourage involvement in risk behaviours such as alcohol use (Keeler & Kaiser, 2010).

Intrapersonal factors include the physical self, genetics, pubertal development, mental capabilities, gender, and personality traits and affect, those that are internal and more innate within the person as well as the manifestation of them (Keeler & Kaiser, 2010). Interpersonal factors include relationships that may result in various levels of support or removal of support as well as undue peer pressure that may result in risk behaviours. Support may include monitoring (Jacobson & Crockett, 2000) and communication (Eisneberg, Seiving, & Bearinger, 2006). Both intrapersonal and interpersonal factors interact with the external or contextual conditions i.e. cultural and/or environmental aspects. These aspects may include traditions, socioeconomic status, family structure, ethnic value, and the influence of media and neighbourhood characteristics (Keeler & Kaiser, 2010). The direct and interaction effects of all these factors impact behaviours. The model further suggests the influence of contextual stimuli for the engagement in or avoidance of risk situations that asks for immediate decision making in this context (Keeler & Kaiser, 2010). It is also argued that while emotions such as fear, anger, and optimism may have immediate influences on a decision, the interaction between the protective and escalatory factors play a central role in decision making. This model proposed that the more protective factors available to individuals, the greater the ability to make more appropriate and mature judgments, while the presence of more escalatory factors will inhibit individuals from sound judgements regarding risk behaviours (Keeler & Kaiser, 2010).

Many studies reveal similar findings, where various psycho-social, economic and contextual factors have been associated with alcohol use among young people. Studies show that substance use by the

parent(s) serves as a behavioral model and predicts adolescents' alcohol use (Ghumaz et al., 2012) and drug use (Brook, Brook, Richter, & Whiteman, 2003). Another South African study by Panday, Reddy, Ruiter, Bergström, and De Vries (2007) found that depressive mood predicts smoking among Black and Colored youth. Fernander et al.'s (2006) findings in a school based sample in Cape Town, showed an association between tobacco use among female adolescents and depression, but not among males. However, another South African study by Wild et al., (2004) reported an association between lower self-esteem and smoking, alcohol and other drug use among both male and female adolescents. In a recent study, Brook, Rubenstone, Zhang Morojele, Brook & Brook (2011) showed a negative association between well-being and substance use among adolescents. Similarly, Fernander et al. (2006) found a positive relationship between perceptions of lower well-being i.e. depression, low self-esteem, or poor general health with alcohol use and smoking.

Other factors, such as low socioeconomic status, environmental and school based stressors, substance availability have also been found to be associated to both alcohol use and/or increased likelihood of substance use (Boardman, Finch, Ellison, Williams, Jackson, & Boardman, 2001; Kalichman et al., 2006; Thomas et al., 1999). The influence of peers often lead to substance use (Allen, Chango, Szwed, Schad & Marston, 2012; Hendricks, Savahl & Florence, 2015; Peltzer et al., 2009). Additionally, in South Africa, alcohol use has been argued to be rooted in the country's socio-political history, especially in the Western Cape (Flisher et al., 2003).

As mentioned in earlier, alcohol use among university students seems to be motivated by socialising, a need to have a sense of belonging, and "fitting in" with the group (Borsari & Carey, 2006). In the USA, Helmer et al., (2014) found that college alcohol drinking was linked to norms of perception regarding peers' alcohol use patterns i.e. quantity and frequency of drinking (descriptive norms) and students perceived attitude about drinking held by important others, injunctive norms (Helmer et al., 2014) rather than "real" drinking behaviours. Buckner et al. (2008) indicated that social anxiety has been a risk factor for heavy drinking, and that an individual's deficiency in coping skills increases the likelihood of alcohol and other substance use (Buckner et al. 2008). Peltzer and his colleagues (2001) found a significant association between mental health problems such as anxiety and depression and alcohol and cannabis use among South African university students.

Studies among university students have found variations in alcohol use due to demographic differences i.e. race, age groups, male gender, and place of staying (Abayomi et al., 2013; Gebreslassie et al., 2013; Wicki, Kuntshe & Gmel, 2010; Young and Klerk, 2012). Social events and gathering, parental status (education and alcohol use), and friends' alcohol use predicted the extent of

students' alcohol use (Abayomi et al., 2013; Gebreslassie et al., 2013). Differences between cultures and across countries were noted. For example, in an earlier study, Peltzer et al. (2002) showed a relationship between minor psychological morbidity, perceived stress and sensation seeking with high consumption of alcohol among South Africa university students. Among French university students, a positive relationship between female gender and regular smoking, alcohol abuse problems, cyber addiction and eating disorders were reported (Tavolacci, 2013).

Self-esteem was indirectly related to alcohol use as people with a low self-esteem are generally more vulnerable, anxious, lonely, depressed and stressed (Leary, Schreindorger, & Haupt, 2004; Ross, Zeller, Srisaeng, Yimmee, Somchid & Sawatphanit, 2005) and therefore more likely to use alcohol. On the contrary, Neumann, Leffingwell, Wagner, Mignogna, & Mignogna (2009) found individuals with higher levels of self-esteem more likely to consume more alcohol, because information regarding the negative consequences of alcohol use were not been taken seriously i.e. they may perceive themselves as less vulnerable as others for the negative consequences.

2.5 Health Promoting Behaviors

In contrast to engaging in risky health related behaviours like alcohol and other substance use, behaviours that promote health, ensures young adults of optimal health and personal development, reinforce their ability to adapt and endure life and university stressors (Tavilacce et al., 2013; Chiauzzi, Green, Lird, Thum, & Goldstein, 2005). Regular physical activity is a moderator of stress levels (Chiauzii et al., 2005). Positive associations between physical activity and a longer life expectancy and quality of life were already reported in much earlier studies (Lawrence & Schank, 1993). Psychological benefits such as decreased symptoms of depression, improving of the self-concept, and improving self-esteem were also found to be associated with physical activity (Garcia, Broda, Frenn, Coviak, Pender & Ronis, 1995).

However, studies found lower rates of health promoting activities among South African and other university students. Peltzer (2002) utilized the HPLP to assess the extent of a health promoting lifestyle among secondary school and university students, and reported that secondary school students engaged in more health-promoting lifestyles than university students (Peltzer, 2002). He concluded that university students seemed to be engaging in fewer health-promoting lifestyle behaviours and that those who did, tended to be more stable and less likely to have a neurotic personality style (Peltzer 2002). In the US, Rozmus et al., (2005), used the HPLP II, and indicated that college students engaged in behaviours that increased their risk for serious health problems.

In this study it was hypothesised that personal resources mainly psychological capital (PsyCap) implying self-efficacy, hope, resilience and optimism, and the engagement in a health promotion life style can be viewed as protective against health risk behaviours. In the following section, an introduction to PsyCap and a health promoting lifestyle (measured through HPLP II) is outlined.

2.6. Psychological Capital and a health promoting lifestyle

The role of psychological capital (i.e. self-efficacy, resilience, hope and optimism) and a health promoting lifestyle in relation to substance use and in particular to alcohol use will be discussed below.

2.6.1 Psychological capital (PsyCap)

Psychological Capital (PsyCap) developed from positive psychological constructs that includes self-efficacy, resilience, hope and optimism has been developed by Luthans & Youssef (2004) with particular reference to the workplace. Luthans, Avolio, Avey and Norman (2007) defined PsyCap as “an individual’s positive psychological state of development” (p. 542). The definition for the constructs are as follow: Self-efficacy is viewed as having confidence and ability to attain desired change; Resilience refers to the ability to bounce back from adverse events, hardship and challenges and attain success; Hope is a positive motivational state linked to agency and action towards success in the present and future, and Optimism is linked to one’s explanatory style about good and bad events where a permanent attribution is made to good events and a temporary attribution to bad events, as well as having a focus on goals and the determination to achieve these goals.

These positive psychological constructs have been studied individually for their likely impact on positive organisational behaviour (see Luthans, Youssef, et al., 2007 for a full review of these studies), more attention has been given to the higher order inner-resource construct namely, Psychological Capital, or PsyCap. In its simplest form, PsyCap can be understood as a state-like positive psychological construct i.e. “*who you are*” and “*what you can become in terms of positive development*” (Luthans, Youssef and Avolio, 2007). This therefore implies that PsyCap as a construct is fluid and able to develop through gratitude, courage, forgiveness, rather than being fixed. However, the trait-like character of the construct is relatively stable and difficult to change as it refers to personality factors and strengths (Luthans, Youssef and Avolio, 2007). The development of positive psychological capital, like human and social capital, is considered to be a worthwhile investment due to its consequences for individuals’ personal life and the work environment (Luthans & Youssef, 2004). PsyCap is popular in organizational behaviour where it was originally intended to

refer to individuals' positive psychological development, attitude, work performance and productivity, better customer service, and more employee retention (Luthans & Youssef, 2004).

The application of PsyCap in health related behaviour such as substance use behaviour is under explored. However, when considering the psycho-social determinants of substance use behaviour as outlined above e.g. self-efficacy (likely linked to self-esteem) and mental states, it is possible to argue for the value of PsyCap as inner resources that may impact substance use and other health related behaviours. Recently Liu, Xu, Wu, Yang & Wang (2015) investigated the protective power of the four constructs of PsyCap in smoking among Chinese mining workers. The findings suggested some mixed results between some components of PsyCap and smoking behaviour in the occupational context. There was positive association between resilience and smoking behaviour of underground coal miners, whereas optimism was found to have a protective role in reducing smoking behaviour (Liu et al., 2015).

A discussion of each of the constructs in relation to health risk behaviours with emphasis on alcohol and other substance use is presented below.

Self-efficacy is defined as the "individual's conviction... about his or her abilities to mobilize the motivation, cognitive resources, and courses of action needed to successfully execute a specific task within a given context" (Stajkovic & Luthans, 1998b, p. 66). This construct of PsyCap is well researched and is theorised by the famous psychologist Albert Bandura, and has been widely applied in both positive organizational behaviour and health behaviour. Bandura (1996) defined self-efficacy as individuals' self-confidence on their competence and effectiveness to perform a specific behaviour successfully. According to Bandura (1986), health behaviour and health outcomes are a function of efficacy and outcome expectations. An efficacy expectation, or "perceived self-efficacy," is an assessment of one's capacity to successfully perform a particular behaviour. Outcome expectations relate to beliefs that one's behaviour will result in a desired outcome. People's self-efficacy differ and is not stable characteristics, as people's ability and confidence to do a particular task may differ across behaviours and contexts. For example, someone may have high confidence in being able to accomplish continuous physical exercises, but his perceived self-efficacy for quitting alcohol binge drinking may be low.

The role of self-efficacy in studies linked to treating addiction and risk behaviours is well established. There are many studies that found individuals who have confidence in their ability to perform certain health behaviour are more likely to perform these health behaviours (Bandura 1986, 1992; Gwaltney, Metrik, Kahler, & Shiffman, 2005). Higher levels of self-efficacy was found to be associated with

health promoting lifestyles such as seeking preventive care, more exercising, quitting smoking, as well as having favourable perceptions of their health status (Bandura 1986; Maisto, Connors & Zywiak, 2000). In a study by Gwaltney et al. (2005), abstinence self-efficacy was assessed among smokers trying to quit smoking. Self-efficacy was reported to increase as abstinence was maintained while a decrease in self-efficacy on a particular day, predicted a relapse event. The study established that the daily fluctuation of self-efficacy within individuals predicts their daily behaviours (Gwaltney et al., 2005).

Similarly, Oei and Morawsk (2004) found in a study among problem drinkers found that the quantity of alcohol consumed, relapse and post treatment recovery was determined by the ability of individuals to resist or refuse alcohol drinking that is known as drinking refusal self-efficacy (DRSE). Similarly, in a study conducted among alcoholics in an outpatient treatment centre, Allsop, Saunders, and Phillips (2000) found that the duration of abstinence is predicted by post-treatment self-efficacy of the patients i.e. a positive association between clients' confidence in their ability to resist drinking and duration of abstinence was reported. Similarly, Romo et al. (2009) reported high confidence predicts abstinence at least for 6 months.

Hope – In developing the hope scale, Snyder et al. (1996) defined it as a cognitive capability that includes agency and pathways in reaching goals. It therefore refers to a motivational state that includes a belief in one's capacity to initiate and sustain actions, as well as generate different routes to achieve intended goals. Snyder (2000) referred in this regard to the integration of the three components of hope namely agency, pathways and goals. He also reported that there were positive associations between hope and academic achievement, athletics and health outcomes. In a longitudinal survey, Adams, Snyder, Rand, King, Sigman and Pulvers (2002) found that individuals' with higher levels of hope were more successful than those who reported low levels of hope in an organizational context.

Higher levels of hope was positively related to self-reported health status and negatively related to body mass in a community intervention directed at improving health, body weight and hope among women of low income in North Carolina in the US (Kelsey, DeVellis, Gizlice, Ries, Barnes & Campbell, 2011). Similarly, Nollen et al. (2008) showed positive association between hope and fruit and vegetable consumption in an intervention designed to increase fruit and vegetable consumption among smokers living in public housing developments.

Resilience is seen as the ability of positive coping and adaptation when facing significant risk or adversity (Masten & Reed, 2002). Resilience is therefore seen as the process of overcoming the negative effects of risk exposure (Luthans et al., 2007), in other words, it refers to positive coping processes when adversity is experienced.

To be resilient is the ability to draw from positive available resources or promotive factors (e.g. supportive family and self-esteem) that enable positive outcomes (Beauvais & Oetting, 1999). Resilience theory emphasise the understanding of healthy development despite risk exposure. According to Fergus and Zimmerman (2005), competence, coping skills, and self-efficacy are positive assets that reside within the individual and help individuals avoid negative effects of risk. Similarly, there are resources that help individuals to overcome risk, but they are located in the social environment of the individual; they could be parental support, adult mentoring, or communities (Fergus and Zimmerman, 2005).

Sharkey, You and Schnoebelen (2008) identified personal and family assets linked to adolescent resiliency and these assets can play a role in modifying the impact of adversity and foster healthier lifestyles (Rew and Horner, 2003). For example, Zimmerman, Bingenheimer and Notaro (2002) found that parental supervision and adult role models contribute to strengthening adolescent resiliency. Mistry, McCarthy, Yancey, Lu and Patelv (2009) study findings indicted that having greater parental support, reduce the likelihood of being physically inactive, low fruit and vegetable consumption among male adolescents in California. While among females adolescents, the presence of a role model was linked to a lower likelihood of being involved in risk behaviours such as smoking, using alcohol, being physically inactive and have low fruit/vegetable consumption. However, depressiveness was found to increase the odds for health risk behaviours. Mixed results for protective resilience resources and health risk behaviour among adolescents were however found in a study by Veselska, Geckova, Orosova, Gajdosova, van Dijk, and Reijneveld (2009). They reported an association of social competence with an increased likelihood of smoking and cannabis use, but a structured lifestyle and family cohesion predicts a lower likelihood of smoking and cannabis use.

Optimism reflects generalised outcome expectations, and has been linked to many health benefits over the lifespan (Benyamini & Roziner, 2008). Seligman (1998) argued that optimistic people admit their success to internal, stable, and global attributions, while their failure is attributed to external, unstable, and specific reasons. Carver, Scheier and Segerstrom (2010) distinguished optimistic and pessimistic people, the former are persistent in trying to reach goals while the later are less persistent

and easily quit before reaching their goals. Optimism within PsyCap relates to positive outcome attributions of events that may include positive emotions and motivation (Luthans et al., 2007).

Positive outcome expectancies promote health partly through positive immune functioning and through positive lifestyle habits and adaptive coping strategies. Many researchers suggest that optimism predicts more health protective behaviours and fewer risk behaviours (Baker, 2007; Giltay et al., 2007; Steptoe, Wright, Kunz-Ebrecht & Iliffe, 2006). An earlier study among women with a family history of alcoholism found more reports of alcohol drinking problems among those who had pessimistic views than those who were optimistic (Ohannessian Hesselbrock, Tennen & Affleck, 1994). A study by Rawana and Ames (2011) among Canadian aboriginal youth found optimism to be protective against the frequency of alcohol use and extent of heavy drinking episodes.

Optimism and hope are part of Global Positive Expectancy (GPE), viewed to be health protective dispositions (Carvaja, 2012). In a longitudinal study by Carvaja (2012) the predictive value of the expectancy constructs (optimism and hope) was reported to be protective for adolescents' physical health. In the study optimism appears to be more predictive of physical activity and less so for risk behaviours. They indicated that higher initial levels of GPE among adolescents predicted lower levels of alcohol use, healthier food choices and greater physical activity over time. Among Swiss adolescent drug users, experimenters and frequent users reported lower levels of optimism and more negative feelings compared with nonusers (Schmid, 1998). Levels of optimism were found to be protective against any substance use for girls but not boys, in a longitudinal study among Australian adolescents (Patton et al., 2010).

Although PsyCap as a core construct has not been studied in assessing students' positive psychological development and its protective role in alcohol and other substance use, the different components i.e. self-efficacy, hope, resilience and optimism, have been linked to health promoting behaviours and therefore general health and wellbeing. It can therefore be argued that someone who is resilient and optimistic is unlikely to be overwhelmed by stress and use alcohol or substance as a way of coping. Similarly, those with high levels of self-efficacy would be able to resist negative peer pressure and refuse to misuse alcohol. It is therefore hypothesised that PsyCap is likely to play a protective role against alcohol use and other substance use.

2.6.2 Health promotion lifestyle (HPLS)

The quality of life individuals enjoy, greatly depends on the degree of their perception on how they influence their own health and the lifestyle they have (Duffy, 1993; Walker et al., 1988). Health promotion is defined as the process of enabling people to increase control over health determinants (individual, social, economic and political), in order to improve their health (WHO, 1986). In efforts to control the determinants of health, health promotion focuses on actions including health behaviours that are under the control of individuals and those factors mostly outside the control of individuals that include the social, economic and environmental conditions (Nutbeam, 1998). The lifestyles are mostly considered to be under the control of individuals and can be enhanced by controlling the self and adopting healthy behaviours. Healthy behaviour is defined as “any activity undertaken by an individual, regardless of actual or perceived health status, for the purpose of promoting, protecting or maintaining health” (WHO, 1998, p. 8). Thus referring to an individual’s capability in promoting a healthy life style. The foundation for a healthy lifestyle is often laid down during the youthful years as behaviour change later in life is more difficult.

The Health Promotion Lifestyle Profile (HPLP) provides multidimensional assessments of health promoting behaviours. Walker, Sechrist and Pender (1995) defined a health-promoting lifestyle as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfilment of the individual. Brief definitions of the HPLP II constructs are presented below, together with an overview of the literature in relation to risk behaviours and specifically to alcohol and substance use. Most definitions of the constructs were taken from Walker et al. (1995).

Health responsibility refers to the individual’s role in taking care of one’s health and wellbeing by being receptive to information about health and open to enhance health and wellbeing through healthy behaviour practices including seeking timely health care.

Physical activity is considered when people participated in light, moderate and vigorous activities that could be planned or accidental, and practiced consistently. Shephard (1997) stated that the underlying premise for the promotion of physical activity among youth is that it may continue to have effect throughout adulthood. It is widely believed that being physically active does not only lead to improved physical fitness, but also decreases the risk of initiating behaviours which may be detrimental to health. Youth participating in physical activity are less likely to be involved with alcohol and drug use (Aaron, Dearwater, Anderson, Olsen, Kriska & Laporte, 1995).

Several studies investigated why individuals participate in physical activity, found positive relationships between physical activity and demographic variables, more males, younger age, married, educated and employed are more engaged in physical activity than others (Downward & Rasciute, 2010; Farrell & Shields, 2002; Wu & Porell, 2000). However, contrary to the above point, other studies with college students reported risky behaviours to be strongly and positively related to students' involvement in athletics (Martens, Cox & Beck, 2003; Wilson, Pritchard & Schaffer, 2004). Especially studies focused on US college athletes, have been reporting that athletes are more involved in alcohol use more than nonathletic college students (Hildebrand, Johnson and Bogle, 2001; Wilson et al., 2004).

A cross sectional study that involved 19,298 university students from 23 countries by Haase, Steptoe, Sallis and Wardle (2004) assessed leisure-time physical activity at recommended levels of three or more times a week. Even though cultural and economic development factors play a role in obtaining varied rates of inactivity, overall physical activity was below the recommended frequency among a great number of students. More physical inactivity was reported among students from developing countries (44%) with lower inactivity in developed countries (23%), followed by 30% from Central and Eastern Europe, 39% from Mediterranean and 42% from Pacific Asian (Haase et al., 2004).

Nutrition – involves “knowledgeable selection and consumption of foods essential for sustenance, health, and well-being” (Walker, Sechrist, & Pender, 1995, p. 2). This means conscious daily choices of food following a healthy diet according to Food Guide Pyramid. Healthy food selection depends on social and economic resources as inequalities in access to healthy foods exist in accordance to socio-economic status (Drewnowski & Darmon, 2005). Unhealthy junk foods (high level of sugar and added fats) are far more affordable than are the recommended “healthful” diets that include lean meats, whole grains, and fresh vegetables and fruits (Darmon & Drewnowski, 2004; Drewnowski & Specter, 2004). They argued that junk foods with high sugar and fats that are convenient and low in cost are the primary reasons for overeating and weight gain. However, increasing consumption of fruits and vegetables, whole grains, and calcium rich foods could improve health and well-being (Darmon & Drewnowski, 2004).

Several studies found that substance use to be related to poor nutrition, physical inactivity, unhealthy weight control, and other risky behaviours (Chen, Beydoun & Wang, 2008; Neumark-Sztainer et al. 2007; Pasch, Nelson, Lytle, Moe & Perry, 2008). In the USA, many college students gain weight rapidly during their first three months on campus (Coon & Mitterer, 2007) which is associated with dependency on fatty and salty foods.

Spiritual Growth - Walker, Sechrist and Pender (1995) defined spiritual growth as the development of inner resources that can be achieved through transcending and connectedness. Through transcending inner peace, new opportunities for self-actualisation may arise. Connectedness shows feelings of wholeness, agreement and connection with the universe. As outlined by Abraham Maslow (1954), the self-actualising individual is fully functioning, autonomous, and ideologically more caring towards humans and nature. They lead more healthy lives and live in the present as opposed to the past or the future.

In a meta-analysis that investigated the relationships between spirituality and religion and health, Koenig (2012) found significant positive relationships between spirituality/religion and general wellbeing. From the total reviewed studies, 278 studies examined associations between alcohol use and abuse and religion and spirituality. Of these, 240 studies (86%) reported negative association of religiosity/spirituality with alcohol use, abuse and dependence, but 4 studies (1%) found a positive relationship. The researchers concluded that the majority of the reviewed studies reported that spirituality and religion promotes better health behaviours, and is positively associated with a health promoting lifestyle that includes physical activity and a better diet besides less alcohol and drug use, less cigarette smoking, and safer sexual practices (Koenig, 2012).

Interpersonal relationship – is defined as achieving intimacy and closeness with meaningful people through communication. Interpersonal relations involves sharing of thoughts and feelings verbally and nonverbally. This plays a critical role in positive adjustment. Researchers have found that through parent-child relationships, children learn to regulate their emotions and behaviours through responsive and reciprocal interactions with their caregiver that later translates to affective interpersonal relationships with peers and others (Dishion & Tipsord, 2011). Peer relationships may have positive outcome or place youth at risk for negative developmental outcomes (Gifford-Smith & Brownell, 2003). Many health risk behaviours such as substance use and abuse that are problematic in adulthood have their origins in earlier adolescent peer relationships (Piehler, Veronneau, & Dishion, 2012).

Parental drug use and parental child-rearing practise are highly related to adolescent drug use (Brook et al., 2006). A South African study among adolescents by Mohaso (2010) stated that adolescent peer interdependence and need for care and support force them to comply with deviant peers. Earlier, Leteka (2003) outlined the reason why adolescents drink; most drink to please their friends and to satisfy belonging needs. Interactions amongst peers may also increase anxiety in adolescents with

low self-esteem, and alcohol may be used to reduce inhibitions thereby facilitating easier interactions among peers (Piehler, et al., 2012). Academics and strained interactions and relationships were push factors for college students to be engaged in alcohol use (Houghton et al., 2012).

In contrast, protective factors (warm supportive relationships) play a protective role among youth against the engagement in risk behaviours during early age (Ward & Snow, 2010). In agreement with the above argument, De Haan and Boljevac (2009) reported that adolescents with supportive parental relationships were less likely to have tried alcohol.

Stress management occurs through the mobilization of psychological and physical resources to control or reduce tension i.e. behavioural strategies to reduce stress and improve coping skills (Coon & Mitterer, 2007). Individuals develop stress when they feel overwhelmed by the task, difficulties, and demands of life, pressure like work expectations and academic tasks (Williams & Cooper, 2002). However, people's perception of stressors determines the adopted coping style i.e. either problem or emotional based coping (Lazarus & Folkman, 1984).

Based on social learning approaches, a coping deficit model is used to explain alcohol and substance use (Bandura, 1969). The coping deficit model assumes that alcohol and substance use by people is a response to adversities (stress) and a lack of coping mechanism that does not involve alcohol (Maisto et al., 2000). This coping mechanism is called a *coping skills deficit*, and the higher the level of coping skills deficit, the higher the likelihood that people use alcohol and substances to assist them get relief from their stress (Maisto et al., 2000). Similarly, Conger's (1956) Tension Reduction Theory argued that alcohol is used to reduce stress, but its negative impact is when it leads to alcohol-related problems and develops into disorders. The theory proposes people use alcohol to escape from negative thoughts and feelings. There is wide agreement among several studies that there is positive relationship between alcohol use and stress, there is high probability that more alcohol is used when people experience anxiety, anger, and sadness (Armeli et al., 2000; Backer-Fulghum et al., 2012). Tavalacci et al., (2013) found that stress was positively associated with some alcohol disorders among university students in France. In addition, Low et al. (2012) found substance use and mental health symptoms to be associated with common stressful life events. Lipschitz, Paiva, Redding, Butterworth and Prochaska (2013) studied the role of stress management in multiple health risk behaviour with employees of a health research centre. The results indicated that employees who possess poor stress management skill, engaged in high risk behaviours, while those with effective stress management skills engaged in less risk behaviours.

