



**The Rate of Substance Use and Associated Risk Factors Among High School Students in  
KwaZulu-Natal**

by

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## Declaration

I hereby declare that this short dissertation, *The Rate of Substance Use and Associated Risk Factors Among High School Students in KwaZulu-Natal*, 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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## Dedication

First and foremost, I would like to thank our Lord and Saviour, Jesus Christ.

It is through you that I have found the strength and courage to get to where I am today –and to finish this research.

My fiancé, Jarryd. Thank you for your love, dedication and efforts in your continued support of me in my academic pursuits – you have truly been an anchor.

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## Abstract

This study investigated the rate and predictors, as suggested by the prototype-willingness model, of adolescent substance use among a sample high school students from the eThekweni and Ugu regions of KwaZulu-Natal.

Through the use of non-probability convenience sampling, the final sample consisted of 162 Black (53.1%, N = 86), White (29.0%, N = 47), Indian/Asian (12.3%, N = 20) and Coloured/Mixed Race (4.3%, N = 7), high school students, aged 14-17 years old (mean age = 15.5). Data was collected via self-report questionnaires, administered by the researcher during the Life Orientation period at the schools. Chi-square analyses and t-tests were conducted to investigate the associations and differences in scores in relation to predictor variables (gender, age, ethnicity, socioeconomic status, perceived social support, peer and parental substance-use behaviours, attitudes, subjective norms, risk images, behavioural intention and behavioural willingness) on both current and lifetime use of alcohol and of other illicit substances. Finally, logistic regression models were fitted to determine the significant predictors of adolescent alcohol and substance use.

Rate of lifetime substance use indicated that 75% had used alcohol, 41.4% had used cigarettes, 40.4% had used marijuana, 8.6% had used ecstasy, 3.1% had used crack/cocaine, 2% had used crystal methamphetamine, and 2% had used heroin. Rate of past 30-day use among participants were lower than lifetime use: alcohol at 38.3%, cigarettes at 16%, and other illicit substances at 13%. Results from the logistic regression analyses indicated that participants who had used alcohol in the past 30 days were more likely to be white (OR=11.778,  $p=.003$ ) and were more willing to use alcohol (OR=1.339,  $p < .001$ ), and those who had used other illicit substances in the past 30 days were more likely to be male (OR=7.526,  $p=.043$ ) and were also more willing to use substances (OR=1.187,  $p=.029$ ).

Results from this study have illustrated significantly high rates of alcohol, cigarette, and marijuana use among the sample of high school adolescents. The constructs of the prototype-willingness model, particularly peer and parental subjective norms, risk images, and behavioural willingness, appear to play a significant role in South African adolescents' decision making in relation to alcohol and substance use. Therefore, future adolescent alcohol and substance use prevention interventions should concentrate efforts on changing heuristic representations of alcohol and substance, particularly on decreasing favourability of actor prototypes and increasing favourability of abstainer prototypes, as well as on informing parents of their significant impact as role models.

*Keywords:* Adolescents; substance use; alcohol use; prototype-willingness model; rate; risk-factors; South Africa

## Chapter 1: Introduction to the Study

### 1.1 Background and Rationale

Drug and alcohol abuse, in a global context, remains an issue for concern, as reported in the United Nations Office on Drugs and Crimes (UNODC) *World Drug Report* (UNODC, 2012). It approximates that one in one hundred adult deaths is attributed to illegal substance use (UNODC, 2012). In the context of health governance in South Africa, the National Drug Master Plan (NDMP) has highlighted the crippling impact of drug and alcohol abuse, maintaining that drug and alcohol abuse are positively correlated with rises in non-communicable diseases, particularly HIV and AIDS, cancer, heart disease as well as psychological disorders (Department of Social Development, 2013). Furthermore, economically, the social and economic impact of drug and alcohol abuse is estimated to cost South Africa R136 million each year (Department of Social Development, 2013).

The UNODC report (2012), emphasized a shift in drug use patterns, stating that “illicit drug use is now characterized by a concentration among youth...the initiation of psychoactive substance use typically occurs during the teens or early years of adulthood” (p. 4). However, little research has been done in South Africa regarding the nature and extent of the use of drugs and alcohol among our youth (Department of Social Development, 2013). Statistics provided in the *World Drug Report* indicate that the prevalence of adolescent lifetime substance use is significantly higher than that of adults (UNODC, 2012). Furthermore, the report indicates that globally, the rate of South African adolescent lifetime substance use is alarmingly higher than the majority of other countries’ rates of adolescent lifetime substance use (UNODC, 2012).

The impact of substance and alcohol abuse is not limited to abusers themselves, but rather, vastly impacts on all members of society, directly and indirectly, contributing to crime, violence, accidents and injury. In reporting their findings from a study investigating the burden of disease in

South Africa, Schneider, Norman, Parry, Bradshaw and Pluddemann (2007) stated that “alcohol harm accounted for an estimated 7.1% of all deaths” (p. 664). Furthermore, research has consistently indicated that more than half of homicide cases, where perpetrators had been tested for alcohol, had high blood-alcohol concentrations (Pluddemann, Parry, Donson, & Sukhai, 2004; Prinsloo, 2007).

Alcohol and substance abuse are regarded as major contributing factors to various negative outcomes, including death, accidents, injury, interpersonal violence, (Schneider et al., 2007; Seedat, Van Niekerk, Jewkes, Suffla, & Ratele, 2009) increased school non-attendance and drop out (Pluddemann, Flisher, McKetin, Parry, & Lomard, 2010; Townsend, Flisher & King, 2007) as well as risky sexual behaviour (Brook, Morojele, Zhang, & Brook, 2006). Furthermore, adolescent substance use has been linked to escalated criminal activity (Carney & Myers, 2012). The literature further suggests that HIV infection is indirectly associated to substance use, which is of major concern for a country that has the world’s largest HIV-positive population (Meghdadpour, Curtis, Pettifor & MacPheil, 2012; Morojele, Brook & Kachieng’a, 2006; Pluddemann, Parry, Flisher & Jordaan, 2008; Kalichman, Simbayi, Kaufman, Cain & Jooste, 2007; Shisana, Rehle, Simbayi, Zuma, & Jooste, 2009).

Globally, South Africa has one of the highest prevalence of adolescent substance use prevalence (UNODC, 2012). Despite the increasing rates of adolescent substance use, very little research has examined the rates and predictors of adolescent substance use in KwaZulu-Natal, South Africa. This study will investigate the rates and risk factors of adolescent alcohol and substance use in Durban, KwaZulu-Natal, using the prototype-willingness model, with the ultimate purpose of better informing prevention and treatment programmes in this regard.

## **1.2 Important terminology**

The following critical terms are used in this study. In the context of this study, the terms are defined as follows:

- **Adolescence:** A critical period in human development occurring after childhood and before adulthood, from the ages of 10 through 19.
- **Illicit substances:** A variety of drugs, the non-medical use of which is prohibited by national and international law, including amphetamine-type stimulants, cannabis, crack/cocaine, heroin, and MDMA (ecstasy).
- **Prototypes:** Mental images based on the ‘typology’ of risk-takers, this study investigates the influences of actor and abstainer prototypes in relation to alcohol and substance use.
- **Behavioural willingness:** an extension to the theory of reasoned action, whereby adolescent risk behaviour may be explained as reactionary in nature, where often in the context of adolescents, behavioural willingness rather than behavioural intention, will ultimately determine whether or not they chose to engage in a given risky behaviour.

## **1.3 Research Aim**

The overall aim of this study is to determine the current rates and predictors of adolescent alcohol and substance use in the eThekweni and Ugu regions KwaZulu-Natal in order to better inform the future development of culturally relevant and age-appropriate prevention and treatment interventions.

### **1.3.1 Research Objectives**

- 1) To determine the rate of alcohol, cigarette and other substance use.

- 2) To examine the relationship between socio-demographic variables, psychosocial variables and substances such as alcohol, cigarette, and illicit substance use in a sample of high school adolescents in KwaZulu-Natal.
- 3) To determine the best predictors of alcohol and other substance use in a sample high school adolescents in Durban, KwaZulu-Natal?

### **1.3.2 Research Questions**

- 1) What is the rate of alcohol, cigarette and other substance use in a sample of high school students in KwaZulu-Natal?
- 2) Is there any relationship between socio-demographic variables, psychosocial variables and alcohol, cigarette, and other substance use in a sample of high school adolescents in KwaZulu-Natal?
- 3) What are the best predictors of alcohol and other substance use in a sample high school adolescents in Durban, KwaZulu-Natal?

## **1.4 Overview of methodology**

Working within the positivist paradigm, a quantitative cross-sectional self-administered survey was used to investigate the rates and associated risk factors of adolescent substance use in a sample of 162 adolescents from two high schools in the eThekweni and Ugu regions of KwaZulu-Natal. The final sample consisted of 45.1% males and 54.9% females, a mean age of 15.5 years, with most students being in grade 10 at the time of the study.

## **1.5 Ethical considerations**

Approval was granted from KwaZulu-Natal Department of Education; the University of KwaZulu-Natal Human Sciences Research Ethics Committee (protocol reference number: HSS/1513/015M); the headmasters of the participating schools; and finally, the parents of

prospective participants. Administration of the questionnaire commenced in mid-February 2016 through mid-March 2016, and took place during the Life Orientation period at the school. Appropriate ethical protocols relating to survey administration, collection and storage were adhered to. Data analysis was performed using the IBM-SPSS package.

Upon committee review of the research proposal, the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics committee issued an ethical clearance certificate, granting full approval for the research study to be undertaken, protocol reference number: HSS/1513/015M (See Appendix 5).

## **1.6 Structure of the dissertation**

This dissertation comprises six chapters, each addressing various elements of the research process. A brief summary of each of the chapters is presented below.

### **1.6.1 Chapter 2: Literature Review and Theoretical Framework**

This chapter reviews the most recent and relevant literature relating to adolescent substance use. Most of the studies included in the literature review are those that have been conducted in South Africa, in an attempt to remain culturally and geographically relevant, and international studies were examined in those areas where the South African literature appeared to be sparse. The literature review is subdivided into the following areas: the background of adolescent substance use; adolescent development; demographic risk factors; environmental risk factors; peer-related risk factors; family-related risk factors and personal risk factors. This is followed by the prototype-willingness model (PWM) of adolescent risky healthy behaviours, which is presented as the theoretical framework of this study. The PWM, developed by Gibbons and Gerrard (1995), is a dual-processing model that has been used internationally to understand the processes behind adolescent risk-behaviours, including alcohol and substance use.



### **1.6.2 Chapter 3: Methodology**

This chapter describes the research methodology used for this study. The following aspects are described within this chapter: the research approach to the study; the context of the study; the sample and sampling method employed including data collection instruments, and issues of reliability and validity the study procedure; and finally, ethical considerations.

### **1.6.3 Chapter 4: Results**

This chapter describes the results of the study, and the following sections are described: socio-demographic characteristics of the sample; descriptive statistics; the rate of adolescent substance use; the differences in demographic variables regarding cigarette, alcohol, and other substances use; the differences in psychosocial variables in relation to alcohol and other substances; and finally the impact of the prototype-willingness variables on the likelihood of adolescent lifetime and current alcohol and substance use.

### **1.6.4 Chapter 5: Discussion**

In this chapter the findings of this study in relation to the literature are discussed. This chapter was structured in accordance with the research questions of the study, comprising of the following: the rate of alcohol, cigarette, and other substance use among adolescents; the differences in demographic variables regarding cigarette, alcohol and other substance use among adolescents; the relationships among psychosocial variables and alcohol and other substance use; and finally, the influence of the prototype willingness variables on the likelihood of current and lifetime alcohol and substance use.

### **1.6.5 Chapter 6: Summary of Findings, Limitations and Recommendations**

This chapter concludes the study through a summary of findings, discussion of the limitations, conclusions, and recommendations from this study.

## **1.7 Chapter Summary**

This chapter provided a brief background of adolescent substance use as well as the rationale for investigating the rate and risk factors of adolescent substance use in South Africa. Following this was a short description of important terminology used in the study, as well as a statement of the research aim, research objectives, and research questions. Subsequently, an overview of the research methodology employed in the study as well as important ethical considerations were introduced. Finally, an overview of each chapter of the dissertation (the literature review and theoretical framework; methodology; results; discussion; summary of findings, limitations and recommendations) was provided.

## **Chapter 2: Review of the Literature and Theoretical Framework**

### **2.1 Introduction**

This chapter explores the existing literature on adolescent substance use through first providing a background to the research in terms of prevalence and impact. This is followed by a short description of adolescent development and the various areas of risk factors associated with adolescent alcohol and substance use, namely: demographic risk-factors; environmental risk-factors; peer risk-factors; familial risk-factors; and psychological risk-factors. Finally, the theoretical framework of this study, namely the prototype-willingness model, is introduced and its application to this study is described.

### **2.2 Rates of adolescent substance use**

Substance abuse has been identified “as one of the most significant health and social problems in South Africa” (Visser & Routledge, 2007, p.597). In the first South African Stress and Health study (SASH), alcohol abuse was found to be the most prevalent individual lifetime disorder (Herman et al., 2009).

Adolescence marks the long transitional stage of human development from childhood to adulthood, often characterized by the onset of puberty, as well as various other physical, cognitive, emotional, and social changes (Papalia & Feldman, 2011). For the purposes of this research, adolescence is defined as the developmental period between age 11 through to age 19 or 20, as defined by Papalia & Feldman (2011).

Studies have shown that 25% of American adolescents and 45% of British adolescents, by the age of fifteen, have used some kind of substance (Visser & Routledge, 2007). According to studies conducted in South Africa, prevalence varies according to substances used (Meghdadpour et al., 2012; Onya, Tessera, Myers & Flisher, 2012; Patrick et al., 2009; Pluddemann et al., 2010;

Visser & Routledge, 2007). Among South African adolescents, alcohol and cigarettes appear to be the most commonly used substances, with rates of 62% and 60% in Cape Town (Patrick et al., 2009); 7% and 25%, also in Cape Town (Pluddemann et al., 2010); 24% and less than 10% in Limpopo (Onya et al., 2012) respectively. The use of other illicit substances has also been investigated, including cannabis, inhalants, cocaine, crack, mandrax, lysergic acid diethylamide (LSD) and methamphetamine. Cannabis, or marijuana, has been found to be the highest used illicit substance by adolescents at 33% (Patrick et al., 2009). Studies that have investigated ‘other illicit substances’ as a group among school-going adolescents have found rates of adolescent substance use to range from 7.5% to 25.5% (Meghdadpour et al., 2012; Visser & Routledge, 2007).