Health promotion life styles have been studied in several countries. In a study among Hong Kong university students, Lee and Loke (2005) indicated that a small number of the university students participated in general health-promoting behaviours, but students health responsibility, physical activity as well as nutrition habits were particularly low (Lee & Loke, 2005). Similarly a study by Rezaei-Adaryani and Rezaei-Adaryani (2012) among Iranian nursing college students also indicated that students had a relatively poor health-promoting lifestyle with the lowest score in physical activity (Rezaei-Adaryani & Rezaei-Adaryani, 2012).

These studies findings are similar to the earlier study in South Africa among high school and university students by Peltzer (2002) and in the study among US college students by Rozmus et al (2005). Fewer health-promoting lifestyle behaviours were reported among the students particularly in relation to alcohol and substance use and risk behaviours.

2.7 Theoretical frame work – Holistic Wellness Model

2.7.1 Introduction

The study used the holistic wellness model as a theoretical framework. Wellness is the combination of environmental, physical, behavioural and psychological components (Myers et al., 2000; Witmer & Sweeney, 1992). The concept of Wellness is understood from various disciplines and can be viewed as a way of life. A definition of health serves as the foundation of wellness, or stated differently, health is central to understanding wellness. As early as 1947 the WHO defined health as “... a state of complete mental, physical, and social well-being, and not merely the absence of disease or infirmity” (WHO, 1964, Cited by Witmer & Sweeney, 2001, p. 140). Holistic wellness refers to the overall quality of life including reducing symptoms or preventing disease or promoting mental and physical health and wellbeing.

Wellness is also viewed within the positive psychological paradigm as it focuses on wellness as emotional health. Positive psychology emphasises the identifying and the nurturing of strength and building positive emotions and experiences (Seligman & Csikszentmihaly, 2000). In the following section the wheel of wellness and the different components that are relevant to the study are discussed in more detail.

2.7.2 Wheel of Wellness Model

The wellness paradigm emerged as a substitution to the illness-based medical model for treatment of mental and physical disorders. The holistic wellness model was based on individual's psychological, spiritual and bodily integration in a holistic way. Adler (1954) wrote about individual psychology and in particular, that the purpose of psychic life "is to guarantee the continued existence on this earth of the human organism, and enable him to securely accomplish his development" (p. 28). As argued by Maslow (1970), in his studies on the characteristics of a healthy person, self-actualization and the pursuit towards health is a universal human desire. Jung (1958) also referred to the instinctual need for wholeness and health, as the human psychic seeks integration. Based on these assumptions Witmer and Sweeney (1992) proposed the model of wellness and prevention over the life span which takes a multidisciplinary perspective in that it incorporates most theoretical concepts of the social sciences.

Wellness was defined as "an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable" (Dunn, 1961, p. 4). Wellness according Myers et al. (2000) involves integration of the body, mind and spirit so that the individual can fully experience the human and natural environment as a way of life, to obtain optimal health and well-being. Shortly, wellness equals to maximum health and wellbeing, interestingly Myers et al. (2000) stated every person is capable of achieving wellness.

Witmer and Sweeney (1992) and Myers, Sweeney & Witmer (2000) proposed what they named the "global village" that emphasis on ecology that involves interconnectedness of all things. Mind, body, spirit and community are the major themes of the wholeness. They developed a wheel of wellness (see Figure 1 below) with five life tasks that characterise a healthy person across the life span. According to them a healthy person is characterised by his spirituality, self- direction, work, love and friendship dimensions. Furthermore, the life task of self-direction has 12 more dimensions that characterise the individual; these are: sense of worth, sense of control, realistic beliefs, emotional awareness and coping, problem solving and creativity, sense of humour, nutrition, exercise, self-care, stress management, gender identity, and cultural identity. They also split the work life task into work and leisure. The five life tasks dynamically interact with the life forces of family, community, religion, education, government, media and business/industry. The life tasks and life forces largely impact and are impacted on by the natural global events (e.g. natural disaster) and human made global events (war).

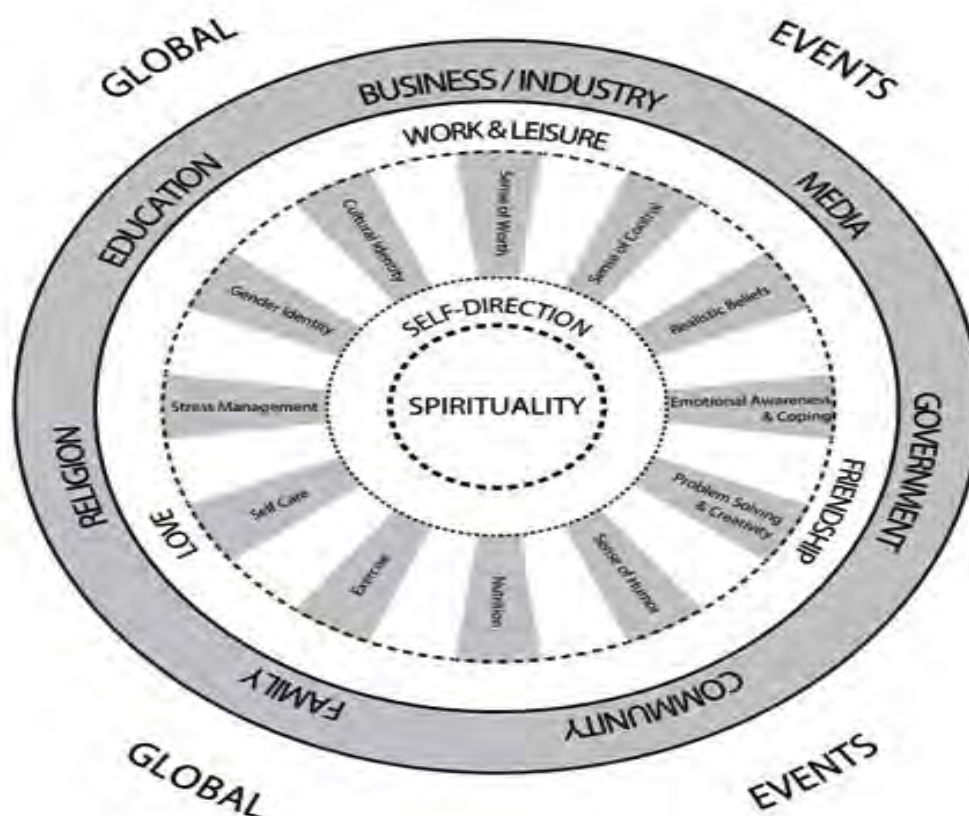


Figure 1. The Wheel of wellness from: Witmer, Sweeney and Meyer (1996).

As these life tasks are interconnected and interrelated changes in one component of wellness impact negative or positive change in another, it is important to notice that some components are significant at different points in the life span (Myers, Sweeney & Witmer, 2000). Thus, the wheel of wellness explains the totality of the person that strives toward improving quality of live through proactive and positive ways. In association with PsyCap and HPLS, a wellness model describes a person with a health promoting life style – as being in a positive state of mind that is resilient to bounce back from difficulties, optimistic about the future, motivated towards goal achievement with hope and self-confidence to start and execute positive actions for change. Further, the individual is perceived to be integrated i.e. spiritually growing toward self-actualisation, capable of relating and interacting with the environment, effectively manage stressors, takes care of his/her health by engaging in physical activity and nurturing the physical body by eating a balanced diet.

Effective health promotion interventions therefore need to have a comprehensive ‘whole person’ focus. The five life tasks of the wellness model refer to spirituality, self-direction with 12 sub-tasks, work and leisure, friendship and love, are discussed below. Relevant for the study is particularly

spirituality, and self-direction with the 12 sub-tasks and friendship, linked to PsyCap and a health promoting lifestyle.

1. **Spirituality** – Myers, Sweeney & Witmer (2000) defined spirituality as “an awareness of being or force that transcends the material aspects of life and gives a deep sense of wholeness or connectedness to the universe” (p. 251). Spirituality doesn’t only mean religiosity – that refers narrowly to the institutional beliefs and behaviours – but much more broad concepts of personal beliefs and values (Myers, Sweeney & Witmer, 2000). This life task is a centre of the wholeness model that characterises the healthy person and the source of all dimensions of wellness. Spirituality develops moral and ethical codes through religious involvement, that play a great role in the developing individual character and life style, beside its acceptable and harmonious with the supreme being-force of the universe (Witmer & Sweeney, 1992). It is characterised by oneness, purposive, optimism and values. Oneness explains the wholeness of human being asserted by the spirituality that comes from within and outside of the person.

2. **Self-direction** – is about the self and how individuals direct, regulates, and discipline themselves in a day to day life and how they pursuit lasting life goals (Hafen, Franksen, Karren, & Hooker, 1992; Pelletier, 1994). To do so self-direction involves mindful and intentional actions to achieve the life tasks and positive personality to manage adverse and stressful circumstances.

The 12 sub-tasks are briefly discussed below:

Sense of worth also mentioned as self-concept, self-esteem and self-worth – is a description and explanation about ones-self (Hattie, 1992). Many research findings suggest the importance of a sense of worth on wellness and being a healthy person. For example, in a study by Mercurio & Landry, (2008) self-objectification of US female undergraduates were explored i.e. feelings of self-worth and well-being. They found that the females’ perceptions of self-worth affected their overall life satisfaction. Similarly, Toussaint and Friedman (2009) found positive associations between people’s expression of high gratitude and positive self-evaluation and sense of self-esteem.

Sense of control explains individuals’ feelings in doing and accomplishing tasks. According to Rodin et al. (1990) a sense of control has been established as a basic element in adaptation, coping and well-being (Rodin et al., 1990; cited by Ward, 2012). Ward (2012) explained that people with a sense of control having strong beliefs that their own actions are responsible for their experiences and are less likely to belief that events in life are determined by chance, fate or other people. In his study among older adults, he reported that individuals with greater personal control and fewer perceived constraints had better health and were less likely to have functional limitations (Ward, 2012).

Realistic beliefs explain the sense of individual's information processing and perception of reality. In this sense, healthy individuals accurately process information and are capable of viewing reality as it is (Myers, Sweeney & Witmer, 2000). However, if there is a great difference between one's internal beliefs and reality the possibility for unhealthy behaviours is high.

Emotional awareness and coping – healthy people are seen as those who experience emotions (joy, anger, affection) and able to express and manage these emotions positively. Since early times, expressing emotions are well established as a treatment in psychotherapy, Symonds (1954) noted that a catharsis (purging emotions) was the most frequent cause of success in psychotherapy. Zech (2000) noted that there is general conviction that talking about emotional experiences with others is healthful and facilitates emotional recovery. A study among Dutch pupils found fewer reports of depression and physical pain among adolescents who were touched by their emotions and successfully managed them (Mavroveli, Petrides, Rieffe & Bakker, 2007). In contrast, inhibition and repression of emotions are believed to result in a maladaptive coping, and consequently ill health (Nyklicek, Vingerhoets & Denollet, 2002).

Solving problems and creativity are recognised as intellectual stimulation and are important for healthy brain function and indirectly improves one's quality of life. When people do creative work, they solve problems, accomplish different things in many ways, and learn new things, overall they produce valuable experience (Mirowsky & Ross, 2007). A study by Mirowsky and Ross (2007) found that a positive significant relationship between creativity and health.

Sense of humour has a positive relationship with psychological well-being. A recent study by Esterhuyse, Nortje, Plenaar and Beukes (2013) among South African school going adolescents assessed the correlation between cognitive flexibility and sense of humour, and reported significant positive associations between creating and expressing humour and cognitive flexibility. According to Martin (2003), a healthy sense of humour correlates positively with psychological well-being, optimism, a healthy self-image, emotional stability, high levels of extraversion and good social skills.

Nutrition – the contribution of healthy food in physical and psychological health is immense. A study by Florence, Asbridge, & Veugelers (2000) showed a link between good balanced nutrition and better academic results. However, unhealthy diet i.e. more intake of fatty foods, less fruit and vegetables and skipping breakfast often, were found to be correlated with higher level of stress among British adolescents (Cartwright, Wardle, Steggle, Simon, Croker, & Jarvis, 2003).

Exercise –Regular and relatively strenuous exercise improves physical health (Rodgers & Brawley, 1993). Among the Finish population, greater emotional stability (i.e. less depression, anger and less cynical distrust) was reported by those who exercise at least two or three times a week than those who exercising less or not at all (Hassmen, Koivula & Uutela, 2000).

Self-care includes safety habits, timely general medical check-ups and non-involvement in substance use. These refer to personal habits for taking accountability for one's wellness that requires preventive and corrective behaviour (Myers, Sweeney & Witmer, 2000). According to the Orem theory, people have a natural ability for self-care (Orem & Vardiman, 1995). The effectiveness of any health care intervention depends on positive behaviour that shows self-care such as self-examination, adhering to prescription and self-prevention habits (Ryan & Deci, 2007).

Stress management– Lazarus (1966) stated that stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well-being. As discussed above, stress is linked to mental health problems (Marin et al., 2011) and causes of death (Cohen, Janicki-Deverts & Miller, 2007). A meta-analysis study by Varvogli & Darviri (2011) identified several stress management techniques that have good results with healthy or ill people, like creating a pleasant mental state, reducing anxiety, improving attention, improving the feeling of control, empower sleep, reducing the cardiac index, lower blood pressure etc.

Gender identity is the subjective feeling and satisfaction of maleness and femaleness and is culturally constructed or defined (Myers, Sweeney & Witmer, 2000).

Cultural identity incorporates racial identity or group identity, acculturation, and an appreciation for the unique aspects of one's culture (Myers, Sweeney & Witmer, 2000). It is positively related to well-being, self-esteem, coping, sense of mastery, optimism, and resilience (Jones & Galliher, 2007; Umana-Taylor et al., 2013; Yip & Fuligni, 2002). Also, cultural identity can be used as a protective factor for substance use (Marsiglia, Kulis, Hecht, & Sills, 2004).

3. **Work and Leisure** - According to Myers, Sweeney & Witmer (2000) work and leisure frequently absorb us in activities with mindful intention through engaging our senses, skills, and interests. When people are highly engaged with what they do, they lose awareness of self and time while being highly engaged in the task at hand. **Work** is as a fundamental life task that is capable of delivering economic, psychological and social benefits which key elements to wellbeing of society (Witmer & Sweeney, 1992). Work is linked positively to health in a dual function, as Burgard and Lin (2013) explained work as a prominent means of income and material benefits, and a foundation

for socialization, status and meaning. Blustein (2008) explained working as a dominant element in the development and maintenance of psychological health.

Trenberth & Dewe (2002) found that **leisure** activity is related to the effective management of major life stressors. Similarly, there is a positive association between leisure activity and a better quality of life as well as academic performance and psychological well-being (Bartko & Eccles, 2003). Iwasaki and Mannell (2000) argued that stressful events activate specific leisure type to cope and maintain health.

4. **Friendship** - the fourth task is one's social relationships that involve a connection with others. Friendship could be individual and collective (Myers et al. 2000). A perceived sense of connectedness or belongingness is a fundamental psychological need, and if met results in positive outcomes (Josi, Ryan & Pryor, 2012). Baumeister & Leary (1995) stated belongingness as an essential element for well-being. In supporting this, self-determination theory (SDT) argued that relatedness is one of three basic psychological needs (relatedness, autonomy, and competence) inherent to humans. The need for relatedness refers to the need for being connected to others (Baumeister & Leary, 1995). Additionally, according to socialization theory the impact of friendships or belongingness in health refer to the similar habits and norms friends share over time, which in turn influences their health (Harrison et al., 2011).

5. **Love** - refers to the relationship formed based on continued, long-term, mutual commitment and intimacy (Myers, Sweeney & Witmer, 2000). They also characterise healthy love as trusting, self-disclosing, and intimacy, receive and express affectionate, non-possessive and mutual respect, enduring, nurturing and sexual satisfaction. Sarason, Shearin, Pierce & Sarason (1987) noted that being loved and valued are core components of social support. To be happy and satisfied in life, love and being related to significant people are crucial components (Miesen & Schaafsma, 2008). In a recent cross cultural study, Galinha et al. (2013) found that love predicated subjective well-being among students from US, Portuguese and Mozambican.

The above discussed five life tasks and 12 sub-tasks in the wheel of wellness, dynamically interact with the life forces of family, community, religion, education, government, media and business/industry. The life tasks and life forces largely impact and are impacted on by the natural global events (Earthquakes) and human made global events (war) as mentioned above.

2.8 Chapter summary

The chapter covered the most relevant literature on alcohol and substance use in South African and international studies among university students and among representative general population studies. Studies on health risk behaviours, especially in relation to alcohol and substances use, and evidence that showed the associations between alcohol and substance use and psychosocial determinants are discussed. Detailed discussions of PsyCap and HPLP II as protective factors from risk behaviours i.e. alcohol and other substance use in particular, were outlined followed by the positive psychological framework in which the wellness model, used as theoretical approach in the study, is located.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

In this chapter the methodology used in this study is explained. In the first section the research design namely cross-sectional quantitative approach is addressed followed by the sampling procedure. An explanation of the four research instruments utilized in this study is outlined, and the data collection and procedures that were followed are discussed in detail. Finally the different descriptive and inferential statistical techniques used to describe the data and to infer from the sample are presented respectively in the data analysis section.

3.2 Research Design and Paradigm

The study adopted a cross-sectional quantitative survey approach. This is appropriate as quantitative research studies allow researcher to collect information that describe, compare or explain knowledge, attitudes and behaviour at a particular point in time (Gray, 2009; Myers & Hansen, 2006). Further, the use of cross-sectional survey in this research was appropriate as participants answered research questions about self-reported beliefs and behaviour as the interest was to gain a better understanding of the relationships between the specific variables (Myers & Hansen, 2006; Neuman, 2006). Thus, the analyses focused on comparing students' responses and accounting for variation between responses on specific variables in terms of variation on others (de Vaus, 2001). However, the cross-sectional design is criticised for investigating only particular aspects of people's beliefs and behaviours without consideration of the context in which they occur which may explain some misunderstandings in meanings of the behaviour when reporting (de Vaus, 2001).

The research design accords with the post-positivist paradigm that argues for the existence of reality as being "out there", and claims no absolute truth (Kraus, 2005). This knowledge is based on the careful measurement of variables that exist out there e.g. students' beliefs and behaviors (Creswell, 2009). Furthermore, the post-positivism paradigm states that a research study can reject or fail to reject the null hypothesis i.e. the null-hypothesis is rejected when there is relationship between the independent and dependent variables of the study is found. The paradigm also argues that knowledge is an assumption only, as there is no absolute truth (Krauss, 2005), and therefore that findings are always imperfect. However, the predictive power of the findings is supported by the refinement of previous knowledge or the rejection of previously held insight and knowledge (Creswell, 2009).

3.3. Sampling

The study used a non-probability convenience sampling method. Convenience sampling is appropriate for the study as it allowed the researcher to collect data from students that are available and accessible (Sekaran, 2003). Convenience sampling is a nonprobability sampling technique in which participants from the target population were chosen because of their convenience and availability (Babbie, 1990). In addition, this approach is more convenient, less costly and not likely to result in the disruption of the population, which in this case is university students (Babbie, 1990).

The research were carried out among 515 university students at the University of KwaZulu-Natal (UKZN) from both campuses Howard and Westville Campuses in the Discipline of Psychology, School of Applied Human Sciences and in the School of Finance, Business and Accounting, respectively in Durban, South Africa. The students were approached for participation in their respective lecture periods on the day of data collection. The details will be discussed in the procedure section below.

3.4. Research Instruments

To answer the research questions, the study utilised a questionnaire with a demographic questionnaire and three major instruments: Psychological Capital scale (PsyCap), Health Promotion Lifestyle Profile II (HPLP II) and the Alcohol, Smoking and Substance use Involvement Scale Test (ASSIST). A Likert based scale was used for the instruments ranging from strongly disagrees to strongly agree (PsyCap), Never to Always (HPLP II), and Never to Daily or Almost daily for ASSIST. More details are presented below.

Demographic questionnaire was designed to collect demographic information of the participants to identify age, gender, race, year of study, living arrangements at university and their socio-economic status.

Psychological Capital (PsyCap) Scale developed by Luthans, Youssef and Avolio (2007), has 24 items and is rated on a 4-point Likert scale: strongly agree = 4, agree = 3, disagree = 2 and strongly disagree = 1. The 24 items on the PsyCap measure the 4 underlying dimensions that are referred to as subscales containing 6 items each of the total PsyCap scale. The items of the sub-scales were adapted to reflect the university context rather than the work environment as per the original scale. The sub-scales are resilience, hope, self-efficacy and optimism. For example, the hope subscale: “If I find myself in a jam in school, I could think of ways to get out of it”; self-efficacy: “I feel confident doing my class work and assignments”; optimism: “I know I will succeed in my studies”; and resilience: “I

can get through difficult times at school”. The higher the mean score the higher PsyCap a student has or the higher the positive psychological state of development the student has.

The Cronbach’s alpha coefficients of the PsyCap in earlier research was 0.90, and for the sub-scales were found to be 0.85 for self-efficacy, 0.80 for hope, 0.79 for resilience and 0.72 for optimism (Luthans et al., 2007). In a South African study, Herbert (2011) reported a satisfactory inter-item reliability coefficient of the four subscales with self-efficacy being the highest (0.83) and optimism with the lowest (0.67), while hope and resilience were 0.81 and 0.69 respectively. Another South African study by Du Plessis and Barkhuizen (2012) reported the reliability coefficients of the four subscales as 0.86 for self-efficacy, 0.86 for hope, 0.77 for resilience and 0.81 for optimism. The PsyCap was also used among UKZN students; Okafor (2014) reported a Cronbach’s alpha inter-item reliability coefficient of 0.89 for the total scale, and for resilience 0.84, for hope 0.75, for optimism 0.75 and for self-efficacy 0.70.

Health Promotion Lifestyle profile II (HPLP II) is an instrument providing a multidimensional assessment of health promoting behaviours rated on a Likert-scale of never = 1, sometime = 2, often = 3 and always = 4. The original HPLP was revised for improved content validity and congruency with the latest research (Walker, Sechrist, & Pender, 1995). The revised version - HPLP II - has 52-items composed of two main categories - namely health promoting behaviour and psychosocial wellbeing (Walker et al., 1995). The health promoting behaviour includes a health responsibility subscale (e.g. Report any unusual signs or symptoms to a physician or other health professional), physical activity (e.g. Follow a planned exercise program) and a third subscale namely nutrition (e.g. Choose a diet low in fat, saturated fat, and cholesterol). The psychosocial wellbeing category has three subscales – spiritual growth (e.g. Believe that my life has purpose), interpersonal relationships (e.g. Maintain meaningful and fulfilling relationships with others) and the stress management subscale (e.g. Take some time for relaxation each day).

The inter-item reliability coefficient for the total scale was $\alpha = 0.943$; the alpha coefficients for the subscales ranged from 0.793 to 0.872 (Walker et al., 1995). The instrument was reported to have sufficient validity and reliability for use among various populations including high school and university students in South Africa, (Peltzer, 2002), university students in Hong Kong (Lee and Loke, 2005) and in southern rural areas in the US (Rozmus et al. 2005) and with adult Turkish women (Erci, 2012). The Cronbach’s alpha for the earlier version of the HPLP was 0.87 among high school

and university students in South Africa (Peltzer, 2002). However, the latest version, HPLP II, seems not to have been used in South Africa.

Alcohol, Smoking and Substance Involvement Screening Test (ASSIST version 3.1)

ASSIST is used to collect information on alcohol and the use of other substances e.g. smoking, cannabis, cocaine, amphetamines, sedatives, inhalants, hallucinogens and opioids. The common substance used in Durban “whonga” was included. ASSIST was developed by an international group of substance abuse researchers from the WHO (WHO, 2002). In developing the measurement, a cross continental study was conducted in Australia, Brazil, Ireland, India, Israel, Palestine, Puerto Rico, UK and Zimbabwe. It was designed to be used in primary health care settings to detect low risk (safe use), moderate risk (hazardous and harmful use) and high risk (substance dependence) (WHO, 2010). It was also designed to be culturally neutral and useable across a variety of cultures (Humeniuk, Henry-Edwards, Ali, Poznyak, & Monteiro (2010). The interview version ASSIST (V - 3.1) has 8 items administered by any trained person to individuals in a primary health care setting, and takes about 5-10 minutes to administer. The screening instrument is relevant to this study as the study assessed the prevalence of multi substance use among university students. Thus, ASSIST enables the detection of substances use such as alcohol, tobacco, marijuana, cocaine, amphetamines type stimulants, inhalants, sedatives or sleeping pills, hallucinogens and opioids.

The seven key questions (Q1 to Q7) enquire about the following: Q1 - life time substance use, Q2 - past three months use; Q3 - strong desire to use/compulsion; Q4 - substance related problems (health, social, legal or financial); and Q5 - failed to do expected tasks because of substance use. In this study Q6 ask about unsuccessful attempts to stop or reduce use, and Q7 - concern about use by family and friends. Question eight was omitted from the questionnaire as it asks about drug injection which is not a major problem in South Africa and due to the overall instrument length. The different questions have different scales, e.g. Q2 and Q3 scored from 0 (never used) to 6 (daily use), however, Q4 scored from 0 (never used) to 7 (daily use). To determine the risk level of substance use the scores for each substance across the questions were summed, excluding Q1. The total score ranges thus from 0 – 39. Higher scores indicate higher levels of risk: scores 0 - 3 (0–10 for alcohol) are considered low risk (occasional or non-harmful use), 4 - 26 (11–26 for alcohol) indicate moderate risk (more regular use or harmful/hazardous use) and scores higher than 26, indicate high risk (frequent high risk use or suggestive of dependence) (WHO, 2010). It must be noted that in this study, non-users were categorised in the low risk group as most students in this group reported using substance once or twice in a life time and the risk level was low for occasional users that is similar to non-users.

According to the level of risk category, appropriate interventions are suggested namely for the low risk group “no treatment”, for moderate risk group a ‘brief intervention’ is suggested and for the high risk group “referral to specialist assessment and treatment’. The low risk group may occasionally use substances but currently do not experience any problems related to their use. People in the moderate risk group are at moderate risk for health and other problems, and may experience some of the problems now. According to the WHO (2010), the moderate risk group has a likelihood of future health and other problems (even dependency) if they continue using substances in the current ways, they are therefore in need of a brief intervention. People in the high risk group are probably experiencing health, social, financial, legal and relationship problems as a consequence of their substance use, and may develop dependence or are already dependent on substance use (WHO, 2010).

WHO ASSIST group (2002) reported inter-item reliability of the measures for each substance with Cronbach alpha coefficients of: 0.92 for alcohol, 0.73 for smoking, 0.85 for Cannabis, 0.91 for Cocaine, 0.87 for Sedatives, and 0.85 for Opioids. Humeniuk et al. (2010) also reported a satisfactory inter-item correlation for the total ASSIST namely Cronbach alpha of 0.89 and for the specific substance as follow: tobacco (0.80), alcohol (0.84), cannabis (0.86), cocaine (0.93), amphetamines (0.94), inhalants (0.93), sedatives (0.89), hallucinogens (0.77) and opioids (0.94). The measure has been successfully used in adapting a combined motivation interviewing and problem solving intervention among risky substance using South Africans (Sorsdahl et al., 2015). Sorsdahl, Stein, Weich, Fourie, and Myers (2012) previously used the instrument in identifying patients with probable substance use problems for a hospital based intervention that was developed by a hospital in the Western Cape, South Africa.

Aimed at reaching more people outside of the primary health care settings, a self-report format of the ASSIST was adopted by Barreto, Christoff and Boerngen-Lacerda (2014) for university students in Brazil. They validated the format by testing both the self-report and interview formats in a counter-balance design where students administered both formats alternatively. The self-report questionnaire’s internal consistency was good to moderate: Cronbach's alpha of 0.90 for tobacco, 0.71 for alcohol, 0.86 for cannabis and 0.89 for cocaine (Barreto et al., 2014). They used different techniques to prove validity of the self-report ASSIST; an inter-class correlation coefficient was considered, agreement was assessed using kappa value and mean score differences between the two questionnaires. They finally concluded that the self-report version was comparable to the interview

version of ASSIST, and therefore the self-report version was deemed an acceptable instrument to use among university student.

It must be noted that in this study, the adopted self-report ASSIST included an additional substance, mentioned above, namely whonga. Common names and local descriptions of some substances were used e.g. Untsu for kind of tobacco and Zolee for cannabis. This was done to align the instrument with current realities of South African students living in Durban.

3.5. Data collection and procedures

Before data was collected, the study followed all the required ethical procedures by the Human and Social Sciences Ethics Committee of the University of Kwa-Zulu-Natal. Gatekeeper's permission was granted from the office of the Registrar to conduct research among students of the UKZN on both campuses namely on Howard and Westville. Permission was also obtained from the Head of Schools i.e. School of Applied Human Sciences (Howard Campus only) and School of Finance, Business and Accounting (Westville Campus). Ethical approval for the study was obtained from the Human and Social Sciences Ethics Committee of the UKZN (protocol reference number is HSS/0880/015M).

In collecting data, the lecturers were first approached by the researcher for permission to administer the questionnaire in the lecture periods prior to the start of the class, as students tend to rush out of the venue after lectures. As the researcher was granted 30 minutes by the lecturers in their double period, about 5 minutes were used to inform the potential participants about the aim and objectives of the study and requested students to participate in the study voluntarily. Before obtaining written informed consent the ethical principles were discussed namely voluntary participation in the study, anonymity of the participants, confidentiality of the data and their right to withdraw from the study at any point in time with no negative consequences to them.

Those that volunteered were given the informed consent document to sign in which the aims and objectives were outlined as well as the ethical principles, as outlined above. With the help of four Health Promotion Masters' classmates, the questionnaires were distributed and collected after the students completed the research instruments. The data collection was completed within the 30 minutes time allocated for the study by the lectures.

3.6. Data Analysis

The data was captured in an Excel format and imported to the Statistical Package for the Social Science (SPSS) version 22 for analyses. First data quality was assured by running frequencies of all the items to check for the quality of data capturing. In case where problems were identified the instruments were compared to the data that was entered. After cleaning the data, descriptive analysis was carried out to summarize data and assess the central tendency of the responses. Frequencies were reported for the demographic characteristics of the students, and also used to determine the prevalence and level of risk for alcohol and other substance use.

In assessing the normality distribution of the scales, the descriptive statistics of the measures was obtained. Upon first assessment the subscales self-efficacy and optimism of PsyCap scale showed more than the acceptable indicators of normal distribution as more than one value indicate unacceptable skewness and Kurtosis (Tabachnick & Fidell, 2007). Then, using the Explore function of SPSS, the outliers scores in each measurement were indicated, the Q-Q plot and Boxplot were used in detecting normality. The outliers were removed to improve the normality of the distribution.

On the basis of these assessments, decisions about statistical tests were made. Both non-parametric and parametric analyses techniques were carried out to determine the mean score difference on the scales across the different demographic groups. Chi-square test and *t*-test were performed on the major substances used, categorised as Low risk and Risky use and demographic characteristics of the students. These tests are convenient as the scores of alcohol and substance use were not normally distributed.

Independent sample *t* - tests were used to determine mean score difference on PsyCap and HPLPL II among gender and age groups. The age group was re-coded into two groups, as in the original grouping there were only 26 students in the age group 26 and older, 316 age group 21-25 and 160 in the age group 20 and younger. Group 1 was 17 – 21, and Group 2 included 22 – 36. Race groups were also recoded namely Black African = 1, Indian = 2 and White and Coloured students = 3. This was done to improve the response rate in the groups for analyses.

A bivariate correlation coefficient assist in examining the strength and direction of the linear relationship between two variables, Pearson's moment-correlation coefficient were carried out to examine the direction and strength of the relationships between the psychosocial determinants i.e. PsyCap and HPLP II, and a non-parametric Spearman's rho correlation was used in assessing the relationships between the two psychosocial determinants and alcohol and substance use on the

overall ASSIT scale. Results were also generated and reported by splitting the data file by gender as it is more informative.

Analysis of variance (ANOVA) was carried out to assess mean score differences on Psycap and HPLP II across different demographic groups with more than two groups (race and socio-economic groups). The magnitude of the difference between the groups was calculated using eta-square as it is the most commonly used effect size statistic (Pallant, 2011). Eta-square ranges from 0 to 1 and tells the proportion of the variance in the DV that is explained by the IV. Lastly two logistic regression models were fitted to examine the predictors' (IV: gender, race, self-efficacy, hope, resilience, optimism as well as HPLP II), value and strength of predication on the dependent variables (alcohol and smoking behaviour). Logistic regression analyses were used as the responses for alcohol and substance were not normal, and so violated the assumptions of standard linear regression models. The Hosmer-Lemeshow Goodness of Fit Test, the most reliable test, was used to identify the model fit (a value above 0.05 is considered to indicate a good fit).

3.7 Chapter Summary

In this chapter, all the necessary methodological procedures for the research study were explained. First the cross section quantitative survey research design was explained and related to the post-positivism world view (paradigm) followed by the sampling procedure. The research instruments and their internal consistency coefficients were outlined to indicate their reliability and validity for use in this study sample and in terms of the research objectives. The steps adhered to data collection processes were also described followed by the techniques used in data analyses to enable answering the research questions.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents all the statistical information to describe the data and the results of the inferential statistics aligned to the research questions. First, the demographic characteristics of the sample are presented, followed by the psychometric properties of the research measurements: PsyCap and HPLP II. Then alcohol and substances use prevalence are presented followed by the results of the chi-square tests to determine the difference in the risk i.e. on the low risk and risky substance use groups in relation to the demographic characteristics of the sample. The Pearson's and Spearman's correlation coefficients results are then presented that were conducted to investigate the relationships between the measurements used and major substances used. Then, the results of the t-tests and ANOVA are presented that were conducted to assess mean score difference among the different demographic groups on PsyCap and HPLP II. Finally, the results of the logistic regression analyses are presented. These were conducted to assess the prediction value of the independent variables (selected demographic variable, PsyCap subscales and HPLP II) on the dependent variables used namely alcohol use and smoking behaviour as these were reported to be most used by the students.

4.2 Sociodemographic characteristics of the sample

In table 1 below the characteristics of the sample are depicted. In this study, undergraduate students (Level 1 to 3) and post graduate (Honours level) of both sexes participated. The sample results showed that the overwhelming majority was female participants 79% (N = 407) with only 108 (21%) males. The participants' age ranged from 17 – 37 years old. In the 20 years and younger group, there were 33.1% (N = 169). The majority were in the 21-25 group (N = 316, 61.8%) while the smallest group were the “older group” i.e. 26 years and older (N = 26, 5.1%). This was however recoded for further analysis as discussed earlier.

The majority of the students were Black Africans (N = 367, 77.1%), followed by Indian (N = 114, 21.3 %), with the smallest groups being White (N = 17, 3.3 %) and Coloured (N = 17, 3.3 %). The latter two groups were also recoded into one group for further analysis as outlined earlier. Most of the students stayed with their parents or off campus (N = 241, 46.8%) and 21.2 % (N = 109) stayed at UKZN residences. With regard to the socioeconomic status of the students who participated, about half of them (N = 264, 47.2%) indicated that they were from families that have money for basics but

not enough money to buy expensive things, and 27.2 % (N =140) were from families that have money to save or buy expensive things.

Table 1
Demography of Participants

Characteristics	N	%
Gender		
Male	108	21
Female	407	79
Age (M = 21.39 , SD = 2.41, Range: 17- 37)		
Age group		
Less than 20	169	33.1
21-25 years	316	61.8
Above 26 years	26	5.1
Race		
Black	367	71.3
Indian	114	22.1
White	17	3.3
Colored	17	3.3
Years of study		
First year	86	16.7
Second year	73	14.2
Third year	237	46.0
Fourth year (Honors)	119	23.1
Residence		
With parents	241	46.8
In Campus	109	21.2
Off Campus	93	18.1
Rent or Share	65	12.6
Stay with others	7	1.4
Socioeconomic Status (SES)		
No Money for Basic	34	6.6
Short money for basic	88	17.1
Have money for Basic	246	47.8
Enough and saving	140	27.2

4.3 Psychometric properties of the measures

The Cronbach's alpha reliability coefficient for the **PsyCap** Scale was $\alpha = 0.892$. The self-efficacy's Cronbach's alpha reliability coefficient was $\alpha = 0.72$ and the mean inter-item correlation was $r = 0.32$; for Hope $\alpha = 0.73$ with $r = 0.31$; resilience was $\alpha = 0.82$ and $r = 0.44$ and optimism Cronbach's alpha reliability coefficient was $\alpha = 0.70$ and $r = 0.31$. The mean inter item-correlation coefficient might be not of concern as the Cronbach's alpha of the PsyCap and the subscales were above the suggested value of $\alpha = .7$ (DeVellis, 2003), however, Briggs and Cheek (1986) suggested optimal inter-item correlation of .2 to .4 if the number of items in a scale is fewer than ten.

In this study the **HPLP II** reliability coefficient using Cronbach's alpha, was $\alpha = 0.92$. The subscales' reliability coefficient ranged from a Cronbach's alpha of $\alpha = 0.84$ and $r = 0.38$ for health responsibility, to $\alpha = 0.71$ and $r = 0.22$ for stress management. The Cronbach's alphas of other constructs are as follows: Physical activity $\alpha = 0.83$ and $r = 0.38$; Nutrition $\alpha = 0.71$ and $r = 0.22$; Spiritual growth $\alpha = 0.81$ and $r = 0.32$ and Interpersonal relationships $\alpha = 0.73$ and $r = 0.24$.

The inter-item reliability coefficient using Cronbach's alpha of the self-report screening test (**ASSIST**) and the sub-test was also satisfactory. The overall ASSIST showed a reliability Cronbach's alpha of $\alpha = 0.93$.

The reliability Cronbach's alpha coefficient for the first three questions was as follows: for Q1 (life time substance use) was $\alpha = 0.67$ and $r = .195$, for Q2 (past three month substance use) was $\alpha = 0.74$, Q3 (past three months strong desire) $\alpha = 0.70$ and $r = 0.25$. The specific substances reliability coefficient results were for smoking $\alpha = 0.84$, for alcohol use $\alpha = 0.79$, for cannabis use $\alpha = 0.816$, for whonga use $\alpha = 0.85$, for Inhalants $\alpha = 0.76$, for sedatives $\alpha = 0.77$, for Hallucinogens $\alpha = 0.81$, for opioids $\alpha = 0.84$ and $\alpha = 0.85$ for cocaine.

4.4 Descriptive Statistics of the measures used (PsyCap and HPLP II)

Table 2 presented the descriptive statistics of the measures obtained after removing the outliers, showing an acceptable level of normality as suggested by Tabachnick and Fidell (2013).

Table 2
Descriptive Statistics analysis of measures

	N	Min	Max	Mean	SD	Skewness	Kurtosis	α
PsyCap	367	51	91	71.39	7.425	.391	.138	0.89
self-efficacy	445	11	22	16.90	2.368	.042	-.219	0.72
Hope	464	13	24	18.24	2.366	.271	-.044	0.73
Resilience	467	12	24	17.49	2.440	.167	.210	0.82
Optimism	457	13	24	18.82	2.277	.238	-.506	0.70
HPLP II	367	66	202	131.6	21.8	.194	-.352	0.92
HR	450	10	35	19.31	5.673	.532	-.379	0.84
Physical activity	466	9	31	17.81	5.255	.411	-.534	0.83
Nutrition	463	10	32	20.16	4.462	.315	-.097	0.71
Spiritual growth	458	18	36	28.41	4.034	-.345	-.484	0.81
IPRS	451	18	36	27.32	4.085	-.222	-.464	0.73
SM	467	9	32	19.98	4.216	.291	-.159	0.71

Note. HR = Health Responsibility, IPRS = Interpersonal relationships, SM = Stress Management,

4.5 Alcohol and Substances use

In this section, first the prevalence results of life time substances use and use of substances in the past three months are presented. Then, substance use risk levels i.e. low, moderate and high risk, obtained using ASSIST risk levels categorization, are presented for each substance, followed by the demographic group score differences on the ASSIST.

4.5.1 Prevalence of substance use among students

Prevalence results from the descriptive statistics for each of the substances' are presented based on life time substance use and substance use in the past three months (see table 3 below). The ASSIST's categorisation scale was used to distinguish between low, moderate and high risk use for each substance. Above all, alcohol was the most used substance: 334 students (68%) indicated a life time alcohol use and 276 (57.3%) reported using alcohol in the past three months, followed by smoking with a life time use by 176 students (34.6%) and in the past three months by 111 students (23%). A life time use of cannabis was reported by 144 students (29.4%) and use within the past three months was reported by 88 (18.3%) students. Use of sedatives was the fourth most used substance, with a life time use reported by 118 students (23.9%) while 76 students (15.8%) used it in the past three months.

Table 3

Substance use prevalence for life time and for the past three months by gender

Substances	Life time substance use						Past three months substance use					
	Males		Females		Total		Males		Females		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Smoking	34	33.7	136	34.4	170	34.6	23	22.5	88	23.1	111	23
Alcohol	71	70.3	263	67.4	334	68	60	58.8	216	56.8	276	57.3
Cannabis	42	41.6	102	26.1	144	29.4	27	26.5	61	16.1	88	18.3
Whonga	4	4.0	3	0.8	7	1.4	3	2.9	2	0.5	5	1.0
Cocaine	5	5.0	11	2.7	16	3.3	4	4.0	8	2.1	12	2.5
Amphetamine	5	5.0	33	8.4	38	7.7	4	3.9	17	4.5	21	4.4
Inhalants	2	2.0	20	5.1	22	4.5	1	1.0	12	3.2	13	2.7
Sedatives	15	14.7	103	26.3	118	23.9	5	4.9	71	18.8	76	15.8
Hallucinogens	5	4.9	25	6.4	30	6.1	4	3.9	21	5.6	25	5.2
Opioids	4	3.9	36	9.2	40	8.1	4	3.9	29	7.7	33	6.9
others	5	4.6	6	1.5	11	2.2	4	3.9	5	1.3	8	1.9

As mentioned, ASSIST categorise substance users in three risk levels – low, moderate and high risk. There were more students who were in the moderate and high risk categories for smoking than for alcohol. For smoking, most of the participants (N = 359, 76.5%) were categorised in the low risk

group, 102 students (22.7%) in the moderate risk group and 8 (1.7%) students in the high risk smoking group. For alcohol use - in low risk group there were 387 students (85.5%), in the moderate risk group 66 students (14.1%) and in high risk group 8 students (1.7%). For a more detailed report of substance use prevalence i.e. life time use, use in the past three months and risk categorisation (low, moderate and high risks) see tables 3 and 4 respectively.

When considering gender difference in substance use as shown in table 3 above for a life time use and use in the past three months, the majority of male students 70.3% (N = 71) reported a life time use of alcohol and 58.8% (N = 60) reported using alcohol in the past three months. Similarly for females, the majority 67.4% (N = 263) had a life time use while 56.8% (N = 216) reported using alcohol in the past three months. For smoking 33.7 % (N = 34) male students and 34.4% (N = 136) female students reported a life time use while 22.5% (N = 23) male students and 23.1% (N = 88) female students reported use of past three months.

Table 4
Students' substances use Risk categorise

Substances	Low Risk		Moderate Risk		High Risk	
	N	%	N	%	N	%
Smoking	359	76.5	102	21.7	8	1.7
Alcohol	387	82.5	74	15.8	8	1.7
Cannabis	400	85.5	66	14.1	2	0.4
Whonga	457	97.4	11	2.4	1	0.2
Cocaine	455	97	13	2.8	1	0.2
Amphetamines	446	95.1	21	4.5	2	0.4
Sedatives	412	87.7	55	11.7	3	0.6
Inhalants	453	96.8	14	3.0	1	0.2
Hallucinogens	450	96.2	17	3.6	1	0.2
Opioids	449	95.5	20	4.3	1	0.2

Table 5 below showed prevalence of the major substances used among students namely alcohol, smoking and cannabis by characteristics: gender, race and age groups. The prevalence was categorised into two risk groups: low risk group (safe use) and risky group (hazardous use), here the moderate and high risk groups were computed as one group namely - risky group. For alcohol use among male students 75.5% (N = 74) were categorised in the low risk group and 24.4 % (N = 24) in the risky group, while 15.5% (N = 58) female students were reported to be in the risky group with most of them (84.5%, N = 313) in the low risk group.

Table 5*Alcohol, Smoking and Cannabis Prevalence by Gender, Race and Age*

Demography		Alcohol				Smoking				Cannabis			
		Low risk		Risky ^a		Low risk		Risky		Low risk		Risky	
		N	%	N	%	N	%	N	%	N	%	N	%
Gender	Male	74	75.5	24	24.5	73	74.5	25	25.5	75	76.5	23	23.5
	Female	313	84.5	58	15.5	286	77.1	85	22.9	325	87.8	45	12.2
Race	Black	271	81.9	60	18.9	265	80.1	66	19.8	282	85.5	48	14.5
	Indian	94	88.7	12	11.3	78	73.6	28	26.4	92	86.8	14	13.2
	Others ^b	22	68.8	10	31.2	16	50.0	16	50.0	26	81.3	5	18.7
Age	17 - 20	117	80.1	29	19.9	117	80.1	29	19.9	116	80.0	29	20.0
	21- 25	244	83.0	50	17.0	220	74.8	74	25.2	257	87.4	37	12.6
	26 - 37	23	88.5	3	11.5	19	73.1	7	26.1	24	92.3	2	7.7

Note: ^a Moderate and High risk = Risky and low risk remained low.

^b White and Coloured students.

Alcohol use among the different race groups was as follows: those that were in the Low risk group were 271 (81.9%) Black Africans students, 94 (88.7%) Indian students, and 22 (68.8%) Whites and Coloured students, while for Risky group, 18.9 % (N = 60) were Black Africans, 11.3 % (N = 12) Indian and 31.3% (N =10) Whites and Coloured students. With regard to the risky Smoking groups: 19.8% were Black Africans (N = 66), 26.4% were Indian (N = 28) and 50% were White and Coloured students (N = 16). For cannabis, low number of students was reported to be in the risky group: 14.5% of Black Africans students (N = 48), 13.2% of Indian students (N = 14) and 18.7% of White and Coloured students (N = 5) were categorised to be in the risky group. When considering the age groups, more students in the age group 20 years and younger were in the risky alcohol use group (N = 29, 19.9 %) and in the cannabis risk group (N = 29, 20 %), while more students in the age group 21 - 25 were in the risky smoking group (N = 74, 25.2 %).

4.5.2 Differences among demographic groups regarding substance use risk groups

Chi-square of independence tests were used to explore the relationships between demographic variables i.e. gender, age and race groups and the level of risk (low risk and risky use) for the major substances used by the students (alcohol, smoking and cannabis). Table 6 shows the results of chi-square of independence tests that assessed whether there were significant differences between the levels of risk for alcohol, smoking and cannabis used and gender i.e. whether males were more likely to be risky alcohol/smoking/cannabis users than females.

Table 6*Chi-square of independence results: Gender by Low risk and Risky use of alcohol*

	Male		Females		P – chi-square		Df	Continuity Corr.		Phi
	Low	Risky	Low	Risky	Value	Asymp.sig		Value	Asmp.sig	
Alcohol	75	24.4	84.4	15.6	4.215	.040	1	3.623	.057	-.095
Smoking	74.5	25.5	77.1	22.9	.292	.589	1	.165	.685	-.025
Cannabis	76.5	23.5	87.8	12.2	7.97	.005	1	7.09	.008	-.131

Note. P = Pearson, Asymp.sig = Asymptotic significance, corr. = correlation

A chi-square test for independence [Yates continuity correlation is used as it compensate overestimation of chi-square value when used with a 2 by 2 table (Pallant, 2011)] indicated no significant association between gender and levels of risk for alcohol use, $X^2 (1, n = 469) = 3.62, p = .057, phi = -.095$. This means that the proportion of males who were categorised as risky alcohol users were not significantly different from the proportion of females who were categorised as risky alcohol users. A similar result was obtained for smoking where there was also not a significant difference between the risk levels for smoking among males and females. However, there was a significant difference between the gender groups and the level of risk for cannabis use, $X^2 (1, n = 468) = 7.09, p = .008, phi = -.131$. This means that the proportion of males who indicated risky levels of cannabis use was statistically different from the proportion of female who were risky cannabis users.

As table 7 shows, there was a significant difference between age groups and categories of alcohol risk use, $X^2 (1, n = 466) = 4.16, p = .041, phi = -.100$. This means the young age group 17 – 21 (20.5%) was more likely to be risky alcohol users than the age group of 22 – 36 years old (12.6%). However, the phi correlation coefficient indicated a small effect ($phi = .100$). Regarding smoking and cannabis, there was no significant difference between age groups and risk levels for smoking and cannabis.

Table 7*Chi-square of independence results: Age groups by Low risk and Risky substance use*

Age G	17 - 21		22-36		P- Chi-square		df	Continuity Correl.		Phi
	Low	Risky	Low	Risk y	value	Asymp.sig		Value	Asymp.si g	
Alcohol	79.5	20.5	87.4	12.6	4.7	0.030	1	4.16	.041	-.100
Smoking	78.4	21.6	73.0	27.0	1.78	.181	1	1.49	.221	.062
Cannabis	85.6	14.4	85.1	14.9	.023	.880	1	.000	.988	.007

Note. P = Pearson, Asymp.sig = Asymptotic significance, corr. = correlation

Table 8 depicts the results of the chi-square of independence tests between levels of substance use and race groups (2 alcohol risk levels by 3 race groups). There was a statistically significant difference between the levels of alcohol risk use and race groups, $\chi^2(2, n = 469) = 7.1, p = .029, V = .123$. The White and Coloured students were more likely to report risky alcohol use (31.3%) than the other races: Black Africans (18.1%) and Indians (11.3%). Similar results were also obtained for levels of risk in smoking behaviour among the race groups. Similarly, White and Coloured students (50%) were more likely to be risky smokers than the others. Indians students more so (26.2%) than Black African students (19.9%), see table 8.

Table 8

Chi-square of independence results: Race groups by Low risk and Risky substance use

Race G	Black		Indian		White & Coloured		P – Chi-square		df	Cramer's V
	Low	Risky	Low	Risky	Low	Risky	Value	Asymp.sig		
Alcohol	81.9	18.1	88.7	11.3	68.8	31.3	7.089	.029	2	.123
Smoking	80.1	19.9	73.8	26.2	50	50	15.35	.000	2	.181
Cannabis	85.5	14.4	86.8	13.2	81.3	18.8	.608	.738	2	.036

Note. P = Pearson, Asymp.sig = Asymptotic significance.