### **2.3 Associated risk factors for adolescent substance use**

Various research studies have focused on the predictors, or associated risk factors, of adolescent substance use. For the purpose of this literature review, the risk factors of adolescent substance use will be explored according to the following areas: demographic risk factors; environmental risk-factors; peer risk factors; familial risk factors; and psychological risk factors.

#### **2.3.1 Demographic risk-factors**

The first broad area of adolescent substance use risk factors to be explored is the demographic domain. The demographic domain consists gender, age, ethnicity and socio-economic status. Each of these characteristics will be discussed in relation to the existing literature on adolescent substance use.

**Gender** Across different decades, several studies have consistently found that males are more likely than females to engage in substance use as well as in excessive consumption of alcohol. Internationally, research dating back to 1989 found that male adolescents use substances more frequently than female adolescents (Elliot, Huizinga, & Menard, 1989). Again, a study conducted

in a sample of 859 Swedish school students aged fourteen through eighteen, after controlling for age, also found that more males than females consume alcohol as well as illicit substances (Svensson, 2003).

The literature indicates that, regarding gender as a predictor, South African adolescents are no different, where several South African studies have consistently found that adolescent males are more likely than females to use substances. In the city of Tshwane, for example, in a sample of 1 918 learners, it was found that more males than females used alcohol excessively and used illicit substances (Visser & Routledge, 2007). Furthermore, a study examining the psychosocial correlates of lifetime alcohol use in a sample of 1 600 high school students in Limpopo, logistic regression analyses revealed that gender, being male in particular, was a significant partial predictor of alcohol use (Onya et al., 2012). Brook, Morojele, Pahl, & Brook (2006) investigated the correlations of drug use in a sample of 1 468 high school students in both Cape Town and Durban, and found that adolescent males were more likely to engage in higher levels of drug use. A study conducted in KwaZulu-Natal, examining the prevalence and predictors of alcohol use in a sample of 1 227 high school students aged between 16 and 18 years, found that males were more likely to have consumed alcohol in the past month (Ghuman, Meyer-Weitz, & Knight, 2012). Similarly, a more recent study conducted by Govender et al., (2013) in KwaZulu-Natal examined the “associations between perceptions of school connectedness and adolescent health risk behaviours” (p. 614) in a sample of 241 school students, aged 13 through 17, where it was found that male adolescents were also more likely to engage in the risk behaviour of substance use. In addition to these studies, reported rates of other studies further illustrate that a higher percentage of males use substances (Flisher Parry, Evans, Muller, & Lombard, 2003; Parry et al, 2004; Patrick et al., 2009; Reddy, Resnicow, Omardien, & Kambaran, 2007).

These studies, both internationally and nationally, have consistently indicated that male adolescents have a higher prevalence of substance use than females, and the various multivariate techniques further confirm that male adolescents are at a higher risk of abusing substances than females. In light of the consistency across these studies, gender appears to be a global predictor of adolescent substance use.

Researchers have further explored the reasons as to why males are more at risk for substance use, and differences in types of peers, parental monitoring and culture have been suggested as possible contributing factors to adolescent male substance use. Adolescent males' higher exposure to deviant peers (Svensson, 2003; Brook et al., 2006) and the tendency of females to receive higher levels of parental monitoring (Svensson, 2003) have been reported as contributing factors to their risk. In the context of South Africa, Onya et al (2012) suggest that their finding of a lower rate of alcohol use among females, in a sample of entirely Black African persons, may be due to traditional African values whereby alcohol use and cigarette smoking by female adolescents is culturally prohibited. However, recent literature suggests that this gap is also closing (Ghuman et al., 2012).

**Age:** Numerous studies have found significant positive associations between the age of individuals and level of substance use (Brook et al., 2006; Patrick et al., 2009; Onya et al., 2012; Morojele & Brook, 2006, Morojele et al., 2006; Parry et al., 2004). In 2006, a study investigating the predictors of drug use in a sample of 1 468 adolescents in Durban and Cape Town found that age was significantly associated with increased levels of substance use (Brook et al, 2006). The numbers of substances used, as well as the progression of substances used, increased with age (Brook et al., 2006). A different study in the city of Tshwane with a sample size of 1 918 learners, found that “current alcohol use, excessive alcohol use, and use of illicit substances all significantly

increased with age” (Visser & Routledge, 2007, p. 604). Study results have been consistent both globally and locally, suggesting that age, like gender, is a common predictor of substance use globally.

The controversial gateway theory, or hypothesis, has been used to explain the phenomenon of increasing rates of substance use with age among adolescents, proposing that the early introduction to substances such as alcohol, tobacco, or marijuana is related to the subsequent use of other illicit substances (Deganhardt et al, 2010; Gold & Pomietto, 2002; Kandel, 2002). This theory, however, does not imply causation, where the stages are obligatory or universal, but rather suggests that entry into early phases of drug behaviour facilitates the subsequent escalation into type and frequency of substance use (Cleveland & Wiebe, 2008; Kandel, 2002). Two studies have examined these stages of progressive substance use in South Africa, where results from both indicated that participating youth demonstrated a sequence of substance use initiation (Flisher, Parry, Muller, & Lombard, 2002; Patrick et al., 2009). Flisher et al. (2002) found that adolescents who had used alcohol and/or cigarettes would progress onto marijuana, mandrax, ecstasy or crack. The second study conducted by Patrick et al., (2009) found that participants who used cigarettes and/or alcohol subsequently progressed onto marijuana followed by inhalants. Results from these two studies indicate that the Gateway Theory may be useful in understanding the escalation in type of substance used among South African youth.

***Ethnicity:*** The demographic variable of ethnicity has been examined in several research studies. However, unlike those related to the variables of gender and age, study findings have been inconsistent. Several American studies investigating adolescent substance use among youth have found that white adolescents are more likely to report substance use than other racial groups (Anthony & Petronis, 1995; Hawkins et al., 1997; Kilpatrick et al, 2000; Merikangas et al., 2010).

The South African literature, however, is not as consistent, where rates of substance use vary not only according to ethnicity, but also to types of substances. In a study investigating the prevalence and correlates of substance use in a sample of 18 027 South African and American high school students, Reddy et al., (2007), reported that rates of “alcohol consumption and cigarette use were significantly higher among white high school children in both the United States and South Africa” (p. 1861). However, findings pertaining to *illicit substances* (namely cocaine, heroin, injectable drugs and methamphetamine) differed between the two countries: prevalence of illicit substance use was higher in the sample of students from South Africa than the sample of students from the United States (Reddy et al., 2007).

A study undertaken by Patrick et al., (2009), examined the differences in the sequence of substance use initiation in a sample of 1 118 South African adolescents and findings indicated that both black and white adolescents were more likely to start drinking alcohol and then try cigarettes, whereas coloured adolescents were more likely to start smoking cigarettes and then drink alcohol. However, despite the differences in initiation, be it alcohol or cigarettes, all adolescents in the sample were more likely to progress to the use of cannabis (Patrick et al., 2009).

The evidence thus far appears to suggest that although the first type of substance used may vary according to ethnicity, the demographic variable of age may play a more significant role in the subsequent escalation onto other substances.

***Socioeconomic status:*** Socioeconomic status (SES) as a possible predictor of adolescent substance use seems inconsistent. It is important to note that more than half of South Africans are living below the poverty line (Stats SA, 2015). Some literature suggests that there is a weak, yet consistent association between socioeconomic status and substance use (Daniel et al, 2009; Thomas et al, 1999). However, upon investigating the predictors of South African adolescent



substance use, Brook et al., (2006) concluded that “neither the degree of hunger experienced in the household, nor the number of household amenities were related to the youngsters’ drug use”, (p. 30), suggesting that socioeconomic status may not be as important in the development of substance use as other risk factors. The current literature regarding the role of socioeconomic status as a risk factor for substance use, particularly among adolescents is sparse, suggesting that SES as a risk factor should be further investigated.

Overall, the literature explored thus far suggests that the demographic characteristics gender and age have consistently been identified as significant risk factors of substance use in adolescents whereas study findings regarding the extent to which ethnicity and socioeconomic status impacts on adolescent substance use have been inconsistent. However, adolescent substance use cannot be associated with demographic variables alone, therefore literature in relation to environmental risk factors as well as the social variables relating to peers and parents will be addressed.

### **2.3.2 Environmental Risk Factors**

Within the environmental domain, it has been suggested that factors such as high levels of environmental stress, including experiences of discrimination and victimization as well as poverty may further contribute to adolescent substance use.

A study conducted in a sample of 1 496 adolescents in Durban and Cape Town which investigated “the environmental stressors of hunger, amenities, violence towards the person, and discrimination” on substance use found that only violence towards the person and discrimination were significantly correlated to lifetime substance use among the sample of adolescents (Brook et al., 2006, p.29). In the same study, hierarchical regression analyses revealed that the environmental stressors only accounted for 2% of the variance in adolescent substance use (Brooke et al, 2006).

As discussed earlier, there appears to be a weak link between socioeconomic status and subsequent substance use among adolescents. However, several studies have found that lower levels of socioeconomic status may contribute to higher levels of environmental stress, and these levels of environmental stress have predicted substance use among adolescents (Brook et al., 2006; Visser & Routledge, 2008; Brook et al., 2011). The relationship between these two constructs is an important one in the context of South Africa, where the most recent estimate of those living in poverty is said to include 53% of our population (StatsSA, 2015).

On the other hand, moving away from environmental stress, a number of studies conducted among South African samples of adolescents have identified the importance of the role of the community in predicting substance use. Substance use has been correlated with the availability of substances and to tolerance levels of risk behaviours in communities (Brook et al, 2011; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012; Visser & Routledge, 2008).

The influence of environmental factors on adolescent substance use appears to be sparse and inconsistent. However, this may be attributed to the various approaches to operationalizing this construct, as each study appears to measure different aspects of the environment. The social risk factors of peer and parental influences will be discussed below.

### **2.3.3 Social risk-factors**

Literature pertaining to the social influences of adolescent substance use is plentiful. It has been consistently demonstrated that both peers and parents have a strong impact on adolescent substance use. The remainder of this literature review will explore each of these influencers respectively.

*Peers.* Numerous studies in South Africa have consistently found adolescents who have peers that use substances are more likely to use substance themselves (Brook et al., 2006; Brook,

Brook, Gordon, Whiteman, & Cohen, 1990; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012; Visser & Routledge, 2008). A study conducted in a sample of participants in Durban and Cape Town found that the peer behaviours of smoking, drinking, marijuana use, and other illegal drug use were all significantly associated with the frequency of adolescent substance use (Brook et al., 2006). Hierarchical regression analysis revealed that “peer behaviour” accounted for 13% of the total variance in adolescent substance use (Brook et al., 2006). Using logistic regression analysis on data from a sample of 1600 rural South African high school adolescents, Onya et al., (2012) found that for every alcohol-using friend, study participants were 1.4 times more likely to also be using alcohol.

Various studies have illustrated that many theories can be used to understand the strong influence of peers on adolescent substance use behaviour. Cognitive behavioural theory suggests that adolescents model the behaviours of their peers, therefore, if peers use substances and alcohol, the adolescent too will use substances and alcohol (Brook et al., 2006; Meghdadpour et al., 2012). Expectancy-value theory suggests that adolescents whose parents and peers use substances and alcohol will develop a more positive expectancy over drinking behaviour (Cumsille, Sayer, & Graham, 2000; Gifford-Smith, 2005; Wigfield & Eccles, 2000). Theories of selection and socialization argue that peer selection and peer socialization are strong influences of substance use behaviour (Farrell & White, 1998; Chassin, Presson, Sherman, Montello, & McGrew, 1986).

Also within the peer domain is the concept of perceived social support. However, the literature around this particular variable is sparse. A study conducted in China suggests that this may in fact be significant when examining adolescent substance use, and findings indicated that adolescents with less intimate and supportive friendships showed a higher risk for drinking alcohol (Hussong, Hicks, Levy, & Curran, 2001).

*Parents.* Several studies have illustrated that parental alcohol and substance use is significantly associated with adolescent substance use (Brook et al., 2006; Ghuman et al., 2012; King et al., 2003; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012). More specifically, a study in a sample of South African adolescents found that within the parental domain, maternal influences were stronger than paternal influences: whereby maternal smoking and marijuana use exerted a stronger and more significant influence than paternal smoking and marijuana use; and both maternal and paternal smoking were equal in significance and influence on the frequency of adolescent substance use (Brook et al., 2006). A more thorough examination of familial factors was conducted by Morojele et al. (2002) among a smaller sample of 123 adolescents in South Africa, comprised of 74% males, and logistic regression analyses indicated that the family domain, made up of nine sub-factors relating to family management, degree of discipline, family histories and attitudes toward antisocial behaviour and drug use, family attachment, positive involvement and behavioural rewards, was a significant predictor of tobacco, alcohol, and marijuana use in the past month.

All in all, the literature on both peer and parental related risk-factors for adolescent substance use appears to consistently suggest that both have a strong and significant impact on adolescent substance use. However, it seems that not many studies have investigated the impact of perceived social support on adolescent substance use.

Other phenomena such as mood disorders, self-esteem and deviant or delinquent behaviours, have been associated with adolescent substance use (Brook et al., 2006; Visser & Routledge, 2008). Brook et al., (2011) and Meghdadpour et al., (2012) found that low levels of wellbeing, specifically depression, low self-esteem as well as poor overall health is related to adolescent alcohol and cigarette use.

The impact and consequences of adolescent substance use is of great cause for concern in South Africa and around the world, as a growing body of evidence indicates that the rate of adolescent substance use is increasing. The literature relating to adolescent substance use is extensive, indicating that several risk factors, that is the demographic risk factors of gender, age, ethnicity, and socioeconomic status, as well as social risk factors that comprises parental and peer components play a role in youth substance use. In light of the evidence presented, it is clear that despite the increasing prevalence of adolescent substance use, currently, very little research has examined the rates and predictors of adolescent substance use in KwaZulu-Natal, South Africa.