4.6 Correlation between PsyCap, HPLP II and ASSIST

The results of the Pearson's and Spearman's correlation coefficients that were conducted to determine the relationships between PsyCap and HPLP II, and ASSIST are presented. Cohen's (1988) criteria were used for indicating the strength of the correlation i.e. $r = 0.10$ to 0.29 as small correlation, $r = 0.30$ to 0.49 as medium correlation and $r = 0.50$ to 1.0 as a strong correlation.

4.6.1 Correlation between PsyCap and HPLP II

The relationships between PsyCap and the HPLP II scales and relevant subscales are depicted in table 9. There was a moderate positive relationship between the PsyCap and HPLP II, $r = 0.366, n = 270, p < .01$, with a shared variance of 13.4% ($.366 \times .366 = .1339 \times 100$). As expected a moderate to high correlation among the PsyCap sub-scales were found i.e. between self-efficacy and optimism ($r = 0.30$) and between resilience and optimism ($r = 0.53$). Positive correlations between the sub-scales of the HPLP II were detected. A strong correlation coefficient between physical activity and nutrition was found ($r = 0.60, p < .01, n = 436$) and a weak positive correlation between physical activity and interpersonal relationships ($r = 0.23, p < .01, n = 426$). Table 9 also shows the correlation coefficient between the sub-scales of PsyCap and HPLP II measures. All variables are correlated except that there was no significant correlation between optimism and nutrition.

Table 9*Pearson's correlation coefficients between PsyCap and HPLP II*

	1	2	3	4	5	6	7	8	9	10	11
1.PsyCap	1										
2.SE	.730**	1									
3.Hope	.812**	.514**	1								
4.Resilienc	.736**	.347**	.456**	1							
5.Op	.673**	.299**	.530**	.409**	1						
6.HPLP II	.366**	.299**	.323**	.246**	.272**	1					
7.HR	.265**	.218**	.199**	.093	.107*	.787**	1				
8.PA	.207**	.212**	.202**	.190**	.121*	.736**	.571**	1			
9.Nut	.230**	.163**	.248**	.146**	.085	.761**	.589**	.595**	1		
10.SG	.435**	.248**	.374**	.303**	.449**	.642**	.324**	.270**	.343**	1	
11.IPR	.312**	.189**	.268**	.232**	.289**	.612**	.366**	.243**	.294**	.568**	1
12. SM	.342**	.229**	.306**	.229**	.202**	.776**	.529**	.543**	.504**	.511**	.351**

Note. **. Correlation is significant at the 0.01 level. *. Correlation is significant at the 0.05 level, SE = Self-efficacy, Op = Optimism, HR = Health responsibility, PA = Physical activity, Nut = Nutrition, SG = Spiritual growth, IPR = Interpersonal relationships, SM = Stress management

4.6.2 Correlation between substances used

In order to determine the relationships between substances; Spearman's rho coefficient were conducted as substance use responses on the ASSIST measure were not normally distributed. There were significant positive relationships between the substances used (see table 10). There was a strong positive correlation between smoking and cannabis use, $r = .48$, $n = 465$, $p < .01$. Alcohol use was also positively correlated with smoking, $r = .48$, $n = 465$, $p < .01$, and with cannabis use, $r = .43$, $n = 463$, $p < .01$. However, alcohol use was weakly correlated with other substances such as; whonga, cocaine, amphetamine, hallucinogens and opioids (see table 10).

Table 10*Spearman's rho correlation between Substances*

	1	2	3	4	5	6	7	8	9	10
1.Alcohol	1									
2.Smoking	.480**	1								
3.Cannabis	.434**	.562**	1							
4.Whonga	.156**	.222**	.279**	1						
5.Cocaine	.178**	.240**	.233**	.493**	1					
6. Amph.	.146**	.272**	.271**	.292**	.419**	1				
7.Inhalants	.258**	.191**	.222**	.374**	.347**	.288**	1			
8.Sedatives	.223**	.232**	.251**	.210**	.223**	.351**	.223**	1		
9. Hallu.	.121**	.101**	.136**	.230**	.454**	.316**	.368**	.309**	1	
10. Opioids	.176**	.151**	.211**	.254**	.297**	.350**	.314**	.425**	.484	1

** . Correlation is significant at the 0.01 level, * . Correlation is significant at the 0.05 level, Amph. = Amphetamines, Hallu. = Hallucinogens

4.7 Mean group difference on PsyCap and HPLS for alcohol use and smoking risk groups

The independent sample *t*-tests were conducted to determine whether low risk and high risk alcohol use, smoking and cannabis use groups had different mean scores on the PsyCap and HPLP II measures and their subsequent subscales and in relation to gender. Table 11 shows the significant results of the tests for low and high risk alcohol use. There was a statistically significant difference on the resilience mean score between alcohol low risk group ($M = 17.74$, $SD = 7.28$) and for high risk alcohol use group ($M = 16.80$, $SD = 2.131$; $t(422) = 3.107$, $p = .002$). The result indicated that the students in the low risk group had higher resilience score than those who were in the risky alcohol use group. Similarly, for both males and females students the resilience score were higher in the low risk groups as depicted in Table 11. Only male students scored statistically significant difference on hope, i.e. male students in the low alcohol risk group had higher levels of hope than those in the risky alcohol use group. However, there was no statistically significant difference between the low and risky alcohol use groups on the full PsyCap and HPLP II, and the rest of the subscales.

Table 11

*Significant Independent-sample *t*-test results for PsyCap and HPLP II by alcohol use (low risk v risky) for all by gender*

Variable	Low Risk		Risky		<i>t</i> – value	<i>df</i>	95% CI		<i>P</i> -value
	Mean	SD	Mean	SD			LL	UL	
Resilience	17.74	2.43	16.80	2.131	3.107	422	.346	1.538	.002
Males									
Resilience	18.55	2.337	16.86	2.575	2.831	86	-.341	2.009	.006
Hope	19.28	2.736	17.95	2.19	2.040	87	0.34	2.009	.044
Females									
Resilience	17.55	2.419	16.78	1.95	2.210	334	0.085	1.459	.028

*Note. *Significance at the 0.05 level, CI= confidence interval; LL= lower limit; UL= upper limit.*

Table 12 – shows the independent sample *t*-test results for the low and high risk smoking groups. There was statistically significant mean score difference on the PsyCap and HPLP II measures and most of the subscales. In general, students in the low risk smoking groups scored higher mean scores on the full PsyCap scale and the sub-scales of self-efficacy, hope, resilience and optimism than those in the high risk smoking groups as seen in Table 12. When males and females were considered separately, significant mean differences were noted on the PsyCap and particularly on hope, resilience and optimism between the males in the low risk and high risk groups. Female students in the low risk groups also had higher scores on the self-efficacy and resilience than those in the high risk smoking groups.

With regards to the HPLP II, there was a statistically significant difference in the mean scores between the low risk smoking group ($M = 133.57$, $SD = 21.01$) and higher risk smoking group ($M = 125$, $SD = 18.98$; $t(339) = 3.329$, $p = .001$). The result indicated that students in the low risk group engaged at a higher level in health promoting lifestyle than those who were in the risky smoking group. A similar pattern can be seen in Table 12 for nutrition, spiritual growth, interpersonal relationships and stress management. For both male and female students in the low risk group, higher mean scores on the HPLP II were found. However, males in the low risk smoking group obtained higher mean scores on the subscales of health responsibility and nutrition while female students in the low risk smoking group scored higher mean scores on the spiritual growth and stress management subscales.

Table 12

Significant Independent-sample t-test results for PsyCap and HPLP II by smoking (low risk v risky) for all and by gender

Variable	Low Risk		Risky		<i>t</i> – value	<i>df</i>	95% CI		<i>P</i> -value
	Mean	SD	Mean	SD			LL	UL	
PsyCap	72.14	7.519	69.51	6.409	2.848	337	.816	4.459	.005
SE	17.12	2.443	16.41	2.443	2.562	405	.165	1.252	.011
Hope	18.42	2.372	17.63	2.306	2.917	422	.271	1.321	.004
Resilience	17.75	2.437	16.99	2.213	2.769	422	.275	.221	.006
Optimism	18.97	2.274	18.35	2.234	2.381	418	.108	1.136	.018
HPLP II	133.57	21.012	125.01	18.984	3.329	339	3.500	13.609	.001
Nutrition	20.41	4.603	19.33	3.991	2.132	430	.084	2.073	.034
SG	28.63	4.037	27.41	3.954	2.696	427	.332	2.117	.007
IPR	28.63	4.037	27.41	3.954	2.202	420	.110	1.943	.028
SM	20.24	4.282	18.93	3.720	2.763	433	.379	2.250	.006
Males									
PsyCap	75.30	7.976	69.00	6.154	2.982	69	2.084	10.508	.004
Hope	19.37	2.533	16.95	2.089	2.608	87	.391	2.900	.011
Resilience	18.48	2.344	17.10	2.700	2.273	86	.173	2.591	.026
Optimism	19.37	2.356	17.65	2.308	3.020	86	.587	2.847	.003
HPLP II	138.57	22.002	118.18	19.083	3.376	61	8.314	32.464	.001
HR	20.11	5.867	16.22	5.496	2.815	85	1.144	6.640	.006
Nutrition	21.67	4.815	18.12	5.600	2.946	85	.864	4.564	.005
Females									
SE	16.90	2.377	16.27	2.208	2.089	324	.037	1.231	.037
Resilience	17.56	2.430	16.96	2.080	1.971	334	.001	1.204	.049
HPLP II	132.47	20.682	126.72	18.710	2.038	276	.197	11.305	.042
SG	28.56	4.040	27.40	3.898	2.284	340	.162	2.167	.023
SM	19.98	4.298	18.79	3.568	2.205	344	.128	2.248	.028

Note. *Significance at the 0.05 level, CI= confidence interval; LL= lower limit; UL= upper limit, SE = Self efficacy, HR = Health Responsibility, PA = Physical Activity, SG = Spiritual growth, IPR = Interpersonal relationships, SM = Stress management.

With regards to **Cannabis** use (see table 13 below), there were no significant differences in the mean scores of the full PsyCap and HPLS scales among the low and risky cannabis use groups. However, when males and females were considered separately, significant mean differences was noted for males on the total PsyCap scale among the low and the high risk cannabis use groups.

There were also significant differences for females between the low risk and risky cannabis use groups on the spiritual growth and interpersonal relationship sub-scales of HPLP II.

Table 13

Significant Independent-sample t-test results for PsyCap and HPLP II by cannabis use (low risk v risky) for all by gender

Variable	Low Risk		Risky		<i>t</i> – value	<i>df</i>	95% CI		<i>P</i> -value
	Mean	SD	Mean	SD			LL	UL	
Males									
PsyCap	74.74	8.33	70.94	6.07	2.073	465	0.11	7.524	0.045
Females									
SG	28.47	3.98	27.13	4.19	2.063	340	0.30	2.91	0.01
IPR	27.56	4.055	25.95	3.838	2.522	399	0.300	2.912	0.016

*ote. *Significance at the 0.05 level, CI= confidence interval; LL= lower limit; UL= upper limit, SG = Spiritual growth.*

4.8 Mean score differences between demographic groups on PsyCap and HPLP II measures

The study examined whether there were any statistically significant differences in the mean scores for gender, age, race and socioeconomic status groups on PsyCap, HPLP II and their respective subscales. The results from independent-sample *t*-tests and analysis of variance (ANOVA) are presented below.

4.8.1 Gender Group Differences on PsyCap and HPLP II

The independent sample *t*-test results conducted to determine whether males and females had different mean scores on the PsyCap and HPLP II measures including their respective sub-scales are depicted in table 14 below. There was a statistically significant difference in PsyCap mean scores for males ($M = 73.1$, $SD = 8.30$) and females ($M = 70.9$, $SD = 7.11$; $t(365) = 2.37$, $p = .09$). Male students had a higher score on the total psychological capital scale than female students. The magnitude of the difference in the means (mean difference = 2.28, 95 % CI: 0.39 to 4.11) was small (eta square = .015). There were also significant differences in the mean scores of the subscales; self-efficacy, hope and resilience for males and females, but there was no significant difference in mean score for the optimism scale for males and females (see table 14 below). With regards to total HPLP II scale, there was no significant difference in the mean scores for males ($M = 133$, $SD = 23.2$) and

females ($M = 131$, $SD = 20$; $t(360) = .62$, $p = .49$). As expected the magnitude of the difference in the means (mean difference = 1.9, 95 % CI: -4.18 to 8) was very small (eta squared = .001). There were however significant difference in the mean scores for male and female students for the physical activity and stress management subscales but not for the other sub-scales (see table 14).

Table 14

Independent-sample t-test results for PsyCap and HPLP II by gender

Variable	Male		Female		<i>t</i> – value	<i>df</i>	95% CI		<i>P</i> -value
	Mean	SD	Mean	SD			LL	UL	
Psycap	73.1	8.30	70.9	7.11	2.38	365	0.39	34.11	0.018*
SE	17.6	2.45	16.7	2.32	3.17	443	.34	1.43	0.002*
Hope	18.9	2.58	18.0	2.27	3.38	462	0.38	1.42	0.001*
Resilience	17.9	2.59	17.3	2.39	2.23	465	0.074	1.17	0.026*
Optimism	18.9	2.40	18.9	2.25	0.364	455	-0.419	0.61	0.716
HPLP II	133.3	23.2	131.2	20.1	0.624	360	-4.418	8.013	0.495
HR	18.9	5.88	19.4	5.63	-0.614	448	-1.712	0.897	0.539
PA	19.3	5.57	17.4	5.11	3.14	465	0.711	3.09	0.002*
Nutrition	20.8	4.73	19.9	4.38	1.72	461	-0.125	1.921	0.085
SG	28.6	4.11	28.3	4.02	0.651	456	-0.621	1.237	0.515
IPR	27.0	4.21	27.3	4.06	-0.758	449	-1.334	0.591	0.449
SM	20.8	4.21	19.7	4.20	2.12	465	0.073	1.978	0.035*

Note. *Significance at the 0.05 level, CI= confidence interval; LL= lower limit; UL= upper limit, SE = Self efficacy, HR = Health Responsibility, PA = Physical Activity, SG = Spiritual growth, IPR = Interpersonal relationships, SM = Stress management.

4.8.2 Age Group Differences on PsyCap and HPLP II

The results of the independent sample t-test are shown in table 15. The results of the independent samples t-tests indicated no statistical significant differences in the mean scores between the two age groups (≤ 21 years old and 22 years and older) on the PsyCap and HPLP II scales including all sub-scales, apart from the health responsibility sub-scale of the HPLP II scale where a statistically significant difference was detected between the age groups ≤ 21 year old ($M = 18.8$, $SD = 5.5$) and the 22 years and older group ($M = 20$, $SD = 5.8$, $t(445) = .01$). The magnitude of the differences in the means (mean difference = -1.42, 95% CI: -2.50 to -.36) was very small (eta square = .014).

Table 15*Independent sample t-test results for PsyCap and HPLP II by age*

Variable	17 – 21		22 - 37		<i>t</i> – value	<i>df</i>	95% CI		<i>P</i> - value
	Mean	SD	Mean	SD			LL	UL	
PsyCap	71.4	7.57	71.3	7.22	0.155	362	-1.46	1.71	0.877
Self-efficacy	16.7	2.45	17.1	2.15	-1.38	439	-0.782	0.136	0.167
Hope	18.2	2.32	18.1	2.42	.382	459	-0.360	0.535	0.702
Resilience	17.4	2.42	17.6	2.49	-0.759	452	-0.643	0.285	0.448
Optimism	18.8	2.32	18.7	2.20	0.730	452	-0.276	0.603	0.466
HPLP II	130.7	21.2	132.7	19.8	-0.891	357	-6.45	2.42	0.373
HR	18.8	5.52	20.2	5.84	-2.57	445	-2.50	-0.336	0.010*
PA	17.8	5.28	17.8	5.27	-0.002	461	-0.995	0.993	0.998
Nutrition	20.1	4.45	20.0	4.49	-0.109	458	-0.902	0.807	0.913
SG	28.3	4.10	28.4	3.89	-0.343	454	-0.901	0.633	0.732
IPR	27.5	4.15	27.0	3.87	1.12	446	-0.334	1.22	0.261
SM	20.0	4.19	19.9	4.22	0.12	462	-0.745	-0.841	0.905

*Note; *Significance at the 0.05 level, CI= confidence interval; LL= lower limit; UL= upper limit*

4.8.3 Race Group Differences on PsyCap and HPLP II (ANOVA)

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the mean score difference between the race groups [Black, Indian and others (White and Coloured)] on the PsyCap and HPLP II scales (see table 16). The ANOVA results showed there was no statistically significant difference in the mean scores for the three groups on the PsyCap and HPLP II scales.

Table 16*ANOVA results for PsyCap and HPLP II by race*

Measures	Race	Mean	S.D	95% of CI		ANOVA	df	F
				LB	UB			
PsyCap	Black	71.3	7.68	70.4	72.3	.418	2	.874
	Indian	70.9	6.43	69.5	72.3			
	Others	73.1	7.82	69.9	76.3			
Self-efficacy	Black	16.8	2.47	16.5	17.1	.568	2	.566
	Indian	16.9	2.15	16.5	17.3			
	Others	17.3	1.70	16.6	18.0			
Hope	Black	18.3	2.31	18.0	18.5	.553	2	.594
	Indian	18.1	2.52	17.6	18.6			
	Others	17.8	2.38	16.9	18.7			
Resilience	Black	17.3	2.45	17.0	17.6	.166	2	1.80
	Indian	17.7	2.38	17.3	18.2			
	Others	17.9	2.46	17.0	18.8			
Optimism	Black	18.9	2.25	18.6	19.17	.298	2	1.21
	Indian	18.5	2.21	18.1	18.9			
	Others	18.7	2.64	17.7	19.6			
HPLP II	Black	131.4	20.4	128.9	134.0	.825	2	192
	Indian	132.1	20.9	127.6	136.6			
	Others	129.3	22.4	120.8	137.9			
HR.	Black	18.93	5.59	18.3	19.5	.101	2	2.23
	Indian	20.1	5.53	19.0	21.1			
	Others	20.3	6.51	18.0	22.6			
Physical Activity	Black	17.5	5.17	16.9	18.1	.156	2	1.86
	Indian	18.1	5.45	17.1	19.1			
	Others	19.2	5.23	17.3	21.1			
Nutrition	Black	20.0	4.47	19.6	20.5	.379	2	.973
	Indian	20.0	4.60	19.1	20.9			
	Others	21.2	3.79	19.8	22.5			
Spiritual Growth	Black	28.57	3.97	28.1	29.0	.224	2	1.41
	Indian	28.2	4.15	27.4	29.0			
	Others	27.3	4.14	25.7	28.8			
Interpersonal RS	Black	27.2	4.00	26.7	27.6	.666	2	.409
	Indian	27.6	4.11	26.8	28.4			
	Others	27.5	4.90	25.6	29.4			
Stress M.	Black	20.2	4.19	19.7	20.6	.064	2	2.76
	Indian	19.5	4.26	18.7	20.4			
	others	18.6	4.08	17.1	20.1			

*Note; HR = Health responsibility***4.8.4 Socioeconomic Status Group differences on PsyCap and HPLP II**

ANOVA was used to explore the mean difference between the four socioeconomic (SES) status groups (Group 1 = No money; Group 2 = Not enough for basics; Group 3 = Money for basic, Group 4 = Surplus money and can save) on PsyCap and HPLP II including the sub-scales (depicted in table 17). No statistically significant mean score differences were detected between the groups on the PsyCap scale including sub-scales and HPLP II scale and sub-scales, expect for health responsibility. There was a statistically significant difference in the mean scores for health responsibility between the four groups: $F(3, 441) = 3.66, p = 0.016$ (p value of Welch was used as homogeneity of variance was violated). Post-hoc comparison using the Tukey HSD test indicated that the mean score for

Group 3 (M = 18.5, SD = 5.14) was significantly different from Group 4 (M = 20.6, SD = 5.89). But there was no significant difference in the mean score between the other groups (See table 17 below).

Table 17
ANOVA results for PsyCap and HPLP II by SES groups

Measures	SES	Mean	S.D	95% of CI		ANOVA	df	F	Post hoc comparison
				LB	UB				
PsyCap	1	72.2	8.19	69.1	75.4	.859	3	.253	N/A
	2	71.7	8.81	69.5	73.9				
	3	71.1	7.18	70.0	72.2				
	4	71.4	6.61	70.2	72.7				
Self-efficacy	1	16.6	2.60	15.7	17.6	.548	3	.708	N/A
	2	16.6	2.64	16.1	17.2				
	3	16.9	2.28	16.5	17.2				
	4	17.1	2.31	16.7	17.5				
Hope	1	18.4	2.29	17.6	19.3	.327	3	1.15	N/A
	2	18.4	2.74	17.7	19.0				
	3	18.3	2.21	18.0	18.6				
	4	17.9	2.38	17.5	18.3				
Resilience	1	17.3	2.55	16.4	18.3	.382	3	1.02	N/A
	2	17.2	2.62	16.6	17.8				
	3	17.4	2.48	17.3	17.7				
	4	17.7	2.13	17.4	18.1				
Optimism	1	18.9	1.96	18.25	19.6	.864	3	.247	N/A
	2	18.7	2.49	18.1	19.2				
	3	18.9	2.25	18.6	19.2				
	4	18.7	2.27	18.3	19.1				
HPLP II	1	130.4	24.7	119.7	141.1	.512	3	.777	N/A
	2	130.4	21.4	124.4	136.4				
	3	130.3	20.9	127.3	133.4				
	4	134.1	19.1	130.3	137.8				
Health Responsibility	1	19.4	6.91	16.8	21.9	.016 ^a	3	3.66	[4>3]*
	2	19.1	5.90	17.8	20.5				
	3	18.5	5.14	17.8	19.2				
	4	20.6	5.89	19.6	21.7				
Physical Activity	1	16.9	5.85	14.9	19.0	.349	3	1.10	N/A
	2	18.0	5.70	16.7	19.2				
	3	17.5	5.07	16.8	18.2				
	4	18.4	5.17	17.5	19.3				
Nutrition	1	19.3	4.16	17.8	20.7	.168	3	1.69	N/A
	2	20.5	4.56	19.4	21.6				
	3	19.8	4.47	19.2	20.4				
	4	20.7	4.48	19.9	21.5				
Spiritual Growth	1	28.0	4.56	26.3	29.6	.592	3	.636	N/A
	2	28.9	4.13	27.9	29.9				
	3	28.4	3.94	27.9	28.9				
	4	28.1	4.04	27.4	28.8				
Interpersonal Relationship	1	26.2	4.14	24.4	27.9	.059	3	2.49	N/A
	2	28.3	3.94	27.3	29.2				
	3	27.0	3.97	26.5	27.5				
	4	27.5	4.24	26.8	28.2				
Stress Management	1	20.2	4.54	18.6	2.8	.094	3	2.14	N/A
	2	21.0	4.65	19.9	22.1				
	3	19.8	4.14	19.2	20.3				
	4	19.5	3.98	18.8	20.2				

^a Robust Test of equality of means – Welch, * $p < .05$; N/A = No post hoc results

4.9 PsyCap and HPLP II as predictors for Alcohol use and Smoking behaviours

The results of the logistic regression models fitted to determine the prediction values of the demographic and psychosocial factors for alcohol risk use and smoking risk behaviour of students are presented below.

4.9.1 Best predictors for risky alcohol use

A force entry logistic regression model was performed to determine the best predictors of risky alcohol use. The independent variables entered were gender, race and PsyCap's sub-scales as well as HPLP II (total scale). Dummy variables were created for race groups i.e. Black =1 and all others =0; Indian =1 and All others =0; White & Coloured = 1 and Indian and African =0. Thus, the model contained seven independent variables (gender, race, self-efficacy, hope, resilience, optimism and HPLP II). The full model containing all the predictors was statistically significant, χ^2 (8, N = 240) = 3.895, $p = .866$ (Hosmer-Lemeshow Goodness of fit test, sig > 0.05) indicating that the model was able to distinguish between respondents who reported low risk and risky alcohol use (see table 18 below). The model as a whole explained only between 5.4 % (Cox and Sell R square) and 8.9 % (Nagelkerke R squared) of the variance in alcohol use. From the seven predictors, gender and resilience made unique statistically significant contributions to the model implying that these were the best predictors for risky alcohol use i.e. being male student and having lower level of resilience increased the likelihood of risky alcohol use among students.

Table 18

Results of the Logistic Regression in predicting risky alcohol use

Variables	B	S.E.	Wald	df	Sig.	Odds of ratio	95% C.I.for EXP(B)	
							Lower	Upper
Gender	-.815	.411	3.936	1	.047*	.443	.198	.990
White & Coloured	.983	.590	2.772	1	.096	2.673	.840	8.501
Self-efficacy	.004	.095	.002	1	.967	1.004	.834	1.208
Hope	.015	.108	.019	1	.889	1.015	.822	1.254
Resilience	-.230	.090	6.505	1	.011*	.794	.665	.948
Optimism	.122	.099	1.518	1	.218	1.130	.930	1.372
HPLP II	.000	.009	.000	1	.987	1.000	.982	1.019
Constant	.364	2.092	.030	1	.862	1.438		

* . sig < .05,

4.9.2 Best predictors for risky smoking behaviour

Another forced entry logistic regression model was fitted with the same seven independent variables (gender, race, self-efficacy, hope, resilience, optimism and HPLP II) to assess the best predictors for risky smoking behaviour. See table 19 below. The full model was statistically significant, $\chi^2 (8, N = 240) = 2.498$, $p = .962$ indicating that the model was able to distinguish between respondents who reported low risk and risky smoking behaviours. The model as a whole explained only between 5.4 % (Cox and Sell R square) and 7.9 % (Nagelkerke R squared) of the variance on smoking behaviour. Race and HPLS made unique statistically significant contribution to the model. White and Coloured ($\beta = 1.11$, and odds of ratio = 3.042) had a three times higher probability of having risky smoking behaviour than other races. Students who practice low health promotion life styles had one times higher probability of having a risky smoking behaviour than others. Thus, risky smoking behaviour was best predicted by being white or coloured and practicing a low health promotion life style.

Table 19

Results of the Logistic Regression in predicting risky smoking behaviour

Variables	B	S.E.	Wald	df	Sig.	Odds	95% C.I. for EXP(B)	
						of ratio	Lower	Upper
Gender	-.121	.394	.094	1	.759	.886	.409	1.918
White & Coloured	1.113	.532	4.368	1	.037*	3.042	1.072	8.636
Self-efficacy	-.075	.083	.823	1	.364	.927	.788	1.091
Hope	-.042	.096	.192	1	.661	.959	.795	1.156
Resilience	-.061	.077	.615	1	.433	.941	.808	1.095
Optimism	.032	.088	.133	1	.715	1.033	.869	1.226
HPLP II	-.017	.008	4.047	1	.044*	.983	.967	1.000
Constant	3.675	1.922	3.655	1	.056	39.448		

* . sig < .05,

4.10 Chapter summary

Various statistical techniques were used in the analyses to describe the data and infer from the data of the study. Descriptive statistics (e.g. mean, standard deviation, skewness, kurtosis, etc.) were used to describe the data in terms of the central tendencies, and inter-item reliability tests were used to understand the psychometric properties of the measures. Chi-square tests for independence were used to determine demographic group difference among substance use behaviours. To determine the mean score difference on the measurements by age, race, gender and SES groups parametric independent sample *t*-tests and ANOVA were conducted. The correlation analysis (Pearson and Spearman's Rho

correlation) were conducted to determine the strength and direction of the association between the measures. Logistic regression models were fitted to investigate the best predictors (demographics and PsyCap and HPLP II) of alcohol and smoking risk behaviours.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

Concern has been expressed about substance use, particularly alcohol abuse among university students worldwide. The study is located within a positive psychological frame work and it is argued that high levels of psychological capital accompanied by a health promoting life style would play a protective role against substance use by students. The key focus of the research study was therefore to investigate the substance use prevalence and relationships between psychosocial resources (PsyCap) and the extent of engaging in health promoting lifestyle (HPLP II) with alcohol and substance use among university students at UKZN.

In this chapter the findings from the research study were discussed in relation to previous studies and the wellness framework of the study with specific focus on the research objectives of the study. First, the characteristics of the sample will be discussed followed by the psychometric properties of the measures, and then the prevalence of alcohol and substance use among students. Results of mean score differences on the substances used by gender, age and race groups were compared to previous studies. The students' available psychological resources and the extent of a health promoting lifestyle are then presented. The relationships between the psychosocial determinants and their implication to wellbeing are discussed, followed by mean score difference between the low risk and high risk substance use groups on the PsyCap and HPLPS. Then mean score difference among demographic groups pertaining to PsyCap and HPLP II are presented. Lastly, the prediction value of the demographic factors and subscales of PsyCap and the full HPLP II for alcohol and smoking is presented.

5.2 Socio-demographic background of the students in the study

The study participants were predominantly female students which reflected the higher number of female students in the School of Psychology while the majority of the students were Black Africans (above 70%) and between the ages of 21- 25 years. The race distribution reflects the demographics of KwaZulu-Natal while the age is common for university students. It seems that about half the students live at home with parents and/or family, while about half have enough money for the basics implying a relatively low socio-economic status.

5.3 Psychometric properties of the measures

The Cronbach's alpha reliability coefficient for the total PsyCap in this study was $\alpha = 0.89$ and was similar to previously reported inter-item reliability coefficients for the full scale. Luthans et al. (2007) reported $\alpha = 0.90$, Pillay (2012) $\alpha = 0.88$ and Okafor (2014), in a study among university students reported $\alpha = 0.89$. The subscales also obtained reliable coefficients in this study and were similar to the study by Okafor (2014) among students at UKZN. However, in another South African research study, Du Plessis and Barkhuizen (2012) reported higher reliability coefficients for the four subscales. Pillay (2012) and Herbert (2011) also reported above 0.70 Cronbach's alpha reliable coefficient for the different subscales. Thus, PsyCap can be considered to be appropriate for use in the South African context in both organizational and educational settings.

In this study the total **HPLP II** showed high internal consistency with a Cronbach's alpha coefficient $\alpha = 0.92$. This result was close to the original scale that obtained an alpha coefficient of 0.94 (Walker, Sechrist, & Pender, 1995). Peltzer (2002) reported a Cronbach alpha of 0.87, for the earlier version used among South African high school and university students.

All subscales obtained satisfactory inter-item reliability coefficients of 0.70 and good mean inter-item correlation coefficient (between 0.2 and 0.4). However, the results were slightly lower than what was reported for the original HPLP II – the alpha coefficients for the subscales ranged from 0.79 to 0.87 (Walker, Sechrist, & Pender, 1995).

The adopted, self-report version of ASSIST obtained satisfactory Cronbach's alpha coefficients for the full scale and sub-scales. The self-report questionnaire used by Barreto et al. (2014) among university students also reported a good to moderate internal reliability coefficients. The WHO (2002) also reported fairly satisfactory coefficients. It can therefore be concluded that the ASSIST can be used within the university context.

5.4 Prevalence of Alcohol and substance use among students

The substances reported to be the most often used by students i.e. per life time and in the past three months are alcohol, tobacco (smoking), cannabis and sedatives respectively. Males reported higher substance use generally but particularly for alcohol, smoking, cannabis use while females used sedatives (sleeping pills) about twice as much as male students. Several other studies in South Africa also found similar results in that alcohol, smoking and cannabis use were the most common substances used among students and also the general population (Pengpid, et al., 2013; Reddy et al., 2010; Van Heerden et al. 2009). While sedatives or sleeping pills were the fourth highest prevalent

substance used among students, especially among female students, its absence in the literature should be noted as it is hardly mentioned in South African substance use literature and attention should be given to the negative impacts of its use.

The substance use patterns of students seems to follow from reported patterns in their earlier high school years as the YHRS of Reddy et al. (2010) found a high alcohol use prevalence among adolescents followed by cannabis and other substances. Ghuman et al. (2012) also reported a 53.8% life time alcohol use and a 40.8% alcohol use in the past month among secondary school students in KwaZulu-Natal.

The high alcohol and substance use prevalence reported in the study seems quite higher than substance use reported from studies among students in other African countries i.e. Kenya and Nigeria respectively (Atwoli et al., 2011; Abayomi et al., 2013). However, Gebreslassie et al. (2013) reported lower rates of alcohol use and smoking behaviour among Ethiopian university students in comparison to the results of this study.

In this study, the majority of the students were in the low risk groups for alcohol use (don't drink or drunk occasionally) implying that they are at a low risk of developing future problems related to their substance use, providing they continue with their current pattern of use (WHO, 2010). Similarly, Pengpid et al. (2013) also reported the majority of students to be at the lower level of risk for alcohol use while Kyei and Ramagoma (2013) reported more than half of the students at the university in Venda to use alcohol safely. However, this is different from students at Rhodes University where about half the sample engaged in hazardous drinking patterns (Young and Klerk, 2008). Similarly, Zverev (2008) reported a higher prevalence of harmful and hazardous drinking for males and less so for females among university students in Malawi. The results of this study suggest that only about 17.5 % of UKZN students' engaged in hazardous drinking which is lower than reported among the other South African university students. This could be linked to lower levels of disposable income found to impact substance use. In this regard, Mark Bowman, the MD of SABMiller (major brewery in South Africa and Africa) commented in March 2015 at a briefing in London: "So, as Africa develops and levels of disposable income increase, we expect the rate of beer consumption to grow significantly" (Kalideem, 2015). It should also be noted that the self-report nature in measuring substance use could also contribute to misleading results due to social desirability bias.

When comparing this study's alcohol prevalence against the general South African population, students' alcohol use seems higher. Peltzer (2009) reported a prevalence of 24.5% in the South African HIV prevalence, Behaviour and communication Survey. However, the result supported the

UN report that categorised South Africa as one of the countries known for hazardous alcohol use patterns of drinking (WHO, 2014).

5.4.1 Demographic group difference on risk levels of substance use

Because of the skewed distribution of the substance use scores on the ASSIST, the substances use were categorised in risk groups with consideration of the ASSIST guidelines. There was no statistically significant difference on students' alcohol use and smoking behaviour across gender groups. However, more males were in the cannabis risk group than female students. For alcohol by gender, a significant difference was first detected but when the Yates correction for continuity was done to account for an overestimation of significance in two by two tables were conducted, no significant difference was detected. Nevertheless, the frequency distribution noted that more males were found to be risky drinkers than females. However, gender was identified as a significant predictor of risky alcohol use in the logistic regression model as discussed later. International data show however that the male–female gap is closing in more recent drug use age cohorts studies (Degenhart et al., 2008) and also for alcohol use (Keyes et al., 2008). In the study of Ghuman et al. (2012) the increase in alcohol use among secondary school female students in KwaZulu-Natal was noted when results of the study was compared with previous YRBS surveys data for KwaZulu-Natal (Reddy et al., 2008).

Significant differences between age groups and alcohol risk use were found. The young age group (21 year and younger, 20.5%) were more likely to be risky alcohol users than older group (12.6%). This result was consistent with the findings of Young and Klerk (2012) among student at Rhodes but differently for the students in Venda as Kyei and Ramagoma (2013) reported a higher risky alcohol use prevalence among the older age group.

White and Coloured students were found to be more likely to be using alcohol and tobacco more risky than the other students. This concurred with results of several previous studies e.g. Dutra et al. (2014); Peltzer and Ramlagan (2009); Sita et al. (2013); Young and Klerk (2008, 2012); and Young and Mayson (2010). Coloured and White students were also reported in the study of Van Heerden et al. (2009) to be more likely than other race groups to have used alcohol, tobacco and other drugs. In this study there was no significant difference between the races in cannabis use, but Peltzer et al. (2010) found highest cannabis use among Indians and Coloured adolescent while among adults, it was highest among Coloured and Whites.

When looking at the frequency distribution of other less common substances used by students in relation to race groups, White and Coloured students' cocaine and opioids use was also higher than among the other race groups, but not different for Black and Indian students. Whonga is used more by Black African students than Indians, while Indian students used inhalants and sedatives more than Black African students. It is however concerning students at Institutions of Higher Learning compromise their health and wellbeing including academic progress through risky substance use.

5.4.2 Substance use clustering

The statistically significant associations between the substances used support the clustering effect of risky behaviours. Similarly, Pengpid et al. (2013) reported that cannabis use was associated with hazardous or harmful alcohol use among South African university students. The result is also consistent with other studies e.g. Brook et al. (2011) and Gebreslassie et al. (2013) supported that alcohol use is strongly associated with smoking behaviour. While not used commonly, students' cocaine use was strongly correlated with whonga and amphetamines, opioids use was also strongly correlated with hallucinogens and sedatives.

Mckee (2004) argued that alcohol and tobacco act as “gateway” substances that indicate the likelihood of subsequent use of other drugs. Gledhill-Hoyt (2000) stated that students who use multi drugs are at greater risk for alcohol-related motor vehicle accidents and other social problems than students that only use one substance. Similarly, studies refer to multi-substance use and the engagement in other health risk behaviours (alcohol, smoking, intoxicated driving, unprotected sex etc.) e.g. Tavoracci et al. (2013) among French students; Laska et al. (2009) among students in the USA and Mutinta et al. (2013) among UKZN students. While not all risk behaviours were investigated, the likelihood of students engaging in other health risk behaviours when using alcohol and other drugs is concerning and little is known about students' knowledge regarding the negative consequences of substance use.

5.5 Students' PsyCap and HPLS

Students overall available psychological capital can be considered to be high with particular reference to hope and optimism. Reporting high levels of hope implies that students believe in their capacity to begin and sustain actions as well as being able to find ways to pursue their goals (Snyder, 2000). Hope is also associated with engaging in healthy behaviours (Nollen et al., 2008; Kelsey et al., 2011). Similarly higher level of optimism also predicts more health protective behaviours and fewer engagements in health risk behaviours (Baker, 2007; Giltay et al., 2007; Steptoe et al., 2006). For

example, Rawana and Ames (2011) found optimism to be protective for both the frequency of alcohol use and binge drinking events among Canadian aboriginal adolescents. This can be understood as optimism refers to a positive outlook on life and the self through internal and stable attribution processes supportive of continued actions towards achievement (Carver et al., 2010).

Their resilience capacity was also good ($M = 17$, $SD = 2.44$), this implies a high probability that they would be able to bounce back during times of crisis, and should they be in a supportive environment would be able to avoid risky outcomes (Luther et al., 2000; Masten & Powell, 2003). However, their self-efficacy mean score was lower than the other personal resources. A similar result was obtained by Okafor (2014) where a lower level of self-efficacy was reported among UKZN university students. Students' low score in self-efficacy might imply a lower self-appraisal in their ability to accomplish academic tasks successfully (Bandura, 1996). The negative consequence of lower levels of self-efficacy i.e. lack of confidence in being able to deal with tasks, perform health related behaviours or resist pressures within the social environment, may increase students' vulnerability to use and abuse substances (Bandura 1986; Maisto et al. 2000). Specially, lower self-efficacy has been found to be associated with decreased abilities to refuse drinking or other substances (Oei and Morawsk, 2004).

Male students' PsyCap was higher than female students, and specifically for self-efficacy, hope and resilience. The finding was inconsistent with Okafor (2014) findings who reported significant difference only on resilience between male and female with females reporting higher levels of resilience. Allan, McKenna & Dominey (2013) found no significant difference between males and females on resilience among first year students. These inconsistent results suggested that a better understanding of the gendered nature of PsyCap is required. There were no age or race group differences for PsyCap. Okafor (2014) however, reported higher resilience among Black Africa students at UKZN.

Regarding engaging in a health promoting lifestyle, the results on the HPLP II showed that students have a generally low level of involvement i.e. not many students deliberately practice healthy behaviours and engage in continued actions to enhance their health. No differences between the genders were found for the HPLP II. Peltzer (2002) reported similar results as no significant difference on the total HPLS between males and female South Africa students were found.

Students' levels of spiritual growth and interpersonal relationships seemed generally high. Spiritual growth refers to being connected with inner resources like peace and living in harmony with their surroundings, while the supportive interpersonal relationships seem to be meaningful as it concurred

with high spiritual growth as highlighted (Sechrist and Pender, 1995). The meaning derived from interpersonal relationships is also central to the communal life or a collectivist orientation of African culture, to which the majority of students belong (Oyserman & Lee, 2008). However, students seem to struggle with stress management which conflicts with reported levels of high inner peace and supportive social environment. The spiritual and interpersonal dimensions should be able to be protective against stress (Walker et al. 1996). It is however likely that the low levels of self-efficacy pertaining to academic life might contribute to perceived unmanageable stress despite some supportive factors such as connections with others and spiritual support . There might also be other factors that were not investigated in the study that mediates the role of spiritual growth and interpersonal relationship in positive management of stress.

It was concerning to note that very few students engaged in physical activities especially planned physical activity besides accidental exercise. The results however indicated that male students were more involved in physical activity and more able to manage their stress than female students. The study findings were also consistent with what Lee and Loke (2005) found better score of male students than female on the physical activity among Hong Kong university students. Although they did not find significant gender difference on stress management, but they reported male students were more able than female students to use stress management methods (Lee and loke, 2005). However, Al-Kandari & Vidal (2007) reported significant differences between the male and female students in the overall HPLS, physical activity, interpersonal relations, and stress management among Kuwait nursing students. Consistent with this study results, male students were more involved in physical activity and more likely able to manage stress than female students (Al-Kandari and Vidal, 2007).

Health responsibility was also low suggesting that students do not actively and purposively take responsibility for their health and in particular pay attention to balanced nutrition. With regards to health responsibility, the older age group (22 – 37) reported higher health responsibility than the younger group. It should be noted that students' financial constraints might play an important role in them not being able to actively take responsibility for their health as measured by the HPLP II, and to follow a well-balanced diet. Health responsibility was found to be significantly different between those with enough money to buy expensive things and those that have money for the basics.

Food insecurity among students has been reported to be a major problem in Institutions of Higher Learning in South Africa (Gwacela, 2014; Van den Berg & Raubenheimer, 2015). In these studies food insecurity were investigated and it was argued to negatively impact on students' academic progress.

Several studies have supported the generally low involvement of University students in health promotion lifestyles. For example a cross cultural study in 23 countries by Haase et al. (2004), Lee and Loke (2005) in Hong Kong, Rezaei-Adaryani and Rezaei-Adaryani (2012) in Iran and Peltzer (2001) in South Africa reported poor levels of health promoting lifestyle, with the lowest scores on the physical activity, nutrition, health responsibility and stress management.

5.6 Association between PsyCap and HPLP II

One of the research questions was to investigate associations between the psychosocial resources and healthy lifestyle orientation. There was a significant association between the PsyCap and HPLP II that implies the higher a student scored in PsyCap the more likely they are to engage in health promotion life styles. This auger well for optimal health or well-being in terms of the Wellness model, that integrated psychological resources, supportive social context and health related behaviours. Optimal health or well-being is achieved when the body, mind and spirit are integrated (Myers, Sweeney & Witmer, 2000). Thus, the higher an individual's positive psychological state of development – (being hopeful, optimistic, resilient and experience self-efficacy – confidence in one's abilities), and able to integrate these with a spiritual dimension, sound relationships with others and the environment, able to mobilize resources to reduce stressors as well as practice health promotion behaviours (e.g. Exercise, balanced diet and accept accountability for personal health) the higher the likelihood in achieving improved health and well-being.

The psychosocial constructs of HPLP II namely spiritual growth, interpersonal relationships and stress management showed associations with some PsyCap subscales that indicated its relevance to a healthy lifestyle orientation. The constructs of wellness are interconnected and interrelated, Myers et al. (2000) argued that changes in one area of wellness affect other areas positively or negatively and different aspects of wellness might be more relevant at different time points during the life span. The holistic wellness model stated that individuals can play an active role in maximising their health and wellbeing potential. Therefore the higher the integration of the PsyCap and HPLS the higher the likelihood for improved health and well-being especially when taking cognisance of the potential to develop PsyCap (Luthans et atl., 2004) and behavioural change efforts in following a healthier lifestyle as outlined in the National Health Promotion Policy and Strategy 2015 to 2019 (DoH, 2015).

However, PsyCap was weakly associated with the health promotion behaviour constructs of HPLP II (health responsibility, physical activity and nutrition), that suggests students' positive oriented mind state was not influential on the health related behaviours measured by the HPLP II. This differs from previous research that indicated some associations. Hope was reported to be positively associated

with self-reported health status and negatively related to body mass (Kelsey et al., 2011) and positively related to healthy food consumption (Nollen et al., 2008). Jointly optimism and hope are considered to have health protective characteristics as viewed within global positive expectancy theory. Carvaja (2012) found optimism to be predictive of physical activity and lower engagement in health risk behaviours.

While not all health enhancing behaviours were measured by the HPLP II, it can also not be assumed that students are fully aware of how to live a healthy and balanced life in terms of actions required e.g. physical activities and balanced nutrition. Therefore more attention should be paid to ensure greater awareness of health promoting lifestyles among students at university. In addition, students might also not have supportive environments to enable these required health behaviours especially in light of their generally low socio-economic status. It might therefore not always be possible for students to engage in healthy behaviours particularly in relation to eating well balanced meals and to make healthy food choices as outlined above.

5.7 Differences between substances use risk groups on PsyCap and HPLS

The significant lower mean scores on resilience, the only PsyCap sub-scale, among the risky alcohol use group for all the participants but also for males and females suggest that students who do not have adequate resilience as psychological resource and support to assist them when experiencing challenges or face adversity, are likely to use alcohol more risky than the others.

Resilience theory emphasise the understanding of healthy development despite risk exposure, and to be resilient means having the ability to draw from positive available resources or supportive factors (e.g. supportive family and self-esteem) that enable positive outcomes (Beauvais & Oetting, 1999). In relation to the result, low resilience among students at high risk of alcohol use also implied lack of available positive personal resources that enable them to avoid risk behaviours and consequent negative outcomes (Fergus and Zimmerman, 2005).

This is further supported by the moderate correlation that was found between resilience and stress management in the study. Perceived stress was also found to be associated with alcohol misuse and other risk behaviours (Houghton et al., 2012; Low et al., 2012; Tavitacci et al., 2013). However, alcohol use seems to be commonly used by students as a stress coping strategy that is called a *coping skills deficit*, and it indicated that the higher the level of coping skills deficit, the higher the likelihood that people use alcohol and substances to assist them to get relief from their stress (Maisto et al., 2000). This evidence can be supported by the theory of Tension Reduction that argued alcohol is

used to reduce stress (Conger's, 1956), but its negative impact is when it leads to alcohol-related problems and develops to disorders. A recent study by Lipschitz et al. (2013) indicated that employees with effective stress management skills engaged in less risk behaviours, while those who possess poor stress management skill, engaged in high risk behaviours. Common stressful life events are associated with both mental health symptoms and substance use in young adolescents (Low et al., 2012). Higher levels of self-efficacy was also found to be associated with health promoting lifestyles such as quitting smoking among others healthy behaviours (e.g. seeking preventive care, more exercising, having favourable perceptions of health status) (Bandura 1986; Maisto, Connors & Zywiak, 2000). As supportive interpersonal relationships (Sharkey et al., 2008; Rew and Horner, 2003) and adult role models contribute to strengthening adolescent resiliency (Mistry et al., 2009; Zimmerman et al., 2002), it is likely that psychosocial support and mentorship of students facing challenges might enhance their resilience and thereby make them less vulnerable to risky substance use.

Lower levels of hope among males were also linked to higher risky alcohol use. Feelings of hopelessness have been found to be significant predictors of health risk behaviours e.g. unprotected sex and multiple partners (Meyer-Weitz, 2005). In this study, hope was strongly correlated with optimism, and optimism was found in previous studies to be a protective factor against risky alcohol use in terms of frequency and binge drinking episodes in particular (Rawana & Ames, 2011), but also against other health risk behaviours (Baker, 2007; Giltay et al., 2007; Steptoe et al., 2006). Similarly, among smokers, hope was reported to be positively associated with fruit and vegetable consumption (Nollen et al., 2008). In addition, hope and optimism are viewed to be integral to Global Positive Expectancy (GPE) which in turn has been found to be linked to health protective outcomes (Carvaja, 2012). Higher initial levels of GPE among adolescents predicted lower levels of alcohol use, healthier food choices and greater physical activity over time Carvaja (2012).

Higher levels of PsyCap were also noted to protect students from both smoking and cannabis use. Lui et al. (2015) demonstrated the protective role of PsyCap in smoking among Chinese mine workers. Adolescents with higher levels of resilience were reported to have a lower probability of substance use, in particular tobacco and cannabis use (Veselska et al., 2008). Among smokers who trying to quit smoking behaviour increased self-efficacy was found to predict maintenance of abstinence and daily fluctuation of self-efficacy within individuals predicts their daily behaviours (Gwaltney et al., 2005).

It was however unexpected that for both the full HPLS scale and all the different sub-scales that there were no significant difference in mean scores for the low and risky alcohol groups. This seems to suggest that alcohol use, even at a risky level, is viewed as congruent with a healthy lifestyle. While Aron et al. (1995) found earlier a negative association between physical activity and alcohol use, later studies found mixed effects for physical activity and alcohol use. Wilson et al. (2004) and Martens et al. (2003) found that students who were involved in athletics were more likely to engage in a wide range of risky behaviours than were nonathletic students. As mentioned earlier, the frequency and quantity of alcohol consumption as well as the hazardous drinking patterns among many South Africans, even among sport stars, may have contributed to the normalisation of risky alcohol use.

This was however different for smoking behaviour as this seems not be compatible with a HPLS among students in the study. Several studies have found substance use to be related to poor nutrition, physical inactivity, unhealthy weight control, and other risky behaviours (Chen, Beydoun & Wang, 2008; Neumark-Sztainer et al. 2007; Pasch, Nelson, Lytle, Moe & Perry, 2008).

Lower quality interpersonal relationships have been found to increase students risk for risky smoking and particularly females risk for cannabis use. Supported relationships with significant adults played a significant role in the protection of young adults from engagement in health risk behaviour e.g. substance use and thus protected them from adverse health events (De Haan & Boljevac, 2009; Ward & Snow, 2010). However, in a South African study, close interdependent peer relationships and need for care and support by peers may result in compliance with deviant peers, and thus increase health risk behaviours (Mohaso, 2010).

Females with lower spiritual development were found in this study to be likely to engage in risky cannabis use. Negative relationships with spirituality and the use of substances were reported in the meta-analysis by Koenig et al. (2012). The overall result was that spirituality and religion promotes better health behaviours, and is associated with less alcohol and drug use, less cigarette smoking, more physical activity and exercise, better diet, and safer sexual practices in the majority of studies that have examined these relationships (Koenig, 2012).

It can therefore be argued that available psychological resources may protect against risky health related behaviours such as alcohol and particularly smoking and cannabis use. It is likely that students with available psychological resources might be better able to deal with adversities and challenging situations and less likely to use substances as a negative coping strategy. As the result showed, HPLS life style integration with psychological resources is necessary for students to draw

from those inner and social resources against adversities and to fully develop their health and wellbeing.

5.8 Predictors of Alcohol use and Smoking behaviour among university students

Step wise logistic regression models were fitted to determine the best predictors i.e. gender, age, self-efficacy, hope, resilience, optimism and HPLP II on the likelihood of low risk and risky alcohol use and smoking behaviour. In the first model the demographical variables were fitted followed by the rest as well as in the second model. With regards to alcohol use, the final model indicated gender and resilience as significant predictors of risky alcohol use. The model showed that female students were about .44 times less likely to engage in risky alcohol use behaviour than male students.