## **2.4 Theoretical Framework**

### **2.4.1 Background**

Adolescence is a transitional life stage, between childhood and adulthood, and is marked by many extreme physical and psychological changes. It is during this transitional life stage that many adolescents feel the need to experiment with substances and are particularly vulnerable to engage in substance use, as well as other health risk behaviours. Various health models have been developed to understand the drivers of risk behaviour, as well as the approaches that can be taken to change risk-related behaviours. However, more often than not, these theories have been based upon, and developed for, adult behaviours. A number of researchers have examined the impact of both psychological and social factors on adolescent substance use, working from various perspectives, including, but not limited to: the social-cognitive perspective; the cognitive-behavioural perspective; the social psychological perspective; and the developmental perspective.

Moving away from conventional perspectives, an innovative model has been developed to account for adolescent health risk behaviour, the use of which has proved to yield substantial predictive value for various health risk behaviours, including, but not limited to, cigarette smoking,

drinking, substance use, and condom use. This model is a dual-process model, developed to enhance our understanding of adolescent health risk behaviour. To date, studies conducted in South Africa have yet to use this model for predicting adolescent health risk behaviours, including, adolescent substance use. Therefore, based on previous international study outcomes, and the identified gap in the South African adolescent research literature, this research study will use the Prototype-Willingness Model to understand and explore adolescent substance use.

#### **2.4.2 Health Behaviour Theories**

Numerous theories have been developed to understand the determinants of health behaviour, the most popular of which include: The Health Belief Model, the Theory of Reasoned Action and the associated theory of Planned Behaviour (National Institutes of Health, 2005). An essential commonality underlying many health behaviour theories is the underlying expectancy-value perspective, that is the assumption that health behaviour is intentional or planned (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008).

However, these theories have limitations in that they cannot predict all behaviours, especially when the particular behaviour is not as a result of intentional planning. Furthermore, according to a 2008 publication (Gerrard et al.) these theories have been used to understand adult health behaviour, and various studies have indicated that these models cannot sufficiently explain adolescent risk behaviour, which has been described as characteristically ‘irrational’ and impulsive.

#### **2.4.3 Dual Processing Models**

As explained by Gerrard et al., (2008, p. 31) a number of theorists have long proposed the idea of a dual-processing model of decision making, some which include: “brain functions and behavioural theory; cognitive-experiential self-theory (Epstein, 1973; Denis-Raj & Epstein, 1994) and fuzzy-trace theory (Reyna, 2004)”. A common underlying notion of all the above-mentioned

theories is that people are capable of both analytic and heuristic processing, essentially reason and social reaction.

In general, dual-processing models suggest that there are two modes of processing incoming information, namely what has been coined the reflexive “X-system” (analytic processing), and the reflective, or “C-system” (heuristic processing). Some of the key characteristics relating to the X-system include: automatic processing, fast processing, and learning based on repeated trials (Gerrard et al., 2008). The C-system is different in that information is processed in a controlled manner, the process is relatively slow, and learning is based on symbolic logic, namely heuristics and affect (Gerrard et al., 2008).

#### **2.4.4 The prototype-willingness model**

The prototype-willingness model was developed by Gibbons and Gerrard (1995) to account for adolescent health risk behaviour as not only intentional or planned, but also as a response to situations that can facilitate risk behaviour. This model is a dual process model, consisting of “two pathways and two proximal antecedents to health behaviour” (Gibbons, Gerrard, Blanton, & Russel, 1998, p. 320). The first path is called the reasoned path, analogous with the Theory of Reasoned Action, and this path attempts to address the processes underlying the intentional behaviour of adolescents (Gerrard, Gibbons, Stock, Vanda Lune, & Cleveland 2005; Gerrard et al., 2008). The second path is called the social reaction path, which is image-based and involves heuristic processing, whereby adolescents’ willingness to take risks also determine their behaviour in risky situations (Gerrard et al., 2005; Gerrard et al., 2008). This model suggests that for decision making, both reasoned and social reaction processes operate concurrently, however, in relation to adolescents, the social reaction process is often stronger than the reasoned process, in relation to

risk behaviour (Gerrard et al., 2008). In explaining the prototype-willingness model, the assumptions of the model will first be addressed, followed by a description of the model as a whole.

#### **2.4.5 Assumptions of the prototype willingness model**

***Behavioural willingness.*** The first assumption of the prototype-willingness model is that adolescent behaviour is often reactive to risk conducive situations, rather than intentional or planned (Gerrard et al., 2005). The model suggests that often, with adolescents, the translation of intentions to consequent behaviour is relatively low, and therefore it is to a larger extent, behavioural willingness to take risks that will ultimately determine behaviour (Gerrard et al., 2008). That is to say, unlike behavioural intentions that involve the evaluation of potential outcomes, willingness is reactive in nature, involving little pre-contemplation of the consequences of the behaviour (Gerrard et al., 2008). The authors have eloquently conveyed the meaning of behavioural willingness as capturing the intentional or unplanned element of adolescent risk behaviour, thereby effectively predicting subsequent risk behaviour (Gerrard et al., 2002).

***Prototypes.*** The second assumption of the model is that much of adolescent risk-behaviour involves heuristic, or image-based processing (Gerrard et al, 2005). Essentially, as stated by Gerrard et al., (2002) “adolescents are preoccupied with their public images and thus are extremely sensitive to the social implications of their behaviour” (p. 602). Thus, prototypes can be a useful in explaining risk behaviour among adolescents in particular. Gerrard et al., (2005) explain that prototypes are cognitive representations or “social images of the type of person at a particular age who engages in a given risky behaviour” (p. 307). An important component of this assumption is that often these prototypes, or images, are characterological rather than visual in nature, that is to say, as stated by Gerrard et al., (2008), a prototype in this regard “is a typology rather than a description of the physical appearance of the type of person” (p. 37). These images can thereby be



seen as the social consequences of a particular behaviour, and because some adolescents may be more willing than others to accept these social consequences, the degree of favourability of these images (prototypes) may be a good predictor of subsequent risky behaviours (Gerrard et al., 2002).

According to Gibbons, Gerrard, Blanton, & Russel (1998), the distinction between these images as goal states and images that are acceptable is imperative. Gerrard et al., (2002) state the following about risk images in the PWM: favourable risk images are associated with behavioural outcomes through the process of 'social reaction', or heuristic processing, thereby representing the degree of acceptability of a given behaviour, whereas favourable non-risk images are associated with behavioural outcomes through a more deliberate, active decision making process, thereby representing these images as goal states. Essentially, the more favourable the risk image, the more willing adolescents are to accept the associated consequences of the behaviour (Gerrard et al, 2008).

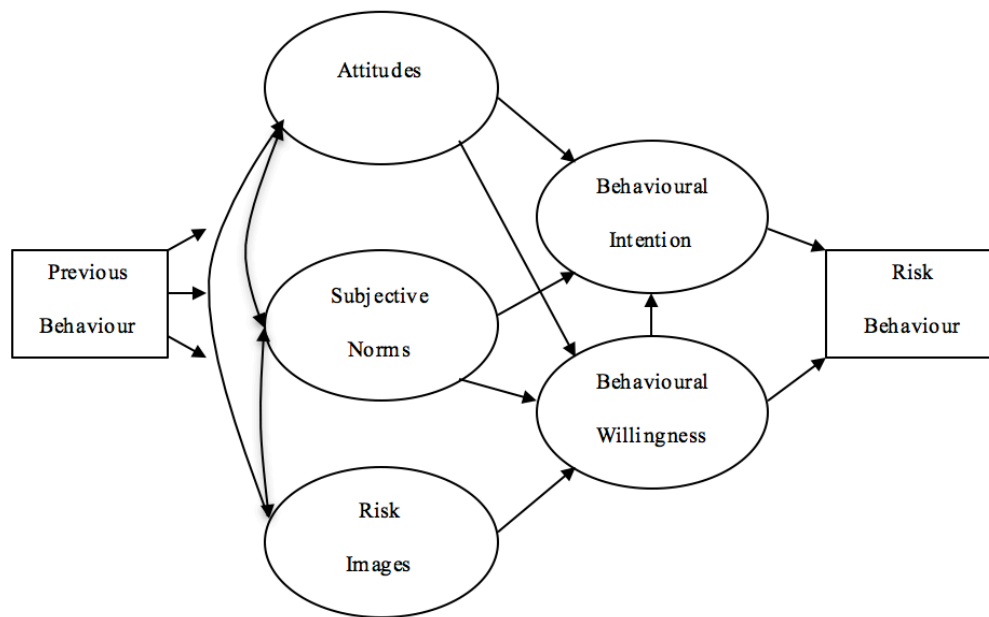
***Social comparison.*** The third assumption of the prototype willingness model is that risk prototypes influence behaviour through a process known as social comparison; therefore, the influence of prototypes is greater among adolescents who have a tendency to engage in social comparison (Gerrard et al., 2005). That is, the connection between prototypes and behavioural willingness is stronger in adolescents who have a greater inclination to compare themselves to their peers than those adolescents who do not (Gerrard et al., 2005).

#### **2.4.6 Processes of Prototype-Willingness Model**

As discussed earlier, the prototype-willingness model is a dual-process model, consisting of two pathways, namely: the reasoned, or analytic pathway and the social reaction, or heuristic pathway. In comparison to many dual-process models, the prototype-willingness model maintains that both the reasoned path, and the social reaction path, operate simultaneously. However, research has indicated that correlations of adolescents' willingness and subsequent behaviours are

stronger than those of intentions and subsequent behaviours (Gerrard et al., 2008; Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009; Spijkerman, van den Eijnden, Vitale, & Engels, 2004). The prototype-willingness model will now be explained in terms of each pathway, followed by an explanation of the three antecedents (attitudes, subjective norms, and risk images), and lastly, the final antecedent of previous behaviour will be discussed.

***The first (reasoned) path.*** The first reasoned path is an extension of the theory of planned behaviour, developed by Ajzen (Gerrard et al., 2008). The proximal antecedent of this path, in line with expectancy-value perspectives, is behavioural intention (Gerrard et al., 2008). The process of this path follows a linear, systematic progression from intention to action, whereby adolescent risk behaviour occurs as a result of a reasoned and thoughtful process (Gerrard et al., 2005; Gerrard et al., 2008). Behavioural intentions, in turn, are influenced by attitudes toward the behaviour and subjective norms relating to the behaviour, as suggested by the Theory of Reasoned Action (Fishbein & Ajzen, 1975).



*Figure 1: The Prototype Willingness Model (Gerrard et al., 2008)*

**The second (social reaction) path.** Unlike the first reasoned path, the second (social reaction) path maintains an entirely new proximal antecedent, namely behavioural willingness (Gerrard et al, 2008; Gibbons, Gerrard, Ouellette, & Burzette, 1998). As explained in the assumptions of the prototype-willingness model, this proximal antecedent suggests that it is behavioural-willingness that will ultimately account for adolescent risk behaviour that is not intentional or planned (Gibbons et al, 1998; Gibbons et al., 1995).

**Attitude:** Attitude, in this context, relates to an individual's perceived risk regarding the expected consequences of performing a given behaviour, in essence: the extent to which one is vulnerable to the various risks associated with a given behaviour (Gerrard, et al., 2008). It is imperative to note that the prototype-willingness model considers this construct to be conditional, and therefore, when attempting to measure this particular construct, questions need to be formulated from the subjunctive, rather than the absolute (Gibbons et al., 1998). According to the model, there appears to be a reciprocal relationship between attitudes and subjective norms, but

this reciprocity does not extend to risk images, whereby risk images influence attitudes, but attitudes do not influence risk images (Gerrard et al., 2008; Gibbons et al., 1995; Gibbons et al., 1998).

In terms of the reasoned path, behavioural intention to perform a given behaviour increases as the degree of favourability of an individual's attitude toward the behaviour increases. Similarly, in the social reaction path, the relationship between attitudes and behavioural willingness is negative, in other words, the less conditional vulnerability (lower perceived risk) the adolescent feels, the more willing he or she will be to engage in a given risk behaviour (Gerrard et al., 2008). Evidence has suggested that the relationship between perceived personal vulnerability and behavioural willingness can be reciprocal in older adolescents, to which the authors have suggested to be as a result of both optimistic bias as well as decision myopia – two constructs that often characterize adolescent information processing (Gerrard et al., 2008; Gerrard, 2005; Gibbons et al., 1995).

***Subjective Norms.*** Traditionally, subjective norms have referred to an individual's normative beliefs and motivation to engage in a given behaviour (Ajzen, 1991). Those subjective norms fall into the category of injunctive norms, which refer to behaviours which are perceived as being approved by an individual's significant others. The prototype-willingness model, however, defines subjective norms according to a different category, descriptive norms, which are an individual's perceptions of others' actual behaviour, regardless of whether or not the behaviour is approved (Gerrard et al., 2008; Gibbons 1995). The model illustrates a reciprocal relationship between both subjective norms and attitudes, as well as between subjective norms and risk images (Gibbons et al., 1998).

Here, similar to the influence of attitudes, subjective norms too influence the proximal antecedent of the reasoned path as well that of the social reaction path. Permissive subjective norms are associated with both greater behavioural intention as well as behavioural willingness.

***Risk Images or Prototypes.*** As earlier explained, prototypes refer an individual's cognitive representations or social images of the type of person of a particular age, who engages in a given risky behaviour (Gerrard et al., 2005). According to the literature, there is usually social consensus surrounding these prototypes, which means that adolescents realize that should they too engage in a given risky behaviour, they themselves will acquire aspects of the prototype, thus being seen by others as the 'typical smoker or drinker' (Gerrard et al., 2005; Gerrard et al., 2008). As previously noted, it appears that a degree of reciprocity exists between risk images and subjective norms, but that the relationship between risk images and attitudes is unidirectional in that risk-images influence attitudes, but attitudes do not influence risk images.

Unlike the constructs discussed thus far, risk images only play a direct role in the social reaction path. Positive risk images increase an individual's willingness to perform a given behaviour. Regarding the reasoned path, risk images indirectly affect behavioural intention through its relative contribution to the formation of attitudes and subjective norms.

***Previous behaviour.*** Apart from image-based processing, a distinguishing feature of the prototype-willingness model is the antecedent of 'previous behaviour'. The model suggests that previous behaviour is antecedent to attitudes, subjective norms, and risk images, as well as to both behavioural intention and behavioural willingness.

## **2.5 Chapter Summary**

This review of the literature explored the prevalence and impact of adolescent substance use at a global level and in South Africa. Several studies conducted in South Africa were cited as

the following risk factors were identified: demographics; environment, peers, family, and psychological risk-factors. Thereafter, the prototype-willingness model of adolescent risk behaviour, was described as the theoretical model for the study.

An understanding of the risk factors of adolescent substance use will better inform culturally relevant prevention efforts and programmes, thereby reducing the prevalence of adolescent substance use (Brook et al., 2006; Onya et al., 2012; Patrick et al., 2009). Carney and Myers (2012) have emphasized the need for adolescent substance use research in developing regions the results of which can be used to address the associated risk and problem behaviours. Furthermore, it has been suggested that future research should investigate the rate of specific substance use, rather than including them all in one category, or only addressing a few substances (Visser & Routledge, 2007).

## **Chapter Three: Research Methodology**

### **3.1 Introduction**

The purpose of this research study is to determine the rate and predictors of substance use among adolescent learners in two high schools in KwaZulu-Natal, South Africa. This chapter will describe the research design, context of the study, sampling and sampling method, study procedure, instruments used as well as validity and reliability thereof, and finally, data analysis procedures.

### **3.2 Research Design**

This research study was of a quantitative nature, grounded in the positivistic paradigm, as its aims were to determine both the rate and risk factors of adolescent substance use. The purpose of this research study was to obtain a scientific explanation for adolescent substance use through testing the applicability of various previously identified predictors as well as predictors from the prototype-willingness model.

In terms of ontology, positivism adopts a realist approach, whereby assumptions include the notion that reality is “out there”, the order and rules of nature are waiting to be discovered and that these can be summarised in time and context free generalisations (Firestone, 1986; Krauss, 2005; Neuman, 2014). The aim of this study was to collect data in order to determine the rate of substance use in two high schools, which could be interpreted as pure positivism, as well as to discover how much variance the model accounts for dependent variable of substance use in its entirety, thereby attempting to add fragments of knowledge together and to measure the prototype-willingness model variables statistical significance in relation to South African adolescent substance use.

Further in line with positivistic paradigm, this study will be a partial replication of previous studies conducted in both America and South Africa, thereby investigating the consistency of

previous findings, as well as to examine how much variance these related variables account for adolescent substance use within the context of KwaZulu-Natal. However, a potential obstacle to being rooted purely in the positivist paradigm arises in terms of time and context free generalisations. This small-scale, cross-sectional study acknowledges the context in which the sample population exists and will not attempt to make universal generalisations about all adolescents, but rather analyse data from a small geographical area, in the hope that future studies may investigate larger samples in South Africa. Regarding the relation between positivism and the chosen model, the potential conflict between the prototype-willingness model, whereby elements of this model view adolescents in terms of social, and sometimes irrational beings, and the positivist view which assumes humans are “rational and individualistic” has been acknowledged.

In terms of the epistemological nature of positivism, the researcher undertook an objectivist approach in that a survey was distributed among participants to complete, and the self-reported data was analysed in terms of statistical calculations (Neuman, 2014). Traditional positivism assumes the researcher will observe empirical evidence – in this research study the empirical evidence was the data collected through survey administration.

The methodological component of this research project is based on predetermined research questions and hypotheses of substance use as well as the predictors thereof, which was empirically tested using statistical measures, further illustrating the positivist nature of this research study (Firestone, 1986; Krauss, 2005; Neuman, 2014).

### **3.2 Research Context**

Extensive studies investigating adolescent substance use have been concentrated in the city of Cape Town, with very little research examining the adolescent population of KwaZulu-Natal. This is of major concern, as the province of KwaZulu-Natal is estimated to have the second highest



percentage of South Africa's total population, after Gauteng (StatsSA, 2014). The two schools that participated in this research study, as a result of convenience sampling procedures, were both located in urban middle-income areas of the eThekweni and Ugu regions of KwaZulu-Natal.

### **3.3 Sampling**

Male and female high school students from grade nine through grade eleven, ranging from fourteen years old through to seventeen years old in two high schools mentioned above were all eligible to participate in the study. The rationale for the participant ages was based on their accessibility, convenience as well as to adhere with the Department of Education research regulations, which stipulates that matric students are not to be included in research activities. All participants attended either a single-gender education school or a coeducation school in the province of KwaZulu-Natal. The first, single-gender school is located in a northern suburb of the eThekweni region whereas the second, co-education high school, is located in the south coast of KwaZulu-Natal in the Ugu region.

This study employed non-probability convenience sampling. Although this method is less ideal due to issues relating to inaccuracy, the techniques required for probability sampling would have been too costly and time consuming for the purposes of this research project. Furthermore, convenience sampling is suitable to avoid potential data collection issues relating to reality and practicality in the school context, such as prescheduled school timetables and lesson disruption. The primary criteria of convenience sampling for selecting participants are ease of reach, availability, as well as convenience. The preliminary nature of this research study legitimizes the selection of convenience sampling. As such 162 high school students from two schools in the eThekweni and Ugu regions of KwaZulu-Natal were selected, based on parental consent as well as each participant's voluntary willingness and assent to participate in this study.

Furthermore, the cross-sectional nature of this study avoids threats to validity that are common with experimental and longitudinal studies, such as maturation of participants, treatment effects and rates of attrition. However, causality is not possible with cross sectional surveys (Neuman, 2014).

### **3.4 Study Procedure**

The main ethical consideration of this study was the inclusion of high school students as the study sample. Various ethical procedures were followed in terms of consent and/or study approval from numerous gatekeepers listed in consecutive order of approval below:

**1. Governmental and institutional consent:** The completion of the questionnaire during the life orientation period of the school day required permission from numerous gatekeepers, including the Department of Education as well the schools' headmasters. A proposal of the research study as well as a copy of the questionnaire was submitted to the provincial Department of Education, who, after reviewing the proposal, granted permission for the researcher to conduct research in the KwaZulu-Natal Department of Education Institutions (see Appendix 1). The researcher approached the headmasters of the schools, where the purpose and requirements of the study were explained. The headmasters of the participating schools signed informed consent sheets (see Appendices 3 and 4).

**2. University research ethics approval.** As discussed in chapter one, the University of KwaZulu-Natal Humanities and Social Sciences Research Ethics committee issued an ethical clearance certificate, granting full approval for this research study to be conducted, protocol reference number: HSS/1513/015M (See appendix 5).

**3. Participant parental consent.** The study sample consisted of minors, that is, participants were under the age of 18, and therefore, parental consent on behalf of each participant was required.

In this respect, information sheets outlining the purpose, nature, and confidentiality of the study, along with informed consent forms, were sent out to all prospective participants' parents (See Appendix 6). The schools collected parental consent forms over a period of two weeks. A total of 100 information sheets and parental consent forms were sent to parents from School A, in the eThekweni region of KwaZulu-Natal. While 53 forms were returned, only 43 parents granted consent for their child to participate in the study. School B, located in the Ugu region of KwaZulu-Natal circulated 300 information sheets and informed consent forms, a total of 135 were returned, with 119 parents granting consent for their child to participate in the study.

**4. *Participant assent.*** The background, purpose, questionnaire, issues surrounding confidentiality, and the voluntary nature of participation in the study was explained to the students whose parents had consented for them to participate in the study. In order to make students feel more comfortable in answering the questionnaire, information sheets and assent forms were distributed (see Appendix 8), completed, and then collected prior to administration of the questionnaire. All students with parental consent to participate in the study had assented to participate in the study. A total of 43 students from School A, and 119 students from School B, assented to participate in the study. Students were given the opportunity to ask questions relating to participation, the questionnaire, as well as the study itself. Students were instructed not to write their names on the questionnaires, again, to enforce and assure anonymity and confidentiality. Students were offered the right to withdraw from the study at any time. In all instances of questionnaire administration, teachers were not present at the time as this made students feel more comfortable and added to honesty in response, with the exception of one instance, where assistant teachers in training remained in the classroom while the students completed the questionnaire. Finally, one further protocol added to the data collection procedure was a sealed collection box,

placed by the entrance to the classroom, in which students placed their completed questionnaires – this visual representation of anonymity and security further emphasized that results would remain private, confidential and that the questionnaire was in fact for research purposes.

An educational substance use crossword was distributed among students who did not have parental consent to participate in the study, so that they were engaged in a task whilst other students completed the survey (see Appendix 10). The survey took between 20 and 30 minutes to complete, where, upon completion of the survey, students dropped their completed surveys into a sealed collection box.

### **3.5 Research Instruments**

The research instrument consisted of a biodemographic section, a substance use section, a perceived social support section, and sections relating to the prototype-willingness model in relation to alcohol and substance use, all of which are discussed in more detail below.

**3.5.1. Demographic Information.** Participants were asked to complete the demographic section of the questionnaire that included general questions related to gender, age, grade, ethnicity, and socioeconomic status. Items 1, 2, 3, 4, and 5 respectively, measured these demographic variables.

**3.5.2. Substance Use.** Items relating to the substance use section of the questionnaire were taken from the Youth Risk Behaviour Survey (Reddy et al., 2013). These items examined substance use in terms of lifetime substance use, current substance use as well as peer and parental substance use. Items 6 and 7 measured lifetime and current cigarette use respectively; items 8 and 9 measured lifetime and current alcohol use respectively; item 10 measured binge drinking; items 11 and 13 measured lifetime and current substance use; and finally, item 12 allowed participants to indicate

specific substances used. Peer cigarette, alcohol, and substance use were measured on items 14-16. Items 17-19 measured parental cigarette, alcohol, and substance use.

**3.5.3. Perceived Social Support.** Perceived social support was examined through the use of the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet, Dahlem, Zimet & Farley (1988). This assessment tool was designed to evaluate perceived evaluations of social support, specifically assessing three specific sources of social support: family, friends, and significant others (Zimet et al., 1988). In line with previous studies conducted in South Africa, the MSPSS section of this survey used a 5-point Likert-type scale rather than a 7-point Likert-type scale as not all learners were English first language speakers and the finer nuances of the English language in a 7-point scale would have rendered less reliable responses than the 5-point scale (Bruwer, Emsley, Kidd, Lochner, & Seedat, 2008; Zimet et al., 1988). Response options ranged from “very strongly disagree” to “very strongly agree” The MSPSS psychometric properties have been investigated in a sample of 502 high school students in South Africa, with a Cronbach’s alpha coefficient of 0.86 for the entire scale, as well as Cronbach’s alpha coefficients of 0.89, 0.88, and 0.90 for the subscales of family, friends, and significant other respectively (Bruwer et al., 2008). The Cronbach’s alpha coefficient for the whole scale of perceived social support in this study was calculated to be .888.

**3.5.4. Heuristic Path.** This survey also examined alcohol and substance use in relation to the prototype-willingness model. This model is a relatively recent extension of the theory of planned behaviour and has been used to assess factors related to adolescent health risk behaviour (Gerrard et al., 2002).

To date, no South African studies have used the prototype-willingness model to assess adolescents’ images of typical alcohol and substance users and their subsequent use of these

substances. Therefore, an indication of the reliability of the scales has been taken from a study conducted in a sample of American adolescents (Gerrard et al., 2002).

**Prototypes.** Adolescents' images of alcohol and substance users (actors) were assessed by asking participants to think about people their age that drink alcohol or use substances and to then indicate the extent to which they agreed or disagreed with several descriptions of alcohol users. The descriptions included: "smart", "confused", "popular", "immature", "cool", "self-confident", "independent", "careless", "unattractive", "boring", "considerate", and "self-centered". Each descriptor was followed with a 7-point Likert-type scale ranging from 1 "strongly disagree" to 7 "strongly agree", where participants rated the extent to which they agreed with each descriptor. Negative items were reverse scored so that higher scores reflected a favourable image. Images of alcohol and substance abstainers were also assessed using the same 12 descriptors. Items 32-43 measured alcohol drinker (actor) prototypes; items 45-56 measured alcohol abstainer prototypes, items 61-72 measured substance user (actor) prototypes, and finally, items 74-85 measured substance abstainer prototypes.

Cronbach's alpha coefficients of .87 and .84 have been found for alcohol user prototype and non-alcohol user prototype indices respectively (Gerrard et al., 2002). This study found Cronbach's alpha coefficients of .727, .776, .761 and .804 for alcohol drinker (actor), alcohol abstainer, substance user (actor), and substance abstainer prototypes respectively.

**Behavioural willingness.** Willingness to drink alcohol (items 58-60) and to use substances (items 87-89) were assessed through giving the students a risk-conducive scenario and then assessing participants' willingness to react in the following different ways: "take it and try it"; "tell them 'no thanks'"; and, "leave the situation". A response to each reaction was set on a 7-point Likert-type scale, ranging from 1 "not at all" to 7 "definitely", and the latter two items were reverse

scored, whereby a higher score indicated decreased behavioural willingness to either engage in alcohol consumption or substance use. A prior study in a sample of American adolescents found an alpha coefficient of .85 for the same behavioural willingness scale (Gerrard et al., 2002). This study found alpha coefficients of .813 for willingness to drink alcohol, and .763 for behavioural willingness to use substances.

**3.5.5. Reasoned path.** The remaining questions of the survey assessed variables of the reasoned path of the prototype willingness model, namely behavioural intention, attitudes and subjective norms.

***Behavioural Intention.*** Items 114, 115, and 121 assessed behavioural intention to drink alcohol, to binge drink, and to use substances in the future (Gou et al., 2007). Response categories included 1 = “yes, definitely”; 2 = “maybe yes”; 3 = “maybe no”; and 4 = “definitely not”, where higher scores indicated decreased intention to perform the given behaviour of either drinking alcohol, binge drinking, or using substances.