Several studies have reported on gender difference in alcohol use with males being more likely than females to use alcohol, particularly in a risky way (Brook et al., 2006; Onya et al., 2012; Peltzer and Ramlagan, 2009; Visser and Routledge, 2007). Alcohol use and abuse among students elsewhere in the country was reported by: Young and Klerk (2008) among Rhodes university students; Kyei and Ramagoma (2013) among Venda university students and by Pengpid et al. (2013) among public university students in South Africa. The explanations for higher male alcohol use have been linked to higher exposure to deviant peers (Svensson, 2003; Brook et al., 2006), lower levels of parenting monitoring than for females (Svensson, 2003). Onya et al. (2012) stated that traditional African values of accepting alcohol use and cigarette smoking by adolescent males and not females may also play a role in African males being more like to engage in substance use than females. The higher the likelihood for engagement in higher risk behaviour have been cited by Govender et al. (2013) to be a reason for risky substance use in males rather than females students. It should however be noted as earlier mentioned, that the gender difference in alcohol use and risky drinking patterns between males and females are changing as an increase in female alcohol use globally is reported and also found among adolescents in high schools in KwaZulu-Natal (Ghuman et al., 2013).

Resilience also significantly predicted the likelihood of risky alcohol use implying that students who reported higher levels of resilience were less likely to engage in risky alcohol use. Resilience was explained as positive coping and adaptation in the face of risk or adversity (Masten and Reed, 2002). Students in their university life are exposed to challenging environments and events that require adaptation and bouncing back from adversity. These challenges could be related to being away from family for support and guidance, increases peer pressure, academic stressors (exam, assignments, and fees) and interpersonal relationships. It can therefore be argued that students that have lower levels of resilience might use alcohol as a way of coping with difficulties. Stress has been found to be

positively related to alcohol use (Brook et al. 2006; Bamberger & Bacharach, 2006; Sinha, 2008; Lloyd & Turner, 2008).

However, the value of resilience i.e. positive cognition and emotion is important for students in coping and adapting positively in challenging contexts. The positive cognitions and emotions developed after enduring the challenges when being able to cope will further enhance their resilience in and their ability to overcome the negative effects of risk exposure (Luther et al., 2000; Masten & Powell, 2003), and therefore less likely to use alcohol as a coping mechanism.

With regard to smoking behaviour White and Coloured students were about three times more likely to report smoking than the African and Indian students. In addition 50.0% students from this race group were categorised as risky smokers, followed by 26.4% Indian students and 19.6% Black Africans students. The finding was consistent with many research results; for example, Reddy et al., (2007) found that smoking and alcohol consumption were significantly higher among White high school students in South Africa and the United States. Colored male and female have previously identified to be engaging in risky smoking followed by White (Dutra et al., 2013). The mortality rate attributed to smoking was also high among the Colored population (Sita et al., 2013).

The model also showed that the total HPLP II was a significant predictor of risky smoking with those students in a health promoting lifestyle being about one time less likely to engage in risky smoking behaviors. Various other studies have found relationships between smoking and some of the constructs of HPLP II or related constructs. Family and peer relationships that support smoking as well as stressors have been reported to be predictors of smoking behavior (Oxford, 2001; Brook, 2003). However, supportive family relationships decrease the likelihood of adolescents being in the risky smoking group (Mistry et al. 2008).

Chipperfield (2008) and Lee et al (2012) found a positive association between physical inactivity and smoking. However, regular physical activity was reported to be a moderator of stress levels (Chiauzii et al., 2005) and positively linked to increased life expectancy and improved quality of life (Lawrence & Schank, 1993). Among adolescents and young adults, exercise has been found to have a positive relationship with decreased symptoms of depression, improving one's self-concept, and self-esteem (Garcia et al., 1995). It is therefore argued that fostering a health promoting lifestyle among students is likely to have many positive health and wellbeing outcomes for students including academic outcomes.

5.9 Chapter summary

The results of research data alongside the research questions were discussed and inferences were made in this regard. The study findings were generally consistent with the literature as alcohol, smoking and cannabis were found to be the most common substances used by the students. The relationship between the PsyCap and HPLS and the major substances supported the basic argument of the study that these factors seem to play a protective role in the engagement of risky behaviour and in particular substance use and may therefore enhance students' health and wellbeing.

CHAPTER SIX

CONCLUSIONS, STUDY LIMITATIONS AND RECOMMENDATIONS

6.1. Introduction

In this last chapter, the conclusions reached from the findings, limitation of the study and recommendations for future research are addressed.

6.2. Conclusions

The aim of the study was to explore the protective nature of psychological capital implying psychological resources and a health promotion life style in preventing students from risk alcohol and substance use. The prevalence of substance use including usage among different demographic groups was investigated. The prediction value of the demographics factors, psychological resources, and a health promoting lifestyle were explored for alcohol use and smoking.

Having positive psychological resources (PsyCap) and adhering health promotion life style (HPLS) seems to be protective against the engagement in alcohol and substance use and likely other health risk behaviours. University students are particularly vulnerable for risky alcohol and substance use as noted in this study and also in studies among university students elsewhere.

6.2.1 Prevalence of alcohol and substances use

Among the students who participated in the study, alcohol use, smoking and cannabis use were found to be the most common substances used also supported by other studies conducted among students in South Africa. Life time alcohol usage and usage within the past three months reflected the generally high prevalence report in similar studies among students. While the engagement of hazardous alcohol use was not as high as reported in most other South African universities, a substantial group nevertheless engage in risky drinking behaviours that is concerning for the negative impact on their health and wellbeing in later years. As smoking is the second most common substance used by students the health impact of continued smoking is severe, as there is no safe limit for tobacco use, and is likely to contribute to the increasing chronic disease burden of South Africa

Males were more at risk for risky substance use than female students (this was not significant for alcohol use, but was significant for smoking and cannabis use). The similar alcohol use among males and females is aligned with the international literature finding that the gender difference in alcohol use are declining and both male and female engage similarly in hazardous drinking behaviours.

Females on the other hand used sedatives more than males. Risky alcohol and smoking use was predominantly found among White and Coloured students.

Younger students (21 years and younger) reported higher levels of substance use i.e. alcohol, smoking and cannabis use than older students. White and Coloured students were also found to use cocaine and opioids more than others, while Black Africans used whonga more than the other race groups. There was no significant difference in cannabis use between the races. Indian students inhalants' and sedatives' use was higher than the other races groups.

There was association between most of the substances used that indicated the co-existence of multi-substances. The association was strong between alcohol and smoking, alcohol and cannabis use and smoking behaviour and cannabis use. The result supported the argument of Mckee (2004) that alcohol and smoking act as "gate way" substances to the use of other substances.

6.2.2 Students' PsyCap and HPLP II

Students general Pyscap was high suggesting that they have inner psychological resources to draw from during challenging times. However, they reported higher level of resilience but it seem that attention should be paid to increase their self-efficacy as this may not only render them vulnerable for substance use, but also for engagement in other health risk behaviours and academic difficulties.

Not all students seem to value a health promoting lifestyle and few actually engage in health enhancing behaviours, also noted among students elsewhere. Although the students reported a higher level of spiritual growth and supportive interpersonal relationships, their level of stress management, physical activity, nutrition and health responsibility was low. There seems thus to be opportunities for health promoters to create greater awareness among students on the benefits of engaging in health promotion lifestyles including its protective role in substance use that have detrimental health and wellbeing consequences. The positive relationship between PsyCap and a health promoting lifestyle also point to the role of psychological resources that supports mental wellbeing and practicing a health promoting lifestyle.

It should be noted that male students had higher levels of PsyCap, and similarly their resiliency, hope and self-efficacy was also higher than female students' PsyCap. An intervention must give more attention to female students' to enhance their resilience, self-efficacy and hope. No gender differences were found on the HPLP II. However, male students' level of physical activity was higher and stress management ability was better than that of female students. No, other significant demographic difference was reported.

6.2.3 Prediction power of the PsyCap, HPLP II, gender and race

The result of the logistic regression showed that the best predictors of risky alcohol use were gender and resilience with male students and those with lower levels of resilience more likely to engage in risky alcohol use. As resilience predict the ability of individuals to bounce back in the face of adversity and manage challenging situations, it is possible that students' who do not have adequate resilience may resort to substance use as a coping mechanism when they experience difficulties. The best predictors of smoking were belonging to the White and Coloured groups and not engaging in a health promoting lifestyle.

Apart from creating greater awareness of the detrimental consequences of substance use as a coping mechanism, students would need support in addressing difficulties and interventions to enhance resilience and health promoting lifestyles through supportive environments and skills building opportunities.

6.3 Limitations of the study

The study had some limitations despite the key findings yielding valuable information pertaining to the protective role of psychological resources and health promoting lifestyles. The nature of the study used i.e. a cross-sectional survey design that obtained information at a particular point in time, is argued to provide only an estimation of knowledge (Warwick & Charle, 1975). A survey is also a correlational method and therefore not able to determine causality among the variables studied. Another limitation of the survey method is ability of respondents to accurately recall past events and in this case, life time substance use and usage in the past three month. Another limitation was the non-probability convenient sampling method that restricts generalizations to the students' population of the UKZN and beyond.

The social desirability bias, inherent in the self-report measures on substance use, may have resulted in students providing socially acceptable rather than an honest answers (Neuman, 2014). As the role of psychological capital and engagement in a health promoting lifestyle were not used in previous substance use studies, comparisons to other studies in this regard were limited. However, studies regarding the psychological constructs linked to psychological capital used as psychosocial determinants of substance use were useful in this regard.

6.4 Implications and Recommendations

The study shed light on the significance of the psychosocial resources and health promoting lifestyle as protective factors from health risky behaviours, particularly from risky alcohol use and smoking behaviours. Alcohol and smoking are among the highest contributors to mortality and morbidity rates globally and particularly in South Africa characterised by high prevalence of particularly alcohol use and risky drinking patterns that have become normative. These high prevalence and risky patterns of alcohol use is particularly among youth including university students. Suggestions for further research and recommendations for interventions are outlined below.

Suggestions for further research:

- The relationships between PsyCap and HPLS need further exploration among bigger samples for generalisation purposes as it seems that available psychological resources and a health promoting lifestyle orientation are likely to protect youth from substance use.
- Minor inconsistencies found in this study, and globally, regarding psychological resources and substance use need better understanding. Qualitative studies could be useful to explore the role of psychological resources in substance use, particularly in contexts where substance use is increased.
- The HPLS II instrument should be further developed through qualitative and quantitative studies to include other health related behaviours particularly relevant for South African students' e.g. Unprotected sex.

Recommendations for Health Promotion Interventions:

- Greater awareness is required about the harmful impact of substance use and abuse. Students need to be made aware of the safe limits for alcohol use.
- Interventions that develop and support psychological resources including stress management and coping skills might prepare students better to deal with challenge face in university life that has been found to increase the likelihood of substance use and abuse. Self-efficacy among female students was significantly lower than males and therefore special attention will be required to assist them in developing greater confidence and self-efficacy to better manage challenges, pressures and events that lead to risky behaviours.

Interventions to create awareness pertaining to a health promoting lifestyle is necessary as the generally low scores obtained on the HPLS is a clear indication of lower awareness and engagement in health promoting behaviours that will have positive health and well-being outcomes for them in

the present and future. Skills building in Health Promoting Interventions will be critical as greater awareness is unlikely to be translated into a health promoting lifestyle. It will also be important to address the likely challenges that student might face particularly in relation to healthy and balanced nutrition in initiating and maintaining a health promoting lifestyle.

6.5 Chapter summary

In this chapter conclusions about the study findings in terms of the research objectives were made. Specifically the major substances used by students, their available psychological capital and extent of engagement in health promoting behaviours were highlighted as well as the protective relationships detected among these aspects and substance use. Particular risk factors identified include being male, race groups with different vulnerabilities regarding substance, low levels of resilience and engagement in HPLS must receive adequate emphasis in interventions aimed to reduce risky alcohol use and smoking behaviours among students. The study is concluded by an overview of study limitations and recommendations for further research and health promoting interventions for students.

REFERENCES

- Aaron, J. D., Dearwater, R. S., Anderson, R., Olsen, T, Kriska, A.M., & Laporte, R.E. (1995). Physical activity and the initiation of high-risk health behaviour in adolescents. *Medicine & Science in Sports and Exercise*, 27(12), 1639-1645.
- Abayomi, O., Onifade, PO., Adelufosi, A., & Akinhanmi, AO. (2013). Psychosocial correlates of hazardous alcohol use among undergraduates in south western Nigeria. *General Hospital Psychiatry*. 35, 320–324.
- Adams, V.H., Snyder, C.R., Rand, K.L., King, E.A., Sigman, D.R., & Pulvers, K.M. (2002). Hope in the workplace. In Giacalone R, Jurkiewicz C (Eds.), *Workplace spirituality and organization performance*. New York: Sharpe.
- Adler, A. (1954). *Understanding human nature*. New York, NY: Fawcett. (Original work published 1927).
- Allen, J. P., Chango, J., Szewedo, D., Schad, M., & Marston, E. (2012). Predictors of susceptibility to peer influence regarding substance use in adolescence. *Child Development*, 83, 337-350.
- Allsop, S., Saunders, B., & Phillips, M. (2000). The process of relapse in severely dependent male problem drinkers. *Addiction*, 95(1), 95-106.
- Alwan, H., Viswanathan, B., Rousson, V., Paccaud, F., & Bovet, P. (2011). Association between substance use and psychosocial characteristics among adolescents of the Seychelles. *BMC Pediatrics*, 11(1), 1.
- Ardell, DB. (1977). *High level wellness: An alternative to doctors, drugs, and disease*. Emmaus, PA: Rodale Press.
- Armeli, S., Tennen, H., Affleck, G., & Kranzler, HR. (2000). Does affect mediate the association between daily events and alcohol use? *Journal of Studies on Alcohol*, 61(6), 862–871.
- Atwoli, L., Mungla, P.A., Ndung'u, M.N., Kinoti, K.C., & Ogot, E.M (2011). Prevalence of substances use among college students in Eldoret, western Kenya. *BMC Psychiatry*, 11(1), 1.
- Babbie, E.R., (1990). *Survey Research Methods* (2nd –edition). Chapman University, Berkeley.
- Babor, T., Higgins-Biddle, Saunders, J. B., & Monteiro, M.G. (2001). *The Alcohol Use Disorder Identification Test* (2nd edition). Geneva: World Health Organisation.
- Backer-Fulghum, L., Patock-Peckham, J., King, KM., Roufa, L., & Hagen, L. (2012). The stress-response dampening hypothesis: How self-esteem and stress act as mechanisms between negative parental bonds and alcohol-related problems in emerging adulthood. *Addictive Behaviours*, 37, 477–484.
- Baker, S. (2007). Dispositional optimism and health status, symptoms and behaviours: Assessing idiographic relationships using a prospective daily diary approach. *Psychology and Health*, 22, 431–455.

- Bandura, A. (1992). Exercise of personal agency through the self-efficacy mechanism. In R. Schwarzer (Ed.), *Self-efficacy: Thought control of action* (pp. 3-38). Washington, D.C.: Hemisphere.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, N.J: Prentice-Hall.
- Bandura, A. (1969). Social-learning theory of identificatory processes. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 213-262). Chicago: Rand McNally
- Barreto, GA. H., Christoff, de O. A., & Boerngen-Lacerda, R. (2014). Development of a self-report format of ASSIST with university students. *Addictive Behaviours*; 39, 1152-1158.
- Bartholomew, D., Knotts, M., & Moustaki, I. (2011). *Latent variable models and factor analysis: A unified approach*. (3rd ed.). West Sussex, UK: John Wiley & Sons.
- Bartlett, M. S. 1954. A note on the multiplying factors for various χ^2 approximations. *Journal of the Royal Statistical Society, Series B*, 16, 269-298.
- Bartko, W. T., & Eccles, J. S. (2003). Adolescent participation in structured and unstructured activities: a person-oriented analysis. *Journal of Youth and Adolescence*, 32, 233–242.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497–529.
- Beauvais, F., & Oetting, E.R. (1999). Drug use, resilience, and the myth of the golden child. In Glantz, M.D. & Johnson, J.L (eds). “*Resilience and Development*”: New York, 101-106.
- Beavers, A.S., Lounsbury, J.W., Richards, J.K., Huck, S.W., Skolits, G.J., & Esquivel, S.L. (2013). Practical Considerations for Using Exploratory Factor Analysis in Educational Research. *Practical Assessment, Research & Evaluation*, 18(6), 1-13.
- Benyamin, Y. & Roziner, I. (2008). The predictive validity of optimism and affectivity in a longitudinal study for older adults. *Science Direct*, 44, 853-864.
- Blustein, D.L. (2008). The Role of Work in Psychological Health and Well-Being: A Conceptual, Historical, and Public Policy Perspective. *American Psychological Association*. 63(4), 228–240.
- Blustein, D. L. (2006). The psychology of working: A new perspective for career development, counseling, and public policy. Mahwah, NJ: Erlbaum.
- Boardman, JD., Finch, BK., Ellison, CG., Williams, DR., Jackson, JS. (2001). Neighbourhood disadvantage, stress, and drug use among adults. *Journal of Health and Social Behaviour*, 42, 151-165.
- Bonnie, R.J., and O’Connell, M.E., eds. (2004). *Reducing Underage Drinking: A Collective Responsibility*. Washington, DC: The National Academies Press.

- Borsari, B., & Carey, K.B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol*, 64, 331–341.
- Briggs, S.R., & Cheek, J.M. (1986). The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54(1), 108-147.
- Brook, D., Rubenstone, E., Zhang C., Morojele, N.K., Brook, JS. (2011). Environmental stressors, low well-being, smoking, and alcohol use among South African adolescents. *Social Science & Medicine*, 72, 1447-1453.
- Brook, J.S., Morojele, N.K., Pahl, K. & Brook, D.W. (2006). Predictors of drug use among South African adolescents. *Journal of Adolescent Health*. 38, 26–34.
- Brook, J.S., Brook, D.W., Richter, L., & Whiteman, M. (2003). Risk and protective factors of adolescent drug use: Implications for prevention programs. In *Hand book of Drug Abuse Prevention Theory and Practice* (pp. 265-87) Springer US.
- Brown, S. D., & Lent, R. W. (2005). *Career development and counseling: Putting theory and research to work*. Hoboken, NJ: Wiley.
- Buckner, J.D., Schmidt N.B., Lang, A.R., Small, J.W., Schlauch, R.C., Lewinsohn, P.M. (2008). Specificity of social anxiety disorder as a risk factor for alcohol and cannabis dependence. *Journal of Psychiatric Research*, 42, 230–239.
- Burgard, S.A., & Lin, K.Y. (2013). Bad Jobs, Bad Health? How Work and Working Conditions Contribute to Health Disparities. *American Behavioural Science*, 0002764213487347.
- Cartwright, M., Wardle, J., Steggle, N., Simon, A.E., Croker, H., & Jarvis, M.J. (2003). Stress and dietary practices in adolescents. *Health Psychology*, 22(4), 362-369.
- Carvajal, S.C. (2012). Global positive expectancies in adolescence and health-related behaviours: Longitudinal models of latent growth and cross-lagged effects. *Psychology and Health*; 27(8), 916–937.
- Carver, C.S., Scheier, M.F., & Segerstrom, C.S. (2010). Optimism. *Clinical Psychology Review*. 30, 879–889
- Cattell, R.B. (1978). *The scientific use of factor analysis in behavioural and life sciences*. New York, NY: Plenum Press.
- Cattell, R.B. (1966). The scree test for number of factors. *Multivariate Behavioural Research*, 1, 245-76.
- Chen, X., Beydoun, M.A., & Wang, Y. (2008). Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity*, 16, 265–274.
- Chiauzzi, E., Green, T.C., Lird, S., Thum, C., & Goldstein, M. (2005). My student body: a high risk drinking prevention web site for college student. *Journal of American College Health*, 53, 263–274.

- Chipperfield, J.G., (2008). Everyday physical activity as a predictor of late-life mortality. *Gerontology*, 48(3), 349–357.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. Hillsdale, NJ: Erlbaum.
- Conger, J. (1956). Reinforcement theory and the dynamics of alcoholism. *Quarterly Journal of Studies on Alcohol*, 17, 296–305.
- Coon, D., & Mitterer, J.O. (2007). Introduction to psychology: *Gateways to mind and behaviour* (11th ed.). Belmont, CA: Wadsworth.
- Cooper, M.L. (2002). Alcohol use and risky sexual behaviour among college students and youth: Evaluating the evidence. *Journal of Students Alcohol, Supplement*, 14, 101–117.
- Courtenay, W. H. (2001). Constructions of masculinity and their influence on men's well-being: A theory of gender and health. *Social Science & Medicine*, 50, 1385–1401.
- Creswell. J.W., (2009). *Research Design: quantitative, qualitative and mixed methods*. SAGE.
- Darmon, N., Briend, A. & Drewnowski, A. (2004) Energy-dense diets are associated with lower diet costs: A community study of French adults. *Public Health Nutrition*, 7, 21–27.
- De Haan, L., & Boljevac, T. (2009). Alcohol use among rural middle school students: Adolescents, parents, teachers and community leaders' perceptions. *Journal of School Health*, 79(2), 58– 92.
- Department of Health National. (2015). *Health Promotion Policy and Strategy*. Republic of South Africa.
- Department of Health. (1998). South African Demographic and Health Survey 1998. Pretoria: Department of Health.
- Department of Health. (2007). South Africa Demographic and Health Survey 2003. Pretoria: Department of Health.
- De Vaus, D. (2001). *Research Design in Social Sciences*. SAGE Publications, Landon.
- DeVellis, R.F. (2003). *Scale development: Theory and applications* (2nd ed). Thousand Oaks, California: Sage.
- Dishion, T. J., & Tipsord, J. M. (2011). Peer contagion in child and adolescent social and emotional development. *Annual Review of Psychology*, 62, 189–214.
- Downward, P. and Rasciute, S. (2010). The relative demands for sports and leisure in England. *European Sport Management Quarterly*, 10(2), 189–214.
- Drewnowski, A., & Darmon, N. (2005). Food choices and diet costs: an economic analysis. *Journal of Nutrition*. 135:900–4.
- Drewnowski, A. & Specter, S. E. (2004) Poverty and obesity: the role of energy density and energy costs. *American Journal of Clinical Nutrition*, 79, 6–16.

- Duffy, M. E. (1993). Determinants of health-promoting lifestyles in older persons. *IMAGE: Journal of Nursing Scholarship*, 25, 23–28.
- Dunn, H. L. (1961). *High level wellness*. Arlington, VA: Beatty Press.
- Du Plessis, Y., & Barkhuizen, N. (2012). Psychological Capital, a requisite for organisational performance in South Africa. *South African Journal of Economic and Management Sciences*, 15(1), 58-96.
- Eisenberg, M.E., Sieving, R.E., Bearing, L.H., Swain, C., & Resnick, M.D. (2005). Parents' communication with adolescents about sexual behaviour: A missed opportunity for prevention? *Journal of Youth Adolescence*, 35, 893-902
- Eric, B. (2012). The effectiveness of the Omaha System intervention on the women's health promotion lifestyle profile and quality of life. *Journal of Advanced Nursing*, 68(4), 898–907.
- Esterhuyse, K.G.F., Nortje, N., Plenaar, A., & Beukes, R.B.I. (2013). Sense of humour and adolescents' cognitive flexibility. *South Africa Fam Practice*, 55(1), 90-95.
- Farrell, L., & Shields, M.A. (2002). Investigating the economic and demographic determinants of sporting participation in England. *Journal of Royal State Society*, 165(2), 335–348.
- Fergus, S., & Zimmerman, M.A. (2005). Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annual Revision Public Health*, 26, 399-419.
- Fernander, A.F., Flisher, A.J., King, G., Noubary, F., Lombard, C., Price, M., et al. (2006). Gender differences in depression and smoking among youth in Cape Town, South Africa. *Ethnicity & Disease*, 16, 41-50.
- Flisher, A.J., Townsen, L., Chikobvu, P., Lombard, C.F., & King, G. (2010). Substance Use and Psychosocial Predictors of High School Dropout in Cape Town, South Africa. *Journal of research on adolescence*, 20(1), 237–255.
- Flisher, A.J., Parry, C., Evans, J., Lombard, C. (2003). Substance Use by Adolescents in Cape Town: Prevalence and Correlates. *Journal of Adolescent Health*, 32, 58-65.
- Florence, M.D., Asbridge, M. & Veugelers, P.J. (2008). Diet quality and academic performance. *Journal of School Health*, 78(4), 209-215.
- Frederickson, B. L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21, 173–206.
- Freeborn, D. K., Polen, M. R., Hollis, J. F., & Senft, R. A. (2000). Screening and brief intervention for hazardous drinking in an HMO: Effects on medical care utilization. *Journal of Behavioural Health Services Research*, 27(4), 446–453.
- Galinha, I.C., Oishi, S., Pereira, C.R., Wirtz, D., & Esteves, F. (2013). Adult Attachment, Love Styles, Relationship Experiences and Subjective Well-Being: Cross-Cultural and Gender

- Comparison between Americans, Portuguese, and Mozambicans. *Social Indices Research*, 119, 823–852.
- Garcia, A.W., Broda, M.N., Frenn, M., Coviak, C., Pender, N. J., & Ronis, D.L. (1995). Gender and developmental differences in exercise beliefs among youth and prediction of their exercise behaviour. *Journal of School Health*, 65, 213–219.
- Gebreslassie1, M., Feleke1, A. & Melese, T. (2013). Psychoactive substances use and associated factors among Axum university students, Axum Town, North Ethiopia. *BMC Public Health*, 13(1), 1.
- Ghuman, S., Meyer-Weitz, A., & Knight, S. (2012). Prevalence patterns and predictors of alcohol use and abuse among secondary school students in southern KwaZulu-Natal, South Africa: demographic factors and the influence of parents and peers. *South Africa Family Practice*, 54, (2), 132-138.
- Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: Social acceptance, friendships, and peer networks. *Journal of School Psychology*, 41, 235–284.
- Giltay, E.J., Geleijnse, J.M., Zitman, F.G., Buijsse, B., & Kromhout, D. (2007). Lifestyle and dietary correlates of dispositional optimism in men: The Zutphen Elderly Study. *Journal of Psychosomatic Research*, 63, 483–490.
- Gledhill-Hoyt, J., Lee, H., Strote, J., Wechsler, H. (2000). Increased use of marijuana and other illicit drugs at US colleges in the 1990's: Results of three national surveys. *Addiction*, 11, 1655-1667.
- Govender, K., Naicker, S.N. Meyer-Weitz, A., Fanner, J., Naidoo, A., & Penfold, W.L. (2013). Associations between perceptions of school connectedness and adolescent health risk behaviours in South African high school learners. *Journal of School Health*, 83, 614-622.
- Gramezy, N., & Rutter, M. (1983). *Stress, coping and development in childhood*. New York: McGraw-Hill.
- Gray, D. E. (2009). *Doing Research in the Real World*. Landon, SAGE Publishers.
- Gwaltney, C. J., Metrik, J., Kahler, C.W., & Shiffman, S. (2005). Self-Efficacy and Smoking Cessation: A Meta-Analysis. *Psychological Addiction Behaviour*, 23(1), 10.
- Haase, A., Steptoe, A., Sallis, J.F., & Wardle, J. (2004). Leisure-time physical activity in university students from 23 countries: associations with health beliefs, risk awareness, and national economic development. *Preventive Medicine*, 39, 182– 190.
- Hafen, B. Q., Franksen, K. J., Karren, K. J., & Hooker, K. R. (1992). *The health effects of attitudes, emotional relationships*. Provo, UT: EMS Associates.

- Harrison, K., Bost, K.K., McBride, B.A., Donovan, S. M, Grigsby-Toussaint, D.S. et al. (2011). Toward a developmental conceptualization of contribution to overweight and obesity in childhood: The Six-C's model. *Child Development Perspective*, 5, 50-58.
- Hassmen, P., Koivula, N., & Uuteal, A. (2000). Physical Exercise and Psychological Well-Being: A Population Study in Finland. *Preventive Medicine*, 30, 17–25.
- Hattie, J. A. (1992). *Self-concept*. Hillsdale, NJ: Erlbaum
- Helmer, SM., Mikolajczyk, RT., McAlaney, J., Vriesacker, B. et al. (2014). Illicit substance use among university students from seven European countries: A comparison of personal and perceived peer use and attitudes towards illicit substance use. *Preventive Medicine*, 67, 204–209.
- Hendricks, G., Savahl, S., Florence, M. (2015). Adolescents Peer pressure, Leisure Boredom, and Substance use in Low-income Cape Town Communities. *Social Behaviour and Personality*, 43(10), 99-110.
- Herbert, M. (2011). An exploration of the relationship between psychological capital, occupational stress, burnout and employee engagement (unpublished Master's Thesis). University of KwaZulu-Natal, Durban.
- Hettler, W. (1980). Wellness promotion on a university campus. *Family and Community Health*, 3, 77–95.
- Hildebrand, K.M., Johnson, D.J., & Bogle, K. (2001). Comparison of patterns of alcohol use between high school and college athletes and nonathletes. *College Students Journal*, 35, 358–365.
- Hingson, R.W., Zha, W., & Weitzman, E.R (2009). Magnitude of and trends in alcohol related mortality and morbidity among US college students ages 18–24, 1998–2005. *Journal Student Alcohol Drugs*, 16, 12–20.
- Houghton, J. D., Wu, J. P., Jeffrey, L. G., Christopher, P. N., & Charles, C. M. (2012). Effective stress management. *Journal of Management Education*, 36, 220-238.
- Humeniuk, R., Henry-Edwards, S., Ali, R., Poznyak, V., & Monteiro, M. (2010). The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Manual for use in primary care. Geneva: World Health Organization.
- Iwasaki, Y., & Mannell, R. C. (2000). Hierarchical dimensions of leisure stress coping. *Leisure Sciences*, 22, 163–181.
- Jacobson, K.C., & Crockett, L.J. (2000). Parental Monitoring and Adolescent Adjustment: An Ecological Perspective. *Journal of research on adolescence*, 10(1), 65–97.
- Jessor, R. (1991). Risk behaviour in adolescence: a psychosocial framework for understanding and action, *Journal of Adolescent Health*, 12(8), 597–605.

- Jones, M., & Galliher, R. (2007). Navajo ethnic identity: Predictors of psychosocial outcomes in Navajo adolescents. *Journal of Research on Adolescence*, 17, 683–696.
- Jose, P.E., Ryan, N., & Pryor, J. (2012). Does Social Connectedness Promote a Greater Sense of Well-Being in Adolescence Over Time? *Journal of Research on Adolescence*, 22(2), 235-251.
- Jung, C. G. (1958). *The undiscovered self* (R. C. F. Hall, Trans.). New York: Mentor Books.
- Kaiser, H. (1970). A second generation Little Jiffy. *Psychometrika*, 35, 401-15.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141-151.
- Kalichman, S. C., Simbayi, L. C., Kagee, A., Toefy, Y., Jooste, S., Cain, D., et al. (2006). Associations of poverty, substance use, and HIV transmission risk behaviours in three South African communities. *Social Science & Medicine*, 62, 1641-1649.
- Keeler, H.J., & Kaiser, M.M. (2010). An integrative model of adolescent health risk behaviour. *Journal of Paediatric Nurse*, 25(2), 126-37.
- Kelsey, K.S., DeVillis, B.M., Gizlice, Z., Ries, A. & Campbell, M.K. (2011). Obesity, hope, and health: findings from the HOPE Works Community survey. *Journal of community Health*, 36(6), 919-24.
- Koenig, H.G. (2012). Religion, Spirituality, and Health: The Research and Clinical Implications. *ISRN Psychiatry*, 2012.
- Krauss, S.E. (2005). Research Paradigms and Meaning Making: A Primer. *The Qualitative Report*, 758-770.
- Kyei, K.A. & Ramagoma, M. (2013). Alcohol Consumption in South African Universities: Prevalence and Factors at the University of Venda, Limpopo Province. *Journal of Social Science*, 36(1), 77-86.
- Laska, M.N., Pasch, K.E., Lust, K., Story, M., & Ehlinger, E. (2009). Latent Class Analysis of Lifestyle Characteristics and Health Risk Behaviours among College Youth. *Prevention Science*, 10, 376–386.
- Lawrence, D., & Schank, MJ. (1993). Health status, health perceptions, and health behaviours of young adult women. *International Journal of Nursing Studies*, 30, 527–535.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Publishing Co.
- Lazarus, R. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.
- Leary, M.R., Schreindorger, L.S., & Haupt, A.L. (2004). The role of low self-esteem in emotional and behavioural problems: Why is low self-esteem dysfunctional? In Kowalski, RM., Leary, MR. (Eds.). *The interface of social and clinical psychology*. New York City.

- Lee, I.M., Shiroma, E.J., Lobelo, F., Puska, P., Blair, S.N., & Katzmarzyk, P.T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide; an analysis of burden of disease and life expectancy. *Lancet*, 380(9838), 219–229
- Lee, R. & Loke, A. (2005). Health Promotion Behaviours and Psychosocial Well-being of University Students in Hong Kong. *Public Health Nursing*, 22(3), 209-20.
- Leteka, M.J.M. (2003). Alcohol Use/ Abuse among Teenagers in Selected High Schools in Maseru City: The Development of a Health Education Programme. Unpublished Doctoral Dissertation, University of South Africa, South Africa.
- Lipschitz, J.M., Paiva, A.L., Redding, C.A., Butterworth, S., & Prochaska, J.O. (2013). Co-occurrence and coercion of stress management with other health risk behaviours. *Journal of Health Psychology*, 0(0) 1–11.
- Liu, L., Xu, X., Wu, H., Yang, Y. & Wang, L. (2015). Associations of psychological capital, demographic and occupational factors with cigarette smoking among Chinese underground coal miners. *Public Health*, 15(1), 1.
- Low, N.C., Dugas, E., O'Loughlin, E., Rodriguez, D., Contreras, G., Chaiton, M., & Loughlin, J. (2012). Common stressful life events and difficulties are associated with mental health symptoms and substance use in young adolescents. *BMC Psychiatry*, 12, 116.
- Luthans, F., Youssef, C.M., & Avolio, B.J. (2007). *Psychological Capital*. New York: Oxford University Press.
- Luthans, F., Avolio, B.J., Avey, B.J., & Norman, S.M. (2007). Positive Psychological Capital: Measurement and Relationship with Performance and Satisfaction. *Leadership Institute Faculty Publications*. Paper 11. <http://digitalcommons.unl.edu/leadershipfacpub/11>.
- Luthans, F., Luthans, K. W., & Luthans, B. C. (2004). Positive psychological capital: beyond human and social capital. *Business Horizons*, 47, 45-50.
- Luthans, F., & Youssef, C. M. (2004). Human, social, and now positive psychological capital management: Investing in people for competitive advantage. *Organizational Dynamics*, 33, 143–160.
- Luthans, F. (2002). The need for and meaning of positive organizational behaviour. *Journal of Organisational Behaviour*, 23, 695-706.
- Luther, S.S., Cicchetti, D., & Becker, B. (2000). The constructs of Resilience: A critical Evaluation and Guidance for future work. *Child Development*, 71(3), 543-562.
- Maisto, S.A., Connors, G.J., & Zywiak, W.H. (2000). Alcohol treatment, changes in coping skills, self-efficacy, and levels of alcohol use and related problems 1 year following treatment initiation. *Psychology of Addictive Behaviours*, 14(3), 257–266.

- Marsiglia, F.F., Kulis, S., Hecht, M.L., & Sills, S. (2004). Ethnicity and ethnic identity as predictors of drug norms and drug use among pre-adolescents in the Southwest. *Substance Use and Misuse*, 39(7), 1061–1094.
- Martens, M. P., Cox, R. H., & Beck, N. C. (2003). Negative consequences of intercollegiate athlete drinking: The role of drinking motives. *Journal of Studies on Alcohol*, 64, 825–828.
- Martikainen, P., Bartley, M., & Lahelma, E. (2002). Psychosocial determinants of health in social epidemiology. *International journal of epidemiology*, 31(6), 1091-3.
- Martin, R. (2003). Sense of humour. In: Lopez, S.J., Snyder, C.J., (eds). *Positive psychological assessment: a handbook of models and measures*. Washington, DC: American Psychological Association, p. 313.
- Maslow, A. (1970). *Motivation and personality* (2nd ed.). New York: Harper & Row.
- Maslow, A. H. (1954). *Motivation and personality*. New York: Harper.
- Masten, A. S., & Powell, J. L. (2003). A resilience framework for research, policy, and practice. In S. S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 1–25). New York, NY: Cambridge University Press.
- Masten, A.S., & Reed, M.G.J. (2002). Resilience in development. In Snyder, C.R., & Lopez, S. (Eds.). *Handbook of positive psychology* (pp.74-88). Oxford: Oxford University Press.
- Mavroveli, S., Petrides, K.V., Rieffe, C. & Bakker, F. (2007). Trait emotional intelligence, psychological well-being and peer-rated social competence in adolescence. *British Journal of Developmental Psychology* 25(2), 263-275.
- McKee, S.A, Hinson, R, Rounsaville, D. & Petrelli, P. (2004). Survey of subjective effects of smoking while drinking among college students. *Nicotine and Tobacco Research*, 6, 111-117.
- McKie, L., Al-Bashir, M., Anagnostopoulou, T., Csepe, P., El-Asfghani, A., Fonseca, H., et al. (1993). Defining and assessing risky behaviours. *Journal of Advanced Nursing*, 18, 1911 – 1916.
- Mercurio, A.E., & Landry, L.J., (2008). Self-objectification and well-being: The impact of self-objectification on women's overall sense of self-worth and life satisfaction. *Sex Roles*, 58, 458–466.
- Meyer-Weitz, A. (2005). Understanding fatalism in HIV/AIDS protection: the individual in a dialogue with the contextual factors. *African Journal of AIDS Research*, 4(2), 75-82.
- Miesen, H. W. J. M., & Schaafsma, J. (2008). Get a life: Relatedness needs, materialism, and subjective well-being. In *Proceedings of the IAREP/SABE World Meeting*.
- Mirowsky, J., & Ross, C. (2007). Creative work and Health. *Journal of Health and Social Behaviour*, 48(1), 385–403.

- Mistry, R., McCarthy, W.J., Yancey, A.K., Lu, Y., & Patel, M. (2009). Resilience and Patterns of Health Risk Behaviours in California Adolescents. *Preventative Medicine*, 48(3), 291-297.
- Mohasoa, I. (2010). Substance abuse among male adolescents. Unpublished MA dissertation. Pretoria: University of South Africa.
- Mutinta, G., Govender, K., Gow, J & George, G. (2013). An Investigation on Students' Risky Sexual Behavior at KwaZulu-Natal University, Durban, South Africa. *American Journal of Sexuality Education*, 8, 121–139.
- Myer, A., & Hansen, C. (2006). *Experimental Psychology* (6th edition). Belmont, CA: Thomson Wadsworth.
- Myers, J. E., Sweeney, T. J., & Witmer, J. M. (2000). The Wheel of Wellness counselling for wellness: A holistic model for treatment planning. *Journal of Counselling & Development*, 78, 251-266.
- Ndom, R., & Adelekan, M. (1996). Psychosocial correlates of substance use among undergraduates in Ilorin University, Nigeria. *East African Medical Journal*, 73, 541-547.
- Neumann, C.A., Leffingwell, T.R., Wagner, E.F., Mignogna, J., Mignogna, M. (2009). Self-esteem and gender influence the response to risk information among alcohol using college students. *Journal of Substance Use*, 14(6), 353–363.
- Neuman, W.L. (2006). Qualitative and Quantitative Research Designs. Neuman, W.L. *Social Research Methods: Qualitative and Quantitative Approaches* (6th ed., pp 149-178). Boston: Pearson Prentice-Hall.
- Neumark-Sztainer, D.R., Wall, M.M., Haines, J.I., Story, M.T., Sherwood, N.E., & van den Berg, P.A. (2007). Shared risk and protective factors for overweight and disordered eating in adolescents. *American Journal of Preventive Medicine*, 33, 359–369.
- Nhlapo, N., Lues, R.F. & Groenewald, W.H. (2014). Microbial counts of food contact surface at schools depending on a feeding scheme. *South African Journal of Science*, 110(11), 1-6.
- Nollen, N., Befort, C., Pulvers, K., James, A.S. Kaur, H., Mayo, M.S., Hou, Q., & Ahluwalia, J.S. (2008). Demographic and psychosocial factors associated with increased fruit and vegetable consumption among smokers in public housing enrolled in a randomized trial. *Health Psychology*, 27(3), 252-259.
- Norman, P., Conner, M., & Stride, C.B. (2012). Reasons for binge drinking among undergraduate students: An application of behavioural reasoning theory. *British Journal of Health Psychology*, 17, 682–698.
- Nutbeam, D. (1998). Evaluating health promotion progress, problems and solutions. Health Promotion International, *Oxford University Press*, 13(1).

- Nyklicek, I., Vingerhoets, A., & Denollet, J. (2002). Emotional (non-) expression and health: Data, questions and challenges. *Psychology and Health*, 17(5), 517–528
- Oei, T. P.S., & Morawska, A. (2004). A cognitive model of binge drinking: The influence of alcohol expectancies and drinking refusal self-efficacy. *Addictive Behaviours*, 29, 159–179.
- Ohannessian, C., Hesselbrock, V., Tennen, H., & Affleck, G. (1994). Hassles and uplifts and generalized outcome expectancies as moderators on the relation between a family history of alcoholism and drinking behaviours. *Journal of Studies on Alcohol*, 55, 754–763.
- Okafer, D.C. (2014). *Psychological capital and Happiness as protective factors in coping with stressors among first year psychology students, University of KwaZulu-Natal, Durban, South Africa*. Unpublished Masters Dissertation.
- Onya, H., Tessera, A., & Flisher, A. (2012). Adolescent alcohol use in rural South African high schools. *African Journal of Psychiatry*, 15, 352-357.
- Orem, D. E., & Vardiman, E. M. (1995). Orem's nursing theory and positive mental health: practical considerations. *Nursing science quarterly*, 8(4), 165-173.
- Oxford, M.L., Harachi, T.W., Tracy, W., et al. (2001). Preadolescent predictors of substance initiation: A test of both the direct and mediated effect of family social control factors on deviant peer associations and substance initiation. *American Journal of Drug Alcohol Abuse*, 27, 599–616.
- Oyserman, D., & Lee, S. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin*, 134(2), 311–342.
- Pallant, J. (2011). *SPSS survival manual* (4th ed.). New York: Mcgraw and Hill Publications.
- Palmer, R.S., Kilmer, J.R., Ball, S.A. & Larimer, M.E. (2010). Intervention defensiveness as a moderator of drinking outcome among heavy-drinking mandated college students. *Addictive Behavior*, 35(12), 1157-1160.
- Panday, S., Reddy, S.P., Ruiter, R.C., Bergström, E., De Vries, H. (2007). Determinants of smoking among adolescents in the Southern Cape-Karoo region, South Africa. *Health Promotion International*, 22, 207-217.
- Parks, K., Collins, R.L., Derrick, J.L. (2012). The Influence of Marijuana and Alcohol Use on Condoms Behaviour: Findings From a Sample of Young Adult Female Bar Drinkers. *Psychological Addict Behaviour*, 26(4), 888.
- Pasch, K.E., Nelson, M.C., Lytle, L.A., Moe, S.G., & Perry, C.L. (2008). The adoption of risk-related factors through early adolescence: Associations with weight status and implications for causal mechanisms. *The Journal of Adolescent Health*, 43, 387-393.

- Patton, G.C., Tollit, M.M., Romaniuk, H., Spence, H.S., Sheffield, J., & Sawyer, M.G. (2010). A Prospective Study of the Effects of Optimism on Adolescent Health Risks. *Pediatrics*, (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).
- Pelletier, K. R. (1994). *Sound mind, sound body: A new model for lifelong health*. New York: Simon & Shuster.
- Peltzer, K. & Ramlagan, S. (2012). Alcohol Use, Problem Drinking and Health Risk Factors Among South African Youths. *Journal of Psychology in Africa*, 22(4), 671–680.
- Peltzer, K., Davids, A., Njuho, P. (2011). Alcohol use and problem drinking in South Africa: findings from a national population-based survey, 2008. *African Journal of Psychiatry*, 14, 30-37.
- Peltzer, K., Ramlagan, S. (2009). Alcohol use trends in South Africa. *Journal of Social Science*, 18(1), 1-12.
- Peltzer, K. (2003). Depressive symptoms in relation to alcohol and tobacco use in South African University students. *Psychology*, 92, 1097–1098.
- Peltzer, K. (2002). Health promotion lifestyle and Personality among Black South African students. *Social Behaviour and Personality*, 30(4), 417-422.
- Peltzer, K., Malaka, D., & Phasawa, N. (2001). Psychological Correlates of substance use among South African university Students. *Social Behaviour and Personality*, 29(8), 799-806.
- Pengpid, S., Peltzer, K., & van Der Heever. (2013). Problem Alcohol Use and Associated Factors in a Sample of University Students in South Africa. *Journal of Psychology in Africa*, 23(2), 243–250.
- Pettifor, A.E., Rees, H., Steffenson, A., Hlongwa-Madikizela, L., MacPhail, et al. (2004). HIV and sexual behavior among young South Africans; A national survey of 15–24 year olds. Johannesburg, South Africa: *Reproductive Health Research Unit*, University of Witwatersrand.
- Piehler, T. F., Véronneau, M.H., & Dishion, T. J. (2012). Substance use progression from adolescence to early adulthood: Effortful control in the context of friendship influence and early-onset use. *Journal of Abnormal Child Psychology*, 40, 1045–1058.
- Pillay, Kreshona. (2012). *Happiness, psychological capital and organisational citizenship behaviour of employees in a financial institution in Durban, South Africa* (unpublished thesis). University of KwaZulu-Natal, Durban.
- Pretorius, J., & Raijmakers, L. (2006). A snapshot: South African university students' attitudes, perceptions and knowledge of HIV/AIDS. *South Africa Journal of Higher Education*, 20(2), 299–317.
- Rawana, J.S., & Ames, M.E. (2012). Protective predictors of alcohol use trajectories among Canada Aboriginal youth. *Journal of Youth Adolescence*, 41(2), 229-43.

- Reddy, S., James, S., Sewpaul, R., Koopman, F., Funani, N., Sifunda, S., et al. (2010). Umthente Uhalaba usamila – The South African youth risk behaviour survey 2008. Cape Town: *South African Medical Research Council*.
- Reddy, P., Resnicow, K., Omardien, R., & Kambaran, N. (2007). Prevalence and correlates of substance use among high school students in South Africa and the United States. *American Journal of Public Health*, 97(10), 1859-1864.
- Reddy, S.P., Panday, S., Swart, D., Jinabhai, C.C., Amosun, S.L., James, S., et al. (2003). Umthente Uhalaba Usamila - The 1st South African Youth Risk Behaviour Survey 2002. *South African Medical Research Council*; Cape Town:
- Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teeawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet*, 373, 2223-2233.
- Reid, M. C., Fiellin, D. A., & O'Connor, P. G. (1999). Hazardous and harmful alcohol consumption in primary care. *Archives of Internal Medicine*, 159(15), 1681.
- Rew, L., & Horner, S.D. (2003). Youth Resilience Framework for reducing health-risk behaviours in adolescents. *Journal of Paediatric Nurse*, 18, 379–88.
- Rezaei-Adaryani, M. & Rezaei-Adaryani, M. (2012). Health-promoting lifestyle of a group of Iranian medical, nursing and allied health students. *Journal of Clinical Nursing*, 21, 3587–3589.
- Rodgers, W. M., & Brawley, L. R. (1993). Using both self-efficacy theory and the theory of planned behavior to discriminate adherers and dropouts from structured programs. *Journal of Applied Sport Psychology*, 5(2), 195-206.
- Romo, L., Le Strat, Y., Aubry, C., Marquez, S., Houdeyer, K., Batel, P., et al. (2009). The role of brief motivational intervention on self-efficacy and abstinence in a cohort of patients with alcohol dependence. *International Journal of Psychiatry in Medicine*, 39(3), 313–323.
- Ross, R., Zeller, R., Srisaeng, P., Yimmee, S., Somchid, S., & Sawatphanit, W. (2005). Depression, stress, emotional support, and self-esteem among baccalaureate nursing students in Thailand. *International Journal of Nursing Education Scholarship*, 2(1), 0-15.
- Rozmus, C.L., Evans, R., Wysochansky, M., & Mixon, D. (2005). An Analysis of Health Promotion and Risk Behaviours of Freshman College Students in a Rural Southern Setting. *Journal of Paediatric Nursing*, 20, 1.
- Rummel, R.J. (1970). *Applied factor analysis*. Evanston, IL: Northwestern University Press.
- Ryan, R. M., & Deci, E. L. (2007). Active human nature: Self-determination theory and the promotion and maintenance of sport, exercise, and health. In M.S. Hagger & N.L.D. Chatzisarantis (Eds.), *intrinsic motivation and self-determination in exercise and sport*, 1-19. Human Kinetics Europe Ltd.

- Sarason, B. R., Shearin, E. N., Pierce, G. R., & Sarason, I. G. (1987). Interrelations of social support measures: Theoretical and practical implications. *Journal of Personality and Social Psychology*, 52, 813–832.
- Schmid, H. (1998). Swiss Adolescents drug users' and nonusers' optimism about their future. *Journal of Applied social sciences*, 28(20), 1889-1902.
- Schneider, M., Norman, R., Parry, C., Bradshaw, D., Plüddemann, A., and the South African Comparative Risk Assessment Collaborating Group. (2007). Estimating the burden of disease attributable to alcohol use in South Africa in 2000. *South African Medical Journal*, 97, 664-672.
- Seedat, M., Van Niekerk, A., Jewkes, R., Suffia, S., & Ratele, K. (2009). Violence and injuries in South Africa: prioritizing an agenda for prevention. *Lancet*, 374, 1011-1022.
- Sekaran, U. (2003). *Research Methods for Business - A Skill Building Approach*. (4th ed.). Wiley.
- Seligman, M.E.P., & Csikszentmihalyi, M. (2000). Positive psychology. *American Psychologist*, 55(1), 5–14.
- Seligman, M.E.P. (1998). *Learned optimism*. New York: Pocket Books.
- Sharkey, J.D., You, S., & Schnoebelen, K. (2008). Relations among school assets, individual resilience, and student engagement for youth grouped by level of family functioning. *Psychology in the schools*, 45, 402.
- Shephard, R.J. (1997). Curricular physical activity and academic performance. *Paediatrician Exercise Science*, 9, 113-126.
- Shobo, Y. (2007). Youth's perceptions of HIV infection risk: A sex-specific test of two risk models. *African Journal of AIDS Research*, 6(1), 1–8.
- Snyder, C.R. (2000). *Hand book of hope*. San Diego: Academic Press.
- Sorsdahal, K., Myers, B., Ward, C., Matzopoulos, R., Mtshshe, B., Nicol, A., Cuijpers, P., & Stein, D. (2015). Adapting a blended motivational interviewing and problem-solving intervention to address risky substance use amongst South Africans. *Psychotherapy Research*, 25(4), 435–444.
- Sorsdahal, K., Stein, D., Weich, L., Fourie, D., & Myers, B. (2012). The effectiveness of a hospital-based intervention for patients with substance-use problems in the Western Cape. *South African Medical Journal*, 102 (7), 634-635.
- Spector, P. E. (2005). *Industrial and organizational psychology: Research and practice*. Hoboken, NJ: Wiley.
- Squeglia, L.M., Pulido, C., Wetherill, R.R., Jacobus, J., Brown, G.G., & Tapert, S.F. (2012). Brain response to working memory over three years of adolescence: influence of initiating heavy drinking. *Journal of Students Alcohol Drug*, 73, 749–760.