***Attitudes.*** Items 119-120 and 125-126 measured attitudes toward alcohol use and substance use respectively, where the scores of both items were averaged to give an overall indication of the individuals’ healthy and harmful attitudes towards alcohol use and substance use (Marcoux & Shope, 1997). The first item, relating to alcohol use asked: “How much do you think a person your age risks hurting themselves (health or other ways) by having five or more alcoholic drinks every weekend”, included the following response categories: 1 = “a lot”; 2 = “some”; 3 = “a little”; 4 = “not at all”, in relation to substance use, the same question was asked in terms of using substances every weekend: “How much do you think a person your age risks hurting themselves (health or other ways) by using substances every weekend?”. The second item, relating to alcohol use, asked: “At your age, if you had five or more alcoholic drinks every weekend, do you think it would hurt

you?”, and included the response categories of 1 = “yes”; 2 = “probably”; 3 = “probably not”; and 4 = “no”, similar to the previous item, in order to assess attitude to substance use, the same question was posed but in terms of substance use rather than alcohol use. The scores of both items were averaged to give an overall indication of the individuals’ attitudes toward alcohol use and substance use, where higher scores indicated a positive attitude toward the given risk behaviour (Marcoux & Shope, 1997).

***Subjective Norms.*** Subjective norms were assessed by items 116 and 117 (alcohol use), and 122 and 123 (substance use), with the response categories of 1 = “very bad”; 2 = “bad idea”; 3 = “neither good nor bad idea”; 4 = “good idea”; and 5 = “very good idea”, where higher scores were indicative of permissive subjective norms around alcohol and substance use (Marcoux & Shope, 1997). Subjective norms were measured by two questions that assessed participants’ beliefs about people their age using alcohol and drugs by two normative influences: parents (*items 116 and 121*) and peers (*items 117 and 122*). The response categories were: 1 = “very bad”; 2 = “bad idea”; 3 = “neither good nor bad idea”; 4 = “good idea”; and 5 = “very good idea”. Higher scores indicated permissive subjective norms toward alcohol and drug use respectively.

***Perceived behavioural control.*** Perceived behavioural control was measured by one item relating to behavioural refusal. Response categories included: 1 = “yes, definitely”; 2 = “maybe yes”; 3 = “maybe no”; and 4 = “definitely not”, where a lower score indicated higher perceived behavioural control.

Reliability of a measurement instrument indicates how free it is from random error, in essence, the dependability or constancy of the measure in relation to a variable (Neuman, 2014). Various indicators can be used to assess the degree of reliability of measures, however, the preliminary nature as well as time constraints of this study allowed for only the internal reliability



of the questionnaire to be evaluated through calculating the Cronbach's alpha coefficient (Pallant, 2013). According to DeVellis (2012), the Cronbach's alpha coefficient should be more than 0.7 for a given scale to be considered as reliable. Table 2, in the next chapter, illustrates the Cronbach's alpha coefficient for each measurement scale used in the study, where all scales used in the study were found to be reliable, with the exception of the non-substance user prototype scale ( $\alpha = .631$ ) and the self-prototype scale ( $\alpha = .695$ ), however, these values were viewed as acceptable for the purposes of this research study (Pallant, 2013).

### **3.6 Data Analysis**

Data analysis was performed using the IBM-SPSS version 6 statistical analysis package. A codebook was prepared prior to entering data into IBM-SPSS. Descriptive statistics were used to describe the nature of the data as these allow the researcher to determine the rate of substance use. To determine the relationship among the variables, the Pearson product moment correlation coefficient was used.

Frequencies and cross-tabulations were used to describe sample characteristics as well as alcohol, cigarette and other substance use rates among the study sample. The central tendency of the data was also explored to determine the nature of statistical tests to use.

The inter-item reliability coefficient, namely the Cronbach's alpha coefficients were calculated. After obtaining satisfactory coefficients, the items of the respective measures were summed and then the normality of the scales was explored.

Scales were examined to ensure that assumptions of normality had not been violated, and where assumptions of normality were violated, frequencies were examined, and the following continuous variables were transformed into categorical variables for the purposes of further analysis due to skewness.

*Life time use of substances*

For the purpose of further analyses, responses to item 12, assessing life time use of specific illicit substances (marijuana, ecstasy, crack/cocaine, crystal meth, and heroin) were recoded into two categories: namely “have used other substances in lifetime” and “have not used other substances in lifetime”.

*Behavioural intention to use alcohol and substances:* The categories for items 114, 115, and 121 of the questionnaire, all relating to behavioural intention to use alcohol, to binge drink, and to use substances, were collapsed from four categories into three categories for the purpose of further statistical analysis. The three categories now consisted of “definitely will”, “maybe will”, and “definitely will not”.

*Attitudes toward alcohol use:* Attitudes toward alcohol use were originally assessed through averaging the final scores on questionnaire items 119 and 120, where higher scores were indicative of positive attitudes to alcohol use. However, upon examining the descriptive statistics of this scale, where the Skewness values were 2.254 and 4.904 respectively, it became clear that assumptions of normality had been violated (Tabashnick & Fidell, 2013). Therefore, for the purpose of further research, this continuous variable was transformed into a dichotomous categorical variable, with the categories of “negative attitude to alcohol use”, consisting of scores between 1 and 2, and the second response category of “positive attitude to alcohol use”, consisting of scores between 3 and 4.

*Attitudes toward substance use:* Similarly, descriptive statistics relating to attitudes toward substance use indicated that this scale also violated assumptions of normality, with a Skewness value of 2.15 and a Kurtosis value of 3.960. Therefore, this continuous variable was transformed into a dichotomous categorical variable, where scores between 1 and 2 fell into the first category

of “negative attitude toward substance use”, and scores between 3 and 4 fell into the second category of “positive attitude toward substance use”.

### *Descriptive Statistics of Measures Used*

The survey consisted of several scales relating to perceived social support, actor and abstainer prototypes, attitudes, subjective norms, behavioural intention and behavioural willingness. In order to assess the normality of the distributions, the following statistics were inspected in relation to each scale: mean, 5% trimmed mean, standard deviation, skewness, kurtosis, as well as the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality. Graphically, the histograms and normal Q-Q plots of the scores on each scale were also examined. Finally, in order to identify and remove outliers, box-plots and outliers were generated and examined.

**Table 1**

### *Descriptive statistics of continuous measures*

<b>Measurement Scale</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b><math>\alpha</math></b>
Perceived social support	142	30	59	47.94	8.058	-.422	-.856	.888
Alcohol drinker prototype	152	16	76	45.72	11.740	.227	.066	.727
Non-alcohol drinker prototype	148	34	81	60.48	10.330	-.393	-.234	.770
Substance user prototype	157	12	74	42.77	12.707	-.029	-.308	.761
Non-substance user prototype	149	29	84	58.54	11.360	-.195	-.178	.804
Behavioural willingness (alcohol)	150	3	21	11.87	5.720	-.123	-1.258	.813
Behavioural willingness (substances)	146	3	21	7.72	5.431	.885	-.413	.763

In table 1, the descriptive statistics of the scales used are presented. All outliers were removed to improve normality as outlined earlier. After the removal of outliers, the descriptive statistics of each continuous measure used in the survey indicate a reasonably acceptable level of normality (Pallant, 2013). This table further illustrates acceptable levels of reliability for each

scale used (Pallant, 2013). As discussed above a number of continuous variables, namely behavioural intention to use alcohol, behavioural intention to use substances, attitude toward alcohol and attitude toward substances, were transformed into categorical variables for the purpose of further statistical analysis.

Table 2 (*please see next page*) provides an overview of the descriptive statistics of categorical variables employed in the study, illustrating frequencies after adjustments were made, as described in the previous chapter.

In order to ascertain the relationship among demographic, social, and psychological variables and adolescent alcohol, cigarette, and other substance use, a number of Chi-square tests for independence as well as independent samples t-tests were conducted.

Finally, in an attempt to answer the third and final research question, **logistic regression analyses** were run in order to assess the impact of the prototype-willingness variables on the likelihood of current and lifetime alcohol and other substance use. Regarding measures used, dummy variables were created for categorical variables with more than two categories in order to properly interpret the results of the regression analyses.

**Table 2**

*Response options and frequencies of recoded categorical variables used in the analysis*

<b>Categorical variables</b>	<b>N</b>	<b>%</b>
<b>Peer cigarette use</b>		
None of them	43	26.7
Some of them	93	57.8
Most of them	25	15.5
<b>Peer alcohol use</b>		
None of them	19	11.7
Some of them	87	53.7
Most of them	56	34.6
<b>Peer substance use</b>		
None of them	67	41.4
Some of them	79	48.8
Most of them	9.9	9.9
<b>Parental cigarette use</b>		
No	115	71.0
Yes	47	29.0
<b>Parental alcohol use</b>		
No	83	51.2
Yes	79	48.8
<b>Parental Substance use</b>		
No	139	85.8
Yes	23	14.2
<b>Behavioural intention to use alcohol</b>		
Not willing	31	19.1
Maybe willing	83	51.2
Definitely willing	48	29.6
<b>Behavioural intention to binge drink</b>		
Definitely will	41	29.6
Maybe will	73	45.1
Definitely will not	48	25.3
<b>Behavioural intention to use substances</b>		
Definitely will	14	8.6
Maybe will	45	27.8
Definitely will not	103	63.6
<b>Attitude towards alcohol use</b>		
Negative attitude	15	9.3
Positive attitude	147	90.7
<b>Attitude towards substance use</b>		
Negative attitude	113	69.8
Positive attitude	49	30.2

### **3.7 Chapter Summary**

This chapter described the methodological aspects of the study. Firstly, the positivist approach and quantitative nature of the research study was described in relation to the ontological, epistemological and methodological aspects of the study. Following this, a brief description of the research context and study sample, which consisted of high school students in KwaZulu-Natal, as well as an explanation as to the use of non-probability convenience sampling employed as the sampling method of this study, was provided. An outline of the study procedure, including ethical considerations, as well as a detailed description of items used in the questionnaire was provided. Finally, issues surrounding reliability, validity, and data analysis were addressed.

## Chapter Four: Results

### 4.1 Introduction

This chapter reports study findings in relation to the following: socio-demographic characteristics of the sample; the rate of substance use among the participants; differences in socio-demographic variables in relation to alcohol and substance use; differences in psychosocial variables in relation to alcohol and substance use; and finally, the impact of demographics, social variables, behavioural intention and behavioural willingness, on the likelihood of predicting current alcohol and substance use.

### 4.2 Socio-demographic characteristics

The final sample consisted of 162 high school students from the eThekweni (N = 43) and Ugu (N = 119) regions of KwaZulu-Natal. As illustrated in *Table 3*, results indicated that the sample consisted of 54.9% females and 45.1% males, ranging from age 14 to age 17 with a mean age of 15.5 years (M=15.5, SD=0.718).

In terms of ethnicity, the majority of the students were Black (53.1%), followed by White (29%), and finally Indian/Asian (12.3%) and Coloured/Mixed Race (4.3%), with only 1.2% reporting that they belonged to the 'other' group. For the further analyses, categories with the lowest frequencies namely: "Indian/Asian", "Coloured/Mixed Race" and "Other", were recoded into a single category named "Other", consisting of 17.8% of the sample. Most students reported that they were from an average and high socioeconomic background, with the remaining students reporting a low and extremely low socioeconomic background. For the purposes of further analyses, the four socioeconomic categories were collapsed into two main categories, namely: low socioeconomic background (7.4%) and average to high socioeconomic background (92.6%).

**Table 3***Sample Characteristics*

<b>Characteristics</b>	<b>N</b>	<b>%</b>
<b>School</b>		
School A (eThekweni)	43	26.5
School B (Ugu)	119	73.5
<b>Gender</b>		
Male	73	45.1
Female	89	54.9
<b>Age (M=15.5, SD=0.718)</b>		
14 Years	10	6.2
15 Years	71	43.8
16 Years	68	42.0
17 Years	11	6.9
<b>Grade</b>		
Grade 10	109	67.3
Grade 11	53	32.7
<b>Ethnicity</b>		
Black	86	53.1
White	47	29.0
Indian/Asian	20	12.3
Colored/Mixed Race	7	4.3
Other	2	1.2
<b>Socioeconomic Status</b>		
Not enough for basics	2	1.2
Only enough for food and clothes	8	4.9
Enough for basics	61	37.7
Enough for basics and savings	89	54.9

**4.3 Rates of Substance Use**

Current and lifetime substance use were assessed in relation to cigarettes, alcohol and other substances, as illustrated in Table 4. A total 41.4% of participants had used cigarettes in their lifetime, with fewer students reporting current cigarette use (16.1%). Of those who had smoked cigarettes in their lifetime, half were male (50.7%), more were Black African (47.8%), 82.1% were aged 15-16; and more smokers were in grade 10 (70.1%) than in grade 11 (29.9%).



**Table 4**  
*Rates of lifetime and current substance use*

Substances	Lifetime				Current			
	Yes		No		Sometimes		Never	
	n	%	n	%	n	%	n	%
Cigarettes	67	41.4	95	58.6	26	16.0	136	84
Alcohol	122	75.3	40	24.7	62	38.3	100	61.7
Other substances <sup>3</sup>	62	38.3	100	61.7	21	13	141	87

<sup>3</sup>For the purposes of further analyses, marijuana, crack/cocaine, crystal meth, and heroin were grouped together into the single category of “other substances”

Alcohol was the highest used substance among the sample, where the majority (75.3%) of participants had used alcohol in their lifetime, nearly half of whom indicated current use alcohol (38.3%). The sample characteristics indicated that, in terms of demography, more lifetime alcohol users were male (84.9%), aged between 16 and 17 years (85.5%), and belonged to the White ethnic group (59.6%).

In terms of the rate of “other substances” used, 38.3% of the sample indicated having used “other substances” in their lifetime, and a total of 13% had indicated other substances used in the past 30 days. The characteristics of those who had used “other substances” in their lifetime suggested that the majority were male (42.5%), aged between 16 to 17 years (40.5%) and belonged to the Black ethnic group (44.2%).

Table 5 illustrates the lifetime rates of specific substances used including marijuana, ecstasy, crack/cocaine, crystal meth and heroin.

**Table 5**  
*Lifetime rates of specific substances*

	Yes		No	
	n	%	n	%
Marijuana	61	40.4	90	59.6
Ecstasy	13	8.6	138	91.4
Crack/Cocaine	5	3.1	146	96.7
Crystal Meth	3	2	148	98
Heroin	3	2.0	148	98

In terms of lifetime use of illicit substances, the highest rate was marijuana use (40.4%), followed by ecstasy use (8.6%). Substances that had been used the least by participants included crack/cocaine at 3.3%, crystal methamphetamine at 2%, and finally, heroin also at 2%.

#### 4.4 Substance use differences by socio-demographic characteristics

Chi-square tests for independence were conducted to examine the differences in demographic variables regarding substances used. Results are presented for the demographic variables of gender, age, ethnicity, as well as socioeconomic status.

##### 4.4.1 Gender by current and lifetime alcohol and substance use

The results of the Chi-square tests for independence (with Yates Continuity Correction) between current and lifetime use of alcohol, cigarette, and other substance are depicted in Table 6. The results indicated a significant but weak association between gender and lifetime alcohol use, with more males than females indicating having used alcohol in their lifetime,  $X^2(1, n = 162) = 5.709, p = .017, phi = .202$ .

**Table 6**

*Chi-square of independence results: Gender by current and lifetime substance use*

	Male %		Female %		P square Value	Chi- p	Df.	Continuity corr.		Phi
	Yes	No	Yes	No				Value	p	
<b><i>Current</i></b>										
Alcohol	45.2	54.8	32.6	67.4	2.704	.100	1	2.196	.138	-.129
Cigarettes	21.9	78.1	11.2	88.8	3.396	.065	1	2.650	.104	-.145
Substances	16.4	83.6	10.1	89.9	1.422	.233	1	.917	.338	.094
<b><i>Lifetime</i></b>										
Alcohol	84.9	15.1	67.4	32.6	6.617	.010	1	5.709	.017	-.202
Cigarettes	46.6	53.4	37.1	62.9	1.491	.222	1	1.125	.289	.096
Substances	42.5	57.5	34.8	65.2	.989	.320	1	.693	.405	-.078

However, no further significant associations were found among the remaining variables of gender and current cigarette use  $X^2(1, n = 162) = 2.650, p = .104, phi = -.145$ ; gender and current

alcohol use  $X^2(1, n = 162) = 2.196, p = .138 \phi = -.129$ , gender and current substance use  $X^2(1, n = 162) = .917, p = .338 \phi = .094$ ; gender and lifetime cigarette use,  $X^2(1, n = 162) = 2.650, p = .104 \phi = -.145$ , and finally, gender and lifetime substance use  $X^2(1, n = 162) = .693, p = .405 \phi = .078$ .

#### 4.4.2 Age

The Chi-square tests for independence (with Yates Continuity Correction) were conducted to investigate the associations between current alcohol, cigarette, and substance use and age, as illustrated in Table 7. The results indicated that the difference between age group and alcohol use was statistically significant, but weak,  $X^2(1, n = 160) = 5.209, p = .022 \phi = -.195$ , with more participants in the age group of 16-17 years indicating to have used alcohol in their lifetime.

No further associations were significant, including age and current cigarette use,  $X^2(1, n = 160) = 2.464, p = .116 \phi = .141$ ; age and current alcohol use,  $X^2(1, n = 160) = 1.212, p = .271 \phi = .100$ ; age and current substance use,  $X^2(1, n = 160) = .604, p = .437 \phi = -.080$ ; age and lifetime cigarette use,  $X^2(1, n = 160) = 2.006, p = .157 \phi = -.125$ ; and finally, age and lifetime substance use,  $X^2(1, n = 160) = .202, p = .653 \phi = -.048$ .

**Table 7**

*Chi-square of independence results: Age by current and lifetime substance use*

	Age 14-15		Age 16-17		P-chi square		Df.	Continuity corr.		Phi
	Yes	No	Yes	No	Value	p		Value	p	
<b>Current</b>										
Cigarettes	11.1	88.9	21.5	78.5	3.183	.074	1	2.464	.116	.141
Alcohol	33.3	66.7	43.0	57.0	1.597	.206	1	1.212	.271	.100
Other	9.9	90.1	15.2	84.8	1.032	.310	1	.604	.437	-.080
<b>Lifetime</b>										
Cigarettes	35.8	64.2	48.1	51.9	2.485	.115	1	2.006	.157	-.125
Alcohol	66.7	33.3	83.5	16.5	6.076	.014	1	5.209	.022	.195
Other	35.8	64.2	40.5	59.5	.375	.540	1	.202	.653	.048

### 4.4.3 Ethnicity

Chi square tests for independence (with Pearson Chi Square) were conducted to investigate the associations between current alcohol, cigarette, and substance use and ethnicity as illustrated in Table 8. Results indicated significant differences between both ethnicity and current alcohol use  $X^2(1, n = 162) = 13.115, p < .0011, phi = .285, Cramer's V = .291$ , as well as between ethnicity and lifetime alcohol use,  $X^2(1, n = 162) = 13.702, p = .001, Cramer's V = .291$ , where, in both cases, the percentage of white students who had used alcohol was greater than that of any other ethnic group.

No further significant differences were found between ethnicity and lifetime cigarette use,  $X^2(1, n = 162) = 1.397, p = .497, Cramer's V = .093$ , as well as between ethnicity and lifetime substance use  $X^2(1, n = 162) = 2.720, p = .257, Cramer's V = .130$ . Results for the differences between ethnicity and current cigarette and substances use have been included in Table 8, but will not be reported as the chi-square assumption minimum expected cell frequency of 5 or more was violated in both cases.

**Table 8**

*Chi-square test for independence: ethnicity by current and lifetime substance use*

	Black %		White %		Other %		P chi-square		Df.	Cramer's V
	Yes	No	Yes	No	Yes	No	Value	p		
<b><i>Current</i></b>										
Cigarettes <sup>1</sup>	11.6	88.4	19.1	80.9	24.1	75.9	2.991	.224	2	.136
Alcohol	27.9	72.1	59.6	40.4	34.5	65.5	13.115	.001	2	.285
Other <sup>2</sup>	15.1	84.9	12.8	87.2	6.9	93.1	1.301	.522	2	.090
<b><i>Lifetime</i></b>										
Cigarettes	37.2	62.8	44.7	55.3	48.3	51.7	1.397	.497	2	.093
Alcohol	70.9	29.1	93.6	6.4	58.6	41.4	13.702	.001	2	.291
Other	44.2	55.8	31.9	68.1	31.0	69.0	2.720	.257	2	.130

<sup>1</sup>The chi-square assumption of minimum cell frequency was violated: expected cell count = 4.65

<sup>2</sup>The chi-square assumption of minimum cell frequency was violated: expected cell count = 3.76

#### 4.4.4 Socioeconomic Status

Chi-square tests for independence (with Yates Continuity Correction) were conducted to investigate the associations between current and lifetime alcohol, cigarette, and substance use. However, the assumption of minimum cell frequency was violated for each test relating to socioeconomic status.

#### 4.4.5 Parental Substance use

Chi-square tests for independence (with Yates Continuity Correction) were conducted to investigate the associations between current alcohol, cigarette and substance use as illustrated in Table 9. Results indicate that the difference between parental alcohol use and current alcohol use was of statistical significance,  $X^2(1, n = 162) = 4.092, p = .043, phi = .172$ , where more students, whose parents had used alcohol, had used alcohol in the past 30 days.

**Table 9**

*Chi-square of independence results: Parental substance use by current and lifetime substance use*

	Parental Use %		Parental non-use %		P-chi square		Df.	Continuity corr.		Phi
	Yes	No	Yes	No	Value	p		Value	p	
<b>Current</b>										
Cigarettes	23.4	76.6	13.0	87.0	2.658	.103	1	1.945	.163	.128
Alcohol	46.8	53.2	30.1	69.9	4.787	.029	1	4.105	.043	.172
Other <sup>1</sup>	26.1	73.9	10.8	89.2	4.092	.043	1	2.849	.091	.159
<b>Lifetime</b>										
Cigarettes	53.2	46.8	36.5	63.5	3.823	.051	1	3.166	.075	.154
Alcohol	87.3	12.7	63.9	36.1	12.007	.001	1	10.777	.001	.272
Other	60.9	39.1	34.5	65.5	5.794	.016	1	4.733	.030	.189

<sup>1</sup>The chi-square assumption of minimum cell frequency was violated: expected cell count = 2.98

Statistically significant associations were also found between: parental cigarette use and lifetime cigarette use,  $X^2(1, n = 162) = 3.823, p = .051, phi = .154$ ; parental alcohol use and lifetime alcohol use,  $X^2(1, n = 162) = 12.007, p = .001, phi = .272$ , where the rate of lifetime alcohol use

was greater among students whose parents consumed alcohol than that of students whose parents did not consume alcohol; as well as between parental substance use and lifetime substance use,  $X^2(1, n = 162) = 5.794, p = .016, phi = .189$ , where the proportion of students who had used substances in their lifetime was higher among those whose parents had used substances than that of students whose parents had not used substances.

The association between parental cigarette use and current cigarette use was not statistically significant,  $X^2(1, n = 162) = 2.658, p = .103, phi = .128$ . Results from parental substance use by current substance use cannot be used as the assumption of minimum cell frequency was violated.

#### **4.4.6 Peer Substance Use**

Chi-square tests for independence were conducted to investigate the associations between peer substance use and current and lifetime substance use. As evidenced in Table 10, a significant association was found between peer alcohol use and current alcohol use,  $X^2(2, n = 162) = 20.242, p < .0010, Cramer's V = .353$ , where the rate of current alcohol use appeared to increase as the number of friends who consumed alcohol increased. Similar significant associations were found between peer cigarette use and lifetime cigarette use,  $X^2(2, n = 162) = 19.937, p < .001, Cramer's V = .350$ , as well as between peer substance use and lifetime substance use,  $X^2(2, n = 162) = 29.704, p < .001, Cramer's V = .428$ , where, in both instances, the use of each substance increased as the amount of friends who used the substance increased.

Results pertaining to the following associations will not be reported as the Chi-Square assumption of minimum cell frequency was violated: current cigarette use and peer cigarette use; current substance use and peer substance use; as well as lifetime alcohol use and peer alcohol use.

#### **Table 10**

*Chi-square test for independence: peer substance use by current and lifetime substance use*

	None %		Some %		Most %		P chi-square		Df.	Cramer's V
	Yes	No	Yes	No	Yes	No	Value	p		
<b><i>Current</i></b>										
Cigarettes <sup>1</sup>	2.3	97.7	14.0	86.0	48.0	52.0	25.121	.000	2	.395
Alcohol	5.3	94.7	32.2	67.8	58.9	41.1	20.242	.000	2	.353
Other <sup>2</sup>	1.5	98.5	17.7	82.3	37.5	62.5	17.937	.000	2	.333
<b><i>Lifetime</i></b>										
Cigarettes	20.9	79.1	41.9	58.1	76.0	24.0	19.741	.000	2	.350
Alcohol <sup>3</sup>	42.1	57.9	72.4	27.6	91.1	8.9	19.041	.000	2	.334
Other	14.9	85.1	50.6	49.4	75.0	25.9	29.704	.000	2	.428

<sup>1</sup>16.7% cells had expected cell count of less than 5. Minimum expected count is 4.04

<sup>2</sup>16.7% cells had expected cell count of less than 5. Minimum expected count is 2.07

<sup>3</sup>16.7% cells had expected cell count of less than 5. Minimum expected count is 4.69

#### 4.4.7 Perceived social support

Independent samples t-tests were conducted to compare the mean scores of perceived social support for current alcohol users and non-alcohol users. As illustrated in Table 15, there was no significant difference in the mean scores for those who had used alcohol in the past 30 days ( $M = 44.98$ ,  $SD = 9.508$ ) and those who had not ( $M = 47.52$ ,  $SD = 10.452$ ;  $t(153) = 1.518$ ,  $p = .131$ , two-tailed). However, there was a significant difference in the mean of perceived social support for those who had used alcohol in their lifetime ( $M=45.59$ ,  $SD = 10.039$ ) and those who had not ( $M = 49.53$ ,  $SD = 10.029$ ;  $t(153) = -2.101$ ,  $p = .037$ , two-tailed), where those who had used alcohol in their lifetime indicated lower perceived social support than those who had not used alcohol in their lifetime. The magnitude of the difference in mean scores (mean difference =  $-.937$ , 95%CI:  $-7.639$  to  $-.234$ ) was small (eta squared  $.028$ ).

The difference in the mean scores of perceived social support for both current and lifetime substance use and non-use were investigated using independent samples t-tests. There was no significant difference between mean scores of the perceived social support measure for those who had used substances in the past 30 days ( $M = 43.90$ ,  $SD = 8.882$ ) and those who had not ( $M =$

46.97, SD = 10.299;  $t(153) = -1.290$ ,  $p = .199$ ). Similarly, there was no significant difference in the mean scores of perceived social support for those who had used substances in their lifetime ( $M = 45.12$ ,  $SD = 10.558$ ) and those who had not ( $M = 47.39$ ,  $SD = 9.859$ ;  $t(153) = -1.343$ ,  $p = .181$ ).

Differences in the mean scores of the subscales of perceived social support from family, friends, and significant others, were examined in relation to participants' current and lifetime alcohol and substance. The only significant difference in the mean scores was that of perceived social support from family for lifetime alcohol use, current alcohol use, lifetime substance use, and current substance use. There was a significant difference in mean scores of perceived social support from family between those who had not used alcohol in their lifetime ( $M = 15.90$ ,  $SD = 4.436$ ) than those who had used alcohol in their lifetime ( $M = 13.91$ ,  $SD = 4.890$ ,  $t(153) = 2.280$ ,  $p = .024$ ), where those who had not used alcohol in their lifetime indicated greater perceived social support from their family than those who had used alcohol in their lifetime. The magnitude of the difference in means (mean difference = 1.99, 95%CI: .266 to 3.719) was small (eta squared = .033).

Similarly, the difference in mean scores of perceived social support from family was significant for those who had used substances in the past 30 days ( $M = 12.29$ ,  $SD = 5.293$ ) and those who had not ( $M = 14.73$ ,  $SD = 4.710$ ,  $t(153) = 2.181$ ,  $p = .031$ ), where those who had used substances in the past 30 days indicated lower mean scores of perceived social support from their family than those who had not used substances in the past 30 days. The magnitude of the difference in means (mean difference = 2.44, 95%CI: .231 to 4.661) was small (eta squared = .031).