- Stajkovic, A.D., & Luthans, F. (1998b). Social cognitive theory and self-efficacy: Going beyond motivational and behavioural approaches. *Organizational Dynamics*, 8, 62-74.
- Step toe, A., Wright, C., Kunz-Ebrecht, S., & Iliffe, S. (2006). Dispositional optimism and health behaviour in community-dwelling older people: Associations with healthy ageing. *British Journal of Health Psychology*, 11, 71–84.
- Step toe, A., & Wardle, J. (2004). Health-related behaviour: prevalence and links with disease. In Kaptein, A., & Weinmen, J. (Eds.), *Health Psychology*. BPS: Blackwell.
- Symonds, P.M. (1954). A comprehensive theory of psychotherapy. *American Journal of Orthopsychiatry*, 24, 697-714.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.
- Tavolacci, M. P., Ladner, J., Grigioni, S., Richard, L., Villet, H., & Dechelotte, P. (2013). Prevalence and association of perceived stress, substance use and behavioral addictions: a cross-sectional study among university students in France. *BMC Public Health*, 13(1), 1-8.
- Taylor, M., Junabhai, C. C., Naidoo, K., Kleinschmidt, I., & Diamini, S. B. (2003). An epidemiological perspective of substance use among high school pupils in rural KwaZulu-Natal. *South African Medical Journal*, 93, 136-140.
- Thomas, E. P., Seager, J. R., Vilhjoen, E., Potgieter, F., Rossouw, A., Tokota, B., et al. (1999). Household environment and health in Port Elizabeth, South Africa. *Stockholm Environment Institute, South African Medical Research Council and Sida*.
- Toussaint, L., & Friedman, P. (2009). Forgiveness, gratitude, and well-being: The mediating role of affect and beliefs. *Journal of Happiness Studies*, 10, 635–654.
- Trainor, S., Delfabbro, P., Anderson, S., & Winefield, A. (2010) Leisure activities and adolescent psychological well-being. *Journal of Adolescence*, 33, 173–186.
- Trenberth, L., & Dewe, P. (2002). The importance of leisure as a means of coping with work related stress: An exploratory study. *Counselling Psychology Quarterly*, 15(1), 59-72.
- Umana-Taylor, A., Lee, R.M., Rivas-Drake, D., Syed, M., Quintana, S.M., Cross, W.E., et al. (2013). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. *Child Development*, 85(1), 21–29.
- Van den Berg, L., & Raubenheimer, J. (2015). Food insecurity among students at the University o the Free State, South Africa. *South African Journal of Clinical Nutrition*, 28(4), 160-169.
- Van Heerden, M., Grimsrud, AT., Seedat, S., Myer, L., Williams, DR., Stein, DJ. (2009). Patterns of substance use in South Africa: Results from the South African Stress and Health study. *SAMJ*, 99, 5.

- Vargoli, L., & Darviri, C. (2011). Stress Management Techniques: evidence-based procedures that reduce stress and promote health. *Health Science Journal*, 5(2), 74-89.
- Veselska, Z., Geckova, A.M., Orosova, O., Gajdosova, B., van Dijk, J.P., Reijneveld, S.A., (2009). Self-esteem and resilience: The connection with risky behavior among adolescents. *Addictive Behaviours*, 34, 287–291
- Walker, S.N., & Hill-Polerecky, D.M. (1996). *Psychometric evaluation of the Health-Promoting Lifestyle Profile II*. Unpublished manuscript, University of Nebraska Medical Center.
- Walker, S., Sechrist, K., & Pender, N. (1995). The Health-Promoting Lifestyle Profile II. Omaha: University of Nebraska Medical Center, *College of Nursing*.
- Walker, S. N., Volkan, K., Sechrist, K. R., & Pender, N. J. (1988). Health-promoting life styles of older adults: Comparisons with young and middle-aged adults, correlates and patterns. *Advanced Nursing Science*, 11, 76–90.
- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The health-promoting lifestyle profile: Development and psychometric characteristics. *Nursing Research*, 36, 76-81.
- Ward, M.M. (2012). Sense of control and sociodemographic differences in self-reported health in older adults. *Quality Life Res*, 21, 1509–1518.
- Ward, B., & Snow, P. (2010). Supporting parents to reduce the misuse of alcohol by young people. *Drugs: education, prevention and policy*, 17(6), 718-731.
- World Health Organisation. (1964). *Basic documents* (15th ed.). Geneva, Switzerland: Author.
- World Health Organisation. (1998). Health Promotion Glossary. WHO, Geneva, Switzerland. <http://www.who.int/healthpromotion/about/HPR%20Glossary%201998.pdf>. Retrieved on June, 2015.
- World Health Organisation. (2002). The World Health Report. Geneva: World Health Organization.
- WHO ASSIST Working Group. (2002). The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Development, reliability and feasibility. *Addiction*, 97(9), 1183–1194.
- World Health Organization. (2004). *International statistical classification of diseases and related health problems* (Vol. 1). World Health Organization. [pps.who.int/iris/bitstream/10665/42980/1/9241546530_eng.pdf](http://apps.who.int/iris/bitstream/10665/42980/1/9241546530_eng.pdf). Retrieved on 12, May 2015.
- World Health Organisation. (2010). Alcohol, Smoking and Substances Involvement Screening Test: manual for use in primary health care. Prepared by Humeniuk et al. France. http://apps.who.int/iris/bitstream/10665/44320/1/9789241599382_eng.pdf. Retrieved on 4 April 2015.
- World Health Organisation. (2010). Alcohol, Smoking and Substances Involvement Screening Test: manual for use in primary health care. Prepared by Humeniuk et al. France.

- World Health Organisation. (2011). Is harmful use of alcohol a public health problem. from <http://www.who.int/features/qa/66/en/index.html>.
- World Health Organisation. (2011). *Global Status Report on Alcohol and Health*. Geneva, Switzerland. http://www.who.int/nmh/publications/ncd_report_full_en.pdf. Retrieved on 19, September 2015.
- World Health Organization. (2014). Global status report on alcohol and health. Geneva, Switzerland. http://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/zaf. Retrieved on September 2015.
- Wicki, M., Kuntsche, E., & Gmel, G. (2010). Drinking at European universities? A review of students' alcohol use. *Addictive Behaviours*, 35, 913–924.
- Williams, S. & Cooper, L. (2002). *Managing Workplace stress: a Best Practice Blueprint*. Chichester: Wiley.
- Wilson, G.S., Pritchard, M.E., & Schaffer, J., (2004). Athletic status and drinking behaviour in college students: the influence of gender and coping styles. *Journal of American College Health*, 52, 269-273.
- Wild, L.G., Flisher, A.J., Bhana, A., & Lombard, C. (2004). Associations among adolescent risk behaviours and self-esteem in six domains. *Journal of Child Psychology and Psychiatry*, 45, 1454-1467.
- Windle M. (2003). Alcohol use among adolescents and youth. *Alcohol Research and Health Journal*, 27, 79-85.
- Witmer, J. M., & Sweeney, T. J. (1992). A holistic model for wellness and prevention over the lifespan. *Journal of Counselling and Development*, 71, 140-148.
- World Health Survey (2006). Report of South Africa. Geneva: World Health Organisation. Community Agency for Social Enquiry (CASE), 2003.
- Wu, B. & Porell, F. (2000). Job characteristics and leisure physical activity. *Journal of Aging Health*, 12(4), 538–559.
- Yip, T., & Fuligni, A. J. (2002). Daily variation in ethnic identity, ethnic behaviours, and psychological well-being among American adolescents of Chinese descent. *Child development*, 73(5), 1557-1572.
- Young, C., & Mayson, T. (2010). The Alcohol Use Disorders Identification Scale (AUDIT) normative scores for a multiracial sample of Rhodes University residence students. *Journal of Child and Adolescent Mental health*, 22(1), 15-23.
- Young, C., & de Klerk, V. (2008). Patterns of alcohol usage on South African university campus: The findings of two annual drinking surveys. *African Journal of Drug and Alcohol Studies*, 7(2), 101–112.

- Yong, A. G., & Pearce, S. (2013). Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology*, 9(2), 79-94.
- Zech, E. (2000). *The Effects of the Communication of Emotional Experiences*. Unpublished dissertation. University of Louvain-la-Neuve, Belgium.
- Zimmerman, M.A., Bingenheimer, J.B., & Notaro, P.C. (2002). Natural mentors and adolescent resiliency: a study with urban youth. *American Journal of Community Psychol*, 30, 221–43.
- Zverev Y. (2008). Problem drinking among university students in Malawi. *Collegium Antropolologicum*, 32(1), 27-31.
- Zweig, J.M., Phillips, S.D., Lindberg, L.D. (2002). Predicting adolescent profiles of risk: looking beyond demographics. *Journal of Adolescent Health*, 31, 343-353.

APPENDIX A

Letter of Permission from Registrar Office



5 June 2015

Mr Aron Hagos Tesfai
School of Applied Human Sciences
College of Humanities
Howard College Campus
UKZN
Email: 214581706@stu.ukzn.ac.za

Dear Mr Tesfai

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN) towards your postgraduate studies, provided Ethical clearance has been obtained. We note the title of your research project is:

"Alcohol and substance use among South African university students: Prevalence and psychosocial determinants".

It is noted that you will be constituting your sample by randomly approaching and handing out questionnaires to students on the Howard and Westville campuses.

Please ensure that the following appears on your questionnaire/attached to your notice:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using 'Microsoft Outlook' address book.

Data collected must be treated with due confidentiality and anonymity.

Yours sincerely


MR B POO
REGISTRAR (ACTING)

Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa

Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7824/2204 Email: registrar@ukzn.ac.za

Website: www.ukzn.ac.za



Edgewood Howard College Medical School Pietermaritzburg Westville

APPENDIX B

Humanities and Social Sciences Research Ethics Committee Approval



06 August 2015

Mr Aron H Tesfai 214581706
School of Applied Human Sciences
Howard College Campus

Dear Mr Tesfai

Protocol reference number: HSS/0880/015M

Project title: Alcohol and Substance use among South Africa university students: Prevalence and psychosocial determinants

Full Approval- Full Committee Reviewed

In response to your application dated 10 July 2015, the above mentioned project was discussed at the HSSREC meeting held on 29 July 2015. The application has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)

/px

cc Supervisor: Professor A Meyer-Weitz
cc Academic Leader Research: Dr Jean Steyn
cc School Administrator: Ms Ayanda Ntuli

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/3550/4557 Facsimile: +27 (0) 31 260 4609 Email: ximbap@ukzn.ac.za / spymgmn@ukzn.ac.za / mohum@ukzn.ac.za

Website: www.ukzn.ac.za



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APPENDIX C

Participant Informed Consent

School of Applied Human Sciences – Psychology

Research Topic: Alcohol and Substance use among South Africa university students: Prevalence and Psychosocial determinants

Dear Participant

My name is Aron H. Tesfai and I am health Promotion masters students in the school of Applied Human Science, Howard Campus, University of KwaZulu-Natal. I am conducting research as part of my Health Promotion Master's degree. My supervisor is Prof. Anna Meyer-Weitz, in the school of Applied Human Sciences, discipline of psychology at the University of KwaZulu-Natal. The study will aim to understand the health promotion lifestyle of students and their substance use behaviour. You have been identified as a possible participant for the research as you are student in UKZN.

Participation in the study is completely **voluntary** and you are allowed to withdraw from the study at any time. Refusal to participate in the study, or withdrawal from the study, will involve no penalty or loss. Participants will not be asked to provide their name and all information you provide will be kept **confidential and anonymous**.

The study has been approved by the UKZN Human Social Science Research Ethics committee (protocol reference number HSS/0880/015M). For any further information please feel free to contact the researcher or supervisor of the study.

Kind Regards

Aron H. Tesfai

Contact details of Researcher

Aron H. Tesfai
0743534306
Email: aribanov@gmail.com

Supervisor

Prof. Anna Meyer-Weitz (PhD)
SAHS, Psychology, Howard College
University of KwaZulu-Natal
Email: meyerweitz@ukzn.ac.za
Tel: 031 260 7618

Declaration of Informed Consent

- I have been informed about the nature, purpose and procedures for the study: Alcohol and Substance use among South Africa university students: Prevalence and Psychosocial determinants.
- I have also received, read and understood the written information about the study. I understand everything that has been explained to me and I consent to take part in the study.
- I understand that I am free to withdraw from the research at any time, should I so desire. The information that I provide will be anonymous and confidential and only be used for research purposes.

Participant:

Signature

Date

Witness/ Research Assistant:

Signature

APPENDIX D

Research Questionnaire

Cell phone number to contact you should
you win a prize in our Lucky Draw!

.....

HEALTH PROMOTION QUESTIONNAIRE

Introduction

Thank you for your willingness to participate in this research study. The success of the research depends on you answering the questions as **honestly** as possible. This questionnaire has four parts and you are requested to read each question carefully and follow the instructions in each section as they differ.

Instructions: Please mark the correct option by using a X (cross) or √

Section A: Demographic information

Please provide your answer in the given space (tick on the number of your choice).

1. Gender

Male	1
Female	2

2. Age

3. Race

Black	1	Coloured	4
Indian	2	Others	5
White	3		

4. Year of study

First year	1
Second year	2
Third year	3
Fourth year	4

5. Where do you stay

Stay with Parent(s)/Family	1
UKZN Residence on campus	2
Residence off campus	3
Rent or share accommodation	4
Stay with others	5

6. Which one of the following statements best describes your household situation? (Mark only one)

1	Not enough money for basic things like food, clothes	1
2	Have money for food and clothes but short on many other things	2
3	We have the basics but not enough money for expensive items	3
4	Have money to save or buy expensive things	4
5	Other (specify)	5

Section B: PC

Instruction: Below are statements that describe how you may think about yourself. Use the following options to indicate your level of agreement or disagreement with each statement.

1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I feel confident doing my class work and assignments	1	2	3	4
2. I feel confident in my studies	1	2	3	4
3. I feel confident contributing to discussions in class	1	2	3	4
4. I feel confident setting goals for my studies	1	2	3	4
5. I feel confident discussing problems I have with my class mates	1	2	3	4
6. I feel confident when submitting assignments	1	2	3	4
7. If I should find myself in a jam in school, I could think of many ways to get out of it	1	2	3	4
8. At the present time, I am energetically pursuing my study goals	1	2	3	4
9. There are lots of way around any problem I might face	1	2	3	4
10. Right now I see myself as being pretty successful in my studies	1	2	3	4
11. I can think of ways to meet the goals I have set	1	2	3	4
12. I am currently meeting the goals that I have set for myself.	1	2	3	4
13. I recover quickly from setbacks I have as a student	1	2	3	4
14. I usually manage difficulties at university	1	2	3	4
15. I can cope on my own at university	1	2	3	4
16. I handle the stress of being a student well	1	2	3	4
17. I can get through difficult times at university	1	2	3	4
18. I feel I can handle many things at a time at this job	1	2	3	4
19. I am optimistic when it comes to my studies	1	2	3	4
20. If something can go wrong for me study-wise, it will	1	2	3	4
21. Things will work out well regarding my studies	1	2	3	4
22. I'm optimistic about what will happen to me in future studies	1	2	3	4
23. I know I will succeed in my studies	1	2	3	4
24. As a student I believe "every cloud has a silver lining."	1	2	3	4

Section C: HPLS

Instruction: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behaviour by circling: **Never = 1, Sometimes = 2, Often = 3, Always = 4.**

	Statements	Never	Sometimes	Often	Always
1.	Discuss my problems and concerns with people close to me.	1	2	3	4
2.	Choose a diet low in fat.	1	2	3	4
3.	Go to a doctor or clinic for any unusual signs or symptoms	1	2	3	4
4.	Follow a planned exercise programme.	1	2	3	4
5.	Get enough sleep.	1	2	3	4
6.	Feel I am growing and changing in positive ways.	1	2	3	4
7.	Praise other people easily for their achievements.	1	2	3	4
8.	Do not use a lot of sugars and eat food containing sugar (sweets).	1	2	3	4
9.	Read or watch TV programmes about improving one's health.	1	2	3	4
10.	Exercise vigorously for 20 or more minutes at least three times a week (such as fast walking, bicycling, aerobic dancing, and climbing stairs).	1	2	3	4
11.	Take some time for relaxation each day.	1	2	3	4
12.	Believe that my life has purpose and meaning.	1	2	3	4
13.	Maintain meaningful and positive relationships with others.	1	2	3	4
14.	Eat 6-11 servings of bread, cereal, rice and pasta each day.	1	2	3	4
15.	Ask questions to health workers when I do not understand instructions.	1	2	3	4
16.	Take part in light to moderate physical activity (such as sustained walking) walking 30-40 minutes 5 or more times a week).	1	2	3	4
17.	Accept those things in life that I cannot change.	1	2	3	4
18.	Look forward to the future.	1	2	3	4
19.	Spend time with close friends.	1	2	3	4
20.	Eat 2-4 servings of fruit each day.	1	2	3	4
21.	Get a second opinion when I question my health care provider's advice.	1	2	3	4
22.	Take part in leisure-time (recreational) physical activities e.g. dancing, walking or bicycling.	1	2	3	4
23.	Concentrate on pleasant thoughts at bedtime.	1	2	3	4
24.	Feel happy and at peace with myself.	1	2	3	4
25.	Find it easy to show concern, love and warmth to others.	1	2	3	4
26.	Eat 3-5 servings of vegetables each day.	1	2	3	4
27.	Discuss my health concerns with health professionals	1	2	3	4
28.	Do stretching exercises at least 3 times per week.	1	2	3	4
29.	Use specific methods to control my stress.	1	2	3	4
30.	Work toward long-term goals in my life.	1	2	3	4
31.	Touch and I am touched by people I care about.	1	2	3	4
32.	Eat 2-3 servings of milk, yogurt or cheese each day.	1	2	3	4
33.	Inspect my body at least monthly for physical changes/danger signs.	1	2	3	4

	Statements	Never	Sometimes	Often	Always
34.	Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).	1	2	3	4
35.	Balance time between work and play.	1	2	3	4
36.	Find each day interesting and challenging.	1	2	3	4
37.	Find ways to meet my needs for intimacy.	1	2	3	4
38.	Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	1	2	3	4
39.	Ask for information from health professionals about how to take good care of myself.	1	2	3	4
40.	Check my pulse rate when exercising.	1	2	3	4
41.	Practice relaxation or meditation for 15-20 minutes daily.	1	2	3	4
42.	I am aware of what is important to me in life.	1	2	3	4
43.	Get support from a network of caring people.	1	2	3	4
44.	Read labels to identify nutrients, fats, and sodium content in packaged food.	1	2	3	4
45.	Attend educational programs on personal health care.	1	2	3	4
46.	Reach my target heart rate when exercising.	1	2	3	4
47.	Pace myself to prevent tiredness.	1	2	3	4
48.	Feel connected with some force/power greater than myself.	1	2	3	4
49.	Settle conflicts with others through discussion and compromise.	1	2	3	4
50.	Eat breakfast.	1	2	3	4
51.	Seek guidance or counseling when necessary.	1	2	3	4
52.	Expose myself to new experiences and challenges.	1	2	3	4

Section D - ASSIST

Instructions: This is a brief questionnaire about alcohol, tobacco products and other drugs. It asks how is your experience of using these substances across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills

Question 1

In your life, which of the following substances have you ever used?	No	Yes
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, Untsu/sinaf etc.)	0	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3
c. Cannabis (Dagga, marijuana, pot, grass, hash, zoll, weed etc.)	0	3
d. Whonga, Nyaope	0	3
e. Cocaine (coke, crack, etc.)	0	3
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth, tik etc.)	0	3
g. Inhalants (nitrous, glue, petrol, paint thinner, etc	0	3
	No	Yes

In your life, which of the following substances have you ever used?		
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	3
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3
j. Opioids (heroin, morphine, methadone, codeine, etc.) prescribed drugs	0	3
k. Other - specify	0	3

Question 2

In the past three months, how often have you used the substances you mentioned? (Only tick the substances mentioned above)	Never	Once or twice	Monthly	Weekly	Daily or
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untu/sinaf etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (Dagga, marijuana, pot, grass, hash, Zoll, weed etc.)	0	2	3	4	6
d. Whonga, Nyaope	0	2	3	4	6
e. Cocaine (coke, crack, etc.)	0	2	3	4	6
f. Amphetamine type stimulants (speed, diet pills, ecstasy, Crystal meth, tik etc.)	0	2	3	4	6
g. Inhalants (nitrous, glue, petrol, paint thinner, etc	0	2	3	4	6
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	2	3	4	6
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
j. Opioids (heroin, morphine, methadone, codeine, etc.) prescribed drugs	0	2	3	4	6
k. Other - specify	0	2	3	4	6

Question 3 (Tick only the substance that you have used in the past three months)

During the <u>past three months</u>, how often have you had a strong desire or urge to use substances?	Never	Once or twice	Monthly	Weekly	Daily or almost
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untu/sinaf etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (Dagga, marijuana, pot, grass, hash, zoll, weed etc.)	0	2	3	4	6
d. Whonga, Nyaope	0	2	3	4	6
e. Cocaine (coke, crack, etc.)	0	2	3	4	6

During the <u>past three months</u> , how often have you had a strong desire or urge to use substances?	Never	Once or twice	Monthly	Weekly	Daily or almost daily
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth. tik etc.)	0	2	3	4	6
g. Inhalants (nitrous, glue, petrol, paint thinner, etc.	0	2	3	4	6
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	2	3	4	6
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
j. Opioids (heroin, morphine, methadone, codeine, etc.) prescribed drugs	0	2		4	6
k. Other - specify	0	2	3	4	6

Question 4

During the <u>past three months</u> , how often has your substance use led to health, social, legal or financial problems?	Never	Once or twice	Monthly	Weekly	Daily or almost
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untu/sinfa etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (Dagga, marijuana, pot, grass, hash, zoll, weed etc.)	0	2	3	4	
d. Whonga, nyaope	0	2	3	4	6
e. Cocaine (coke, crack, etc.)	0	2	3	4	6
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth, tik etc.)	0	2	3	4	6
g. Inhalants (nitrous, glue, petrol, paint thinner, etc	0	2	3	4	6
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	2	3	4	6
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
j. Opioids (heroin, morphine, methadone, codeine, etc.) prescribed drugs	0	2	3	4	6
k. Other - specify	0	2	3	4	6

Question 5

During the <u>past three months</u> , how often have you failed to do what was normally expected of you because of your substance use? (<u>Tick only substances mentioned</u>)	Never	Once or Twice	Monthly	Weekly	Daily or almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untsu/sinfa etc.)	0	5	6	7	8
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	5	6	7	8
c. Cannabis (Dagga, marijuana, pot, grass, hash, Zoll, weed etc.)	0	5	6	7	8
d. Whonga, nyaope	0	5	6	7	8
e. Cocaine (coke, crack, etc.)	0	5	6	7	8
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth, tik etc.)	0	5	6	7	8
g. Inhalants (nitrous, glue, petrol, paint thinner, etc	0	5	6	7	8
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	5	6	7	8
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	5	6	7	8
j. Opioids (heroin, morphine, methadone, codeine, etc.) prescribed drugs	0	5	6	7	8
k. Other - specify	0	5	6	7	8

Question 6

Have you ever tried and failed to control, cut down or stop using any of the substances? (<u>Tick only substances mentioned above</u>)	No, Never	Yes, in the post three months	Yes, but not in the past three moths
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untsu/sinaf etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (Dagga, marijuana, pot, grass, hash, Zoll, weed etc.)	0	6	3
d. Whonga, nyaope	0	6	3
e. Cocaine (coke, crack, etc.)	0	6	3

Have you ever tried and failed to control, cut down or stop using any of the substances? (<u>Tick only substances mentioned above</u>)	No, Never	Yes, in the post three months	Yes, but not in the past three months
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth, tik etc.)	0	6	3
g. Inhalants (nitrous, glue, petrol, paint thinner, etc)	0	6	3
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.) over counter drugs	0	6	3
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
j. Opioids (heroin, morphine, methadone, codeine, prescribed drugs, etc.)	0	6	3
k. Other - specify	0	6	3

Question 7

Has a friend or relative or anyone else ever expressed concern about your substance use?	No, Never	Yes, in the past three months	Yes, but not in the past three months
a. Tobacco products (cigarettes, chewing tobacco, cigars, e-cigarette, untso/sinfa etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (Dagga, marijuana, pot, grass, hash, zolee etc.)	0	6	3
d. Whonga, nyaope	0	6	3
e. Cocaine (coke, crack, etc.)	0	6	3
f. Amphetamine type stimulants (speed, diet pills, ecstasy, crystal meth, tik etc.)	0	6	3
g. Inhalants (nitrous, glue, petrol, paint thinner, etc)	0	6	3
h. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, over counter drugs, etc.)	0	6	3
i. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
j. Opioids (heroin, morphine, methadone, codeine, prescribed drugs , etc.)	0	6	3
k. Other - specify	0	6	3

THANK YOU FOR YOUR PARTICIPATION!