All in all, the above results indicate that the mean scores of perceived social support for participants were only significantly different in relation to alcohol use, where both those who had used alcohol in their lifetime and those who had used alcohol in the past 30 days scored significantly lower mean scores on the perceived social support scale than those who had not



engaged in such behaviours. Interestingly, even though those who had engaged in lifetime and current substance use also had lower mean scores on the perceived social support scale than those who had not, however, these mean score differences were not significant. Mean scores of the perceived social support subscale of family revealed significant differences in terms of lifetime alcohol use, where those who had used alcohol in their lifetime indicated significantly less perceived social support from their families than those who had not used alcohol in their lifetime. A similar difference was found in relation to current substance use, where those who had used substances in the past 30 days indicated lower mean scores of perceived social support from their families than those who had not used substances in the past 30 days.

#### **4.5 Associations between variables of the reasoned path and alcohol and other substances used**

##### **4.5.1 Attitude**

Chi-square tests for independence (with Yates Continuity Correction) were used to investigate the associations between attitudes toward alcohol and substance use and lifetime and current alcohol and substances use. As illustrated in Table 11, results revealed a small but significant association between attitude and current alcohol use [ $X^2(1, n = 162) = 10.315$   $p = .001$ ,  $phi = .294$ ] where current alcohol use was higher among those who had a positive attitude to alcohol use than those who had a negative attitude to alcohol use. No further significant associations were found and results for current other substance use and attitude, as well that of lifetime alcohol use and attitude will not be reported as the assumption of minimum expected cell frequency was violated.

#### **Table 11**

*Chi-square of independence results: Attitudes toward alcohol and substance use by current and lifetime substance use*

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	Negative attitude %		Positive attitude %		P-chi square		Df.	Continuity corr.		Phi
	Yes	No	Yes	No	Value	p		Value	p	
<b>Current</b>										
Alcohol	34.0	66.0	80.0	20.0	12.184	.000	1	10.315	.001	.294
Other <sup>1</sup>	9.9	90.1	35.0	65.0	9.821	.002	1	7.719	.005	.246
<b>Lifetime</b>										
Alcohol <sup>2</sup>	73.5	26.5	93.3	6.7	2.888	.089	1	1.919	.166	.134
Other	36.6	63.4	50.0	50.0	1.329	.249	1	.823	.364	.091

<sup>1</sup>25% cells had expected cell count less than 5. Minimum expected count is 2.59.

<sup>2</sup>25% cells had expected cell count less than 5. Minimum expected count is 3.70.

#### 4.5.2 Parental Subjective Norms

Chi-square tests for independence (with Yates Continuity Correction) were used to investigate the associations between parental subjective norms around alcohol and substances and current and lifetime alcohol and substance use. As illustrated in Table 12, results indicated a moderate significant association between parental subjective norms around alcohol use and current alcohol use [ $X^2(1, n = 159) = 19.356, p < .001, Phi = .367$ ] where current alcohol use was higher among those who perceived parental norms around alcohol use to be permissive (79.2%) than those who perceived parental subjective norms to be restrictive (29.6%). A small significant association was found between parental subjective norms around alcohol use and lifetime alcohol use [ $X^2(1, n = 159) = 7.993, p = .005, Phi = .234$ ] where the proportion of students who had used alcohol in their lifetime was lower among those who had perceived parental norms to be restrictive (70.4%) than those who had perceived parental norms to be permissive (100%). The chi-square assumptions of minimum expected cell frequency was violated in the chi-square analyses concerning parental subjective norms around substance use in relation to lifetime and current and lifetime substance use, therefore, these results will not be reported.

**Table 12**

*Chi-square of independence results: Parental subjective norms toward alcohol and substance use by current and lifetime substance use*

	Restrictive Norms %		Permissive Norms %		P-chi square		Df.	Continuity corr.		Phi
	Yes	No	Yes	No	Value	p		Value	p	
<b>Current</b>										
Alcohol	29.6	70.4	79.2	20.8	21.426	.000	1	19.356	.000	.367
Other <sup>1</sup>	12.3	87.7	25.0	75.0	.576	.448	1	.000	1.000	.060
<b>Lifetime</b>										
Alcohol	70.4	29.6	100	0	9.501	.002	1	7.993	.005	.244
Other <sup>2</sup>	38.1	61.9	50.0	50.0	.235	.628	1	.000	1.000	.038

<sup>1</sup>50.0% cells had expected cell count of less than 5. Minimum expected count is 1.53

<sup>2</sup>50.0% cells had expected cell count of less than 5. Minimum expected count is .50

#### 4.5.3 Peer subjective norms

Chi-square tests for independence were conducted to investigate the whether or not there were any associations between peer subjective norms (permissive and restrictive) and current and lifetime alcohol and substance use, the results of which are presented in Table 13. A small but significant association was found between peer subjective norms around alcohol use and current alcohol use [ $X^2(1, n = 162) = 13.510, p < .001, Phi = .292$ ] where the proportion of students who had used alcohol in the past 30 days was greater among those who had perceived peer norms to be permissive (55.1%) than those who had perceived peer norms to be restrictive (12.5%). Results further revealed a small but significant association between lifetime alcohol use and peer norms around alcohol use [ $X^2(1, n = 162) = 8.364, p = .004, Phi = .230$ ] where the proportion of students who had consumed alcohol in their lifetime was higher among those who had perceived peer norms to be permissive (80.5%), and lower among those who had perceived their peer norms to be restrictive (57.5%).

The association between current substance use and perceived peer norms around substance use was small but significant [ $X^2(1, n = 162) = 11.655, p = .001, Phi = .268$ ] where the proportion of students who had used substances in the past 30 days was higher among those who had perceived peer subjective norms to be permissive, at 22.7% and lower among those who had

perceived peer subjective norms to be restrictive at 4.6%. Similarly, the association between lifetime substance use and perceived peer norms was moderate and significant [ $X^2(1, n = 162) = 15.890, p < .001, Phi = .313$ ] where the proportion of students who had used substances in their lifetime was higher among those who had perceived peer norms around substance use to be permissive (54.7%) compared to those who had perceived their peer norms to be restrictive (24.1%).

**Table 13**

*Chi-square of independence results: Peer subjective norms toward alcohol and substance use by current & lifetime substance use*

	Restrictive norms %		Permissive norms%		P chi-square		Df.	Continuity corr.		Phi
	Yes	No	Yes	No	Value	p		Value	p	
<b>Current</b>										
Alcohol	12.5	87.5	44.9	55.1	13.510	.000	1	12.151	.000	.292
Other	4.6	95.4	22.7	77.3	11.655	.001	1	10.109	.001	.268
<b>Lifetime</b>										
Alcohol	57.5	42.5	80.5	19.5	8.364	.004	1	7.192	.007	.230
Other	24.1	75.9	54.7	45.3	15.890	.000	1	14.624	.000	.313

#### 4.5.4 Intention

Chi-square tests for independence were conducted to investigate the associations between behavioural intention to use substances and alcohol and current and lifetime alcohol and substance use. Results, as illustrated in Table 14, indicated strong significant associations between lifetime alcohol use and behavioural intention to use alcohol [ $X^2(2, n = 162) = 31.521, p < .001, Cramer's V = .524$ ] as well as between lifetime other substance use and behavioural intention to use other substances [ $X^2(2, n = 162) = 42.527, p < .001, Cramer's V = .512$ ]. In both cases, the number of students who had used alcohol or substances increased as the strength of behavioural intention to use alcohol or substances increased.

**Table 14***Chi-square test for independence: behavioural intention by current and lifetime substance use*

	Definitely will not %		Maybe will %		Definitely will%		P chi-square		Df.	Cramer's V
	Yes	No	Yes	No	Yes	No	Value	p		
<b>Current</b>										
Alcohol	16.7	83.3	32.9	67.1	73.2	26.8	31.521	.000	2	.441
Other <sup>1</sup>	2.9	97.1	28.9	71.1	35.7	64.3	27.760	.000	2	.399
<b>Lifetime</b>										
Alcohol	41.7	58.3	87.7	12.3	92.7	7.3	41.827	.000	2	.508
Other	20.4	79.6	62.2	37.8	92.9	7.1	42.527	.000	2	.512

<sup>1</sup>1 cell (16.7%) had an expected count less than 5. Minimum expected cell count is 1.81

A strong, significant association was found between current alcohol use and behavioural intention to use alcohol [ $X^2(2, n = 162) = 31.521, p < .001, Cramer's V = .441$ ] where the proportion of students who had used alcohol in the past 30 days increased as the strength of behavioural intention increased.

Results for current other substance use and behavioural intention to use other substances will not be reported as the Chi-square assumption of minimum expected cell frequency was violated.

#### **4.6 Differences in variables of the heuristic path in relation to alcohol and other substance use**

Analyses were conducted to explore the variables of actor and abstainer prototypes, perceived social support, as well as behavioural willingness, in relation to adolescent alcohol and substance use. In order to determine whether the differences in scores on various scales between groups (users and non-users) were significant or not, independent samples t-tests were conducted. Results are presented first in relation to differences in alcohol and substance user prototype scores, followed by differences in perceived social support scores, and finally, differences in behavioural willingness.

#### 4.6.1 Prototype scores

**Actor prototype (alcohol):** As evident in Table 15, there was a significant difference in mean scores of the actor prototype for those who had used alcohol in the past 30 days ( $M = 50.21$ ,  $SD = 11.759$ ) and those who had not [ $M = 42.95$ ,  $SD = 10.896$ ;  $t(150) = -3.871$ ,  $p < .001$ , two-tailed], where those who had consumed alcohol in the past 30 days gave a more positive rating of the actor prototype than those who had not consumed alcohol in the past 30 days. The magnitude of the differences in the means (mean difference =  $-7.260$ , 95% CI:  $-10.966$  to  $-3.555$ ) was moderate (eta squared =  $.090$ ). However, no significant difference in alcohol prototype scores was found for those who had used alcohol in their lifetime ( $M = 46.41$ ,  $SD = 12.144$ ) and those who had not used alcohol in their lifetime [ $M = 43.57$ ,  $SD = 10.240$ ;  $t(150) = -1.283$ ,  $p = .201$ , two-tailed].

**Abstainer prototype (alcohol):** As illustrated in Table 15, there was a significant difference in mean scores of abstainer prototypes for those who had used alcohol in the past 30 days ( $M = 57.80$ ,  $SD = 11.204$ ) and those who had not used alcohol in the past 30 days [ $M = 62.06$ ,  $SD = 9.487$ ;  $t(146) = 2.469$ ,  $p = .015$ , two-tailed]. Those who had not consumed alcohol in the past 30 days had higher mean scores for the abstainer prototype than those who had consumed alcohol in the past 30 days, indicating that ‘abstainers’ had a higher positive appraisal of students who abstain from alcohol.

The magnitude of the difference in the means (mean difference =  $4.265$ , 95%CI:  $.850$  to  $7.679$ ) was small (eta squared =  $0.040$ ). Similarly, there was a significant difference in mean scores of the abstainer prototype for those who had used alcohol in their lifetime ( $M=58.77$ ,  $SD = 10.317$ ) and those who had not used alcohol in their lifetime [ $M = 65.62$ ,  $SD = 8.620$ ;  $t(146) = -3.871$ ,  $p < .001$ , two tailed] where those who had not used alcohol in their lifetime indicated higher ratings

of the abstainer prototype than those who had consumed alcohol in their lifetime. The magnitude of the difference in means (mean difference = -6.856, 95%CI: 3.132 to 10.580) was moderate (eta squared = .083).

***Actor prototype (substances):*** As illustrated in Table 16, there was no significant difference in mean scores of the actor prototype for those who had used substances in the past 30 days (M=45.94, SD = 11.389) and those who had not used substances in the past 30 days [M = 42.36, SD = 12.848,  $t(155) = 1.127$ ,  $p = .261$ ]. However, there was a significant difference between those who had used substances in their lifetime (M = 45.46, SD = 12.497) and those who had not [M = 41.24, SD = 12.632,  $t(155) = -2.698$ ,  $p = .045$ , two-tailed] where those who had used substances in their lifetime gave a more positive rating of the actor prototype than those who had not used substances in their lifetime. The magnitude of the difference in means (mean difference = -4.216, 95%CI: -8.342 to -.091) was small (eta squared = 0.025).

***Abstainer prototype (substances):*** There was a significant difference in mean scores of the abstainer prototype between those who had used substances in the past 30 days (M = 54.25, SD = 11.502) and those who had not used substances in the past 30 days [M = 61.33, SD = 11.082;  $t(147) = -2.644$ ,  $p = .009$ ]. Those who had not used substances in the past 30 days gave a more positive rating of the abstainer prototype than those who had not used substances in the past 30 days. The magnitude of the difference in means (mean difference = -7.076, 95%CI: -12.365 to -1.786) was small (eta squared = .045). In contrast to current substance use, the difference in mean scores of the abstainer prototype for those who had used substances in their lifetime (M = 58.37, SD = 11.502) and those who had not [M = 61.62, SD = 10.852;  $t(147) = 1.709$ ,  $p = .090$ ] did not reach statistical significance.

All in all, results from alcohol actor and abstainer prototype scores indicate that students who had drunk alcohol in the past 30 days scored significantly higher on the actor prototype than those who had not, and likewise, those who had not consumed alcohol in the past 30 days scored significantly higher on the abstainer prototype than those who had used alcohol in the past 30 days. However, regarding lifetime use of alcohol, the only significant difference was related to the non-alcohol drinker prototype, where those who had not used alcohol in their lifetime scored higher on this scale compared to those who had used alcohol in their lifetime.

Furthermore, results indicated that scores on the substance user prototype were only of significance in relation to lifetime substance use, where those who had used substances in their lifetime scored higher on this scale than those who had not. The second significant difference was found in relation to current substance use, where those who had not used substances in the past 30 days scored higher on the non-substance user prototype scale than those who had used substances in the past 30 days.



**Table 15**

*Independent samples t-test results for prototype, willingness and perceived social support scores of alcohol users and abstainers.*

Variable	Users		Abstainers		t-value	df	95% CI		p-value
	Mean	SD	Mean	SD			LL	UL	
<b>Current</b>									
Actor prototype	50.21	11.759	42.95	10.896	-3.871	150	-10.966	-3.555	< .001
Abstainer prototype	57.80	11.204	62.06	9.487	2.469	146	.850	7.679	.015
Total PSS	44.72	9.379	48.24	9.283	2.263	150	.446	6.595	.025
PSS_Family <sup>1</sup>	13.12	5.113	15.19	4.534	2.589	113	.487	3.663	.011
PSS_Peers	15.16	4.439	15.32	4.217	.215	157	-1.234	1.539	.828
PSS_Sig.	16.56	3.711	16.84	3.722	.456	156	-.929	1.487	.456
Behavioural willingness <sup>1</sup>	15.54	4.403	9.80	5.342	7.079	128	4.132	7.338	< .001
<b>Lifetime</b>									
Actor prototype	46.41	12.144	43.57	10.240	-1.283	150	-7.216	1.534	.201
Abstainer prototype	58.77	10.317	65.62	8.620	3.639	146	3.132	10.580	< .001
Total PSS	45.75	9.559	50.49	8.208	2.710	150	1.283	8.194	.008
PSS_Family	13.91	4.890	15.90	4.436	2.280	157	.266	3.719	.024
PSS_Peers	15.08	4.311	15.79	4.238	.899	57	-.851	2.274	.370
PSS_Sig. Other	16.44	3.808	17.64	3.265	1.772	156	-.138	2.546	.078
Behavioural Willingness	13.55	5.107	7.08	4.579	6.986	148	4.271	8.224	< .001

<sup>1</sup>Equal variances not assumed

#### 4.6.2 Behavioural willingness

Independent samples t-tests were conducted to compare the mean scores on behavioural willingness to use alcohol and substances. Regarding willingness to use alcohol, the difference in total willingness scores between those who had used alcohol in the past 30 days (M = 15.54, SD=4.403) and those who had not (M=9.80, SD = 5.342; equal variances not assumed, t (128) = 7.079, p < .001), where students who had used alcohol in the past 30 days indicated greater behavioural willingness to engage in future alcohol use. Similarly, there was a statistically

significant difference between those who had used alcohol in their lifetime ( $M=13.55$ ;  $SD=5.107$ ) and those who had not ( $M=7.08$ ,  $SD=4.579$ ;  $t(148) = 6.986$ ,  $p < .001$ ), where those who had used alcohol in their lifetime indicated a greater willingness to engage in future alcohol use. The magnitude of the difference between the means (mean difference = 6.473, 95%CI 4.642 to 8.303) was large (eta squared = .247).

**Table 16**

*Independent samples t-test results for prototype, willingness and perceived social support scores of substance users & abstainers*

Variable	Users		Abstainers		t-value	df	95% CI		p-value
	Mean	SD	Mean	SD			LL	UL	
<b>Current</b>									
Actor prototype	45.94	11.389	42.36	12.848	-1.127	155	-9.867	2.698	.261
Abstainer prototype	54.25	11.502	61.33	11.082	2.644	147	1.786	12.365	.009
Total PSS	43.90	8.882	47.38	9.477	1.574	150	-.889	7.843	.118
PSS_Family	12.29	5.293	14.73	4.710	2.181	157	.231	4.661	.031
PSS_Peers	15.19	3.983	15.27	4.349	.077	157	-1.914	2.069	.939
PSS_Sig.	16.43	3.655	16.78	3.272	.405	156	-1.369	2.074	.686
Behavioural willingness	12.71	5.935	7.06	5.028	4.259	144	3.024	8.263	< .001
<b>Lifetime</b>									
Actor prototype	45.46	12.497	41.24	12.632	-2.019	155	-8.342	-.091	.045
Abstainer prototype	58.37	11.961	61.62	10.852	1.709	147	-.509	7.011	.090
Total PSS	45.70	9.716	47.60	9.263	1.203	150	-1.226	5.041	.231
PSS_Family <sup>1</sup>	13.00	5.282	15.24	4.386	2.747	105	.623	3.857	.007
PSS_Peers	15.78	4.000	14.94	4.447	-1.204	157	-2.228	.541	.230
PSS_Sig. Other <sup>1</sup>	16.02	4.104	17.16	3.401	1.805	105	-.113	2.402	.074
Behavioural willingness <sup>1</sup>	10.58	6.159	6.14	4.254	4.622	78	2.527	6.350	< .001

<sup>1</sup>Equal variances not assumed

Differences in behavioural willingness to use substances between current and lifetime substances users and non-users were examined using independent samples t-tests. A significant difference in behavioural willingness scores between those who had used substances in the past 30 days ( $M = 12.71$ ,  $SD=5.935$ ) and those who had not ( $M=7.06$ ,  $SD=5.028$ ;  $t(144) = 4.259$ ,  $p < .001$ )

was identified, where those who had used substances in the past 30 days indicated greater willingness to engage in future substance use than those who had not. The difference between the means (mean difference = 4.644, 95%CI: 3.024 to 8.263) was moderate (eta squared = .112). Similarly, there was a significant difference in willingness scores between those who had used substances in their lifetime (M=10.58, SD=6.159) and those who had not (M=6.14, SD=4.254, equal variances not assumed,  $t(78) = 4.622$ ,  $p < .001$ ), where those who had used substances in their lifetime indicated greater willingness to engage in future substances use than those who had not.

#### **4.7 The impact of prototype willingness variables on the likelihood of current alcohol and substance use**

Logistic regression were fitted in order to assess which variables best predicted the likelihood of current alcohol and substance use. The variables investigated included: demographic variables (age, gender, ethnicity, and socioeconomic status); social variables (peer alcohol/substance use, parental alcohol/substance use, perceived social support subscales relating to significant other, parents, and peers); and finally behavioural intention to use alcohol/substances and behavioural willingness to use alcohol/substances. Results are presented in relation to current alcohol use and current substance use;

##### **4.7.1 Current Alcohol Use**

Logistic regression analysis was used to assess which variables were the best predictors of current alcohol use. The full model, containing all the predictors was statistically significant  $X^2(14, N = 141) = 85.321$ ,  $p < .001$ , indicating that the model was able to distinguish between respondents who did and did not use alcohol in their lifetime. The model as a whole explained

between 45.4% (Cox and Snell R Squared) 62.2% (Nagelkerke R Square) of the variance in current alcohol use and correctly classified 83.7% of cases.

**Table 17**

*Logistic Regression Predicting the Likelihood of Current Alcohol Use*

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Gender	-.825	.648	1.623	1	.203	.438	.123	1.559
Age	-.196	.413	.224	1	.636	.822	.366	1.847
Ethnicity (black)	-.814	.780	1.090	1	.296	.443	.096	2.043
Ethnicity (white)	2.466	.839	8.632	1	<b>.003</b>	11.778	2.273	61.034
Socioeconomic status	-2.256	1.244	3.286	1	.070	.105	.009	1.201
PSS significant other	.082	.103	.639	1	.424	1.086	.888	1.328
PSS family	-.082	.064	1.670	1	.196	.921	.813	1.044
PSS family	-.026	.082	.101	1	.751	.974	.830	1.144
Peer alcohol use (none)	-2.302	1.392	2.735	1	.098	.100	.007	1.532
Peer alcohol use (some)	-1.008	.572	3.107	1	.078	.365	.119	1.119
Parental alcohol use	.283	.597	.225	1	.635	1.327	.412	4.273
Behavioural intention (high)	.770	.981	.615	1	.433	2.159	.316	14.765
Behavioural intention (some)	-.741	.896	.685	1	.408	.476	.082	2.757
Behavioural willingness	.292	.072	16.329	1	<b>&lt; .001</b>	1.339	1.162	1.543
Constant	1.613	6.736	.057	1	.811	5.015		

As illustrated in Table 17, only two independent variables made a statistically significant contribution to the model, namely: ethnicity and behavioural willingness to drink alcohol. The strongest predictor of reporting current alcohol use was ethnicity, specifically, being white, recording an odds ratio of 11.778. This indicated that respondents who were white were about 12 times likely to report current alcohol use than other ethnic groups.

The second strongest predictor of alcohol use in the past 30 days was behavioural willingness, recording an odds ratio of 1.339, indicating that those with higher scores on the behavioural willingness to drink alcohol in the future were 1.339 times more likely to have consumed alcohol in the past 30 days.

#### 4.7.2 Current Substance Use

Logistic regression analysis was used to assess which variables were the best predictors of current substance use.

**Table 18**

*Logistic Regression Predicting the Likelihood of Current Substance Use*

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Gender	2.018	.996	4.103	1	<b>.043</b>	7.526	1.068	53.049
Age	.523	.540	.935	1	.334	1.686	.585	4.864
Ethnicity (black)	1.399	1.188	1.387	1	.239	4.052	.395	41.566
Ethnicity (white)	.956	1.178	.659	1	.417	2.601	.258	26.178
Socioeconomic status	.060	1.724	.001	1	.972	1.061	.036	31.118
PSS significant other	.097	.139	.485	1	.486	1.102	.839	1.447
PSS family	-.156	.082	3.652	1	.056	.856	.729	1.004
PSS friends	.106	.126	.702	1	.402	1.112	.868	1.424
Peer substance use (none)	-2.287	1.472	2.415	1	.120	.102	.006	1.818
Peer substance use (some)	-1.058	.947	1.249	1	.264	.347	.054	2.220
Parental substance use	1.716	.930	3.406	1	.065	5.561	.899	34.403
Behavioural intention (high)	.491	1.384	.126	1	.722	1.635	.109	24.621
Behavioural intention (low)	.865	1.012	.731	1	.392	2.375	.327	17.248
Behavioural willingness	.166	.076	4.785	1	<b>.029</b>	1.181	1.017	1.371
Constant	-14.918	9.177	2.643	1	.104	.000		

The full model, containing all predictors was statistically significant  $X^2(14, N = 138) = 38.397, p < .001$ , indicating that the model was able to distinguish between respondents who did and did not use substances in the past 30 days. The model as a whole explained between 24.3% (Cox and Snell R Squared) 47.4% (Nagelkerke R Square) of the variance in current substance use and correctly classified 89.9% of cases.

As illustrated in Table 18, only two independent variables made a statistically significant contribution to the model, namely: gender and behavioural willingness to use substances. The strongest predictor of current substance use was gender, with an odds ratio of 7.526, suggesting that males were more than 7 times likely to have used substances in the past 30 days than females. The second strongest predictor was behavioural willingness, with an odds ratio of 1.181, indicating that those who reported stronger willingness to use substances were 1.181 times more likely to have used substances in the past 30 days.

#### **4.8 Chapter Summary**

This chapter presented and reported on the findings of the various analyses used in an attempt to address the research questions. The study sample consisted of grade 9 and 10 high-school students (N=162) from the eThekweni and Ugu regions of KwaZulu-Natal. 54.9% of participants were female, 53.1% were Black, 29.0% were White, 12.3 % were Indian, and 4.5% were Coloured/Mixed-Race. Majority of students indicated that they were from average (37.7%) to high (54.9%) socioeconomic groups.

Among the study sample, rates of lifetime use of substances were as follows: alcohol at 75.0%; cigarettes at 41.4%, marijuana at 40.4%, ecstasy at 8.6%, crack/cocaine at 3.1%, crystal methamphetamine at 2%, and heroin at 2%. Rates of past 30-day use of substances among the

study sample were lower than lifetime use: alcohol at 38.3%, cigarettes at 16%, and other illicit substances at 13%.

Chi-square tests of independence revealed lifetime alcohol use to be significantly associated with participants who were male, in an older age group, from the White ethnic group, parental alcohol use, perceived permissive peer and parental subjective norms, as well as a stronger behavioural intention to use alcohol. Current alcohol use was also significantly associated to belonging to the White ethnic group, parental alcohol use, peer alcohol use perceived permissive peer and parental subjective norms around alcohol use, stronger behavioural intention to use alcohol, and finally, a positive attitude towards alcohol use. Lifetime substance use was significantly associated to parental substance use, peer substance use, permissive peer subjective norms around substance use as well as stronger behavioural intention to use substances. Similarly, use of substances in the past-30 days was significantly associated with perceived permissive peer norms.

Those who had used alcohol in their lifetime scored significantly lower on various scales suggesting the following: participants who had used alcohol in their lifetime had lower overall perceived social support, lower perceived familial social support, general negative evaluations of the abstainer prototype and a greater willingness to engage in alcohol use. For those who had used alcohol in the past 30 days, the only differences in mean scores indicated that these participants had a positive evaluation of the alcohol actor prototype, lower negative evaluation of the alcohol abstainer prototype and indicated greater willingness to engage in alcohol use.

Those who had used substances in their lifetime scored significantly lower on two scales, with a more positive evaluation of the drug-user prototype and stronger behavioural willingness to use substances. Those who had used substances in the past 30 days indicated significantly lower

perceived familial social support, perceived permissive peer norms, a lower negative evaluation of the substance abstainer prototype as well as stronger behavioural willingness to use substances.

In order to assess which were the best predictors of adolescent substance use, logistic regression analyses were run. Results indicated that participants who had used alcohol in the past 30 days were more likely to be white (OR=11.778,  $p=.003$ ) and to have a higher behavioural willingness to use alcohol (OR=1.339,  $p < .001$ ). In relation to other illicit substances, participants who had used other illicit substances in the past 30 days were more likely to be male (OR=7.526,  $p=.043$ ) and, like current alcohol users, were more likely to have higher behavioural willingness to use substances (OR=1.187).



## **Chapter Five: Discussion**

### **5.1 Introduction**

Adolescent drug and alcohol use has remained a global concern, especially for South Africa which has one of the highest rates adolescent substance use in the world (UNODC, 2012). Evidence suggests that the rate of adolescent substance use in South Africa is on the rise, and yet, there remains limited research in this area, particularly in the province of KwaZulu-Natal (Reddy, 2013). This study attempted to determine the rates of adolescent cigarette, alcohol, and substance use, in a sample of high school learners, as well as the associations between the use of substances and the best predictors thereof.

This chapter discusses the study findings in relation to the literature pertaining to adolescent substance use in South Africa as well as globally. The socio-demographic characteristics of the sample will be discussed followed by the psychometric properties of scales used in the study. The rate of cigarette, alcohol and other substance use will then be discussed and considered in relation to findings from previous studies in South Africa. Study findings relating to associations between demographic, social, and the prototype-willingness variables and alcohol and substance use will be addressed and compared to results from prior research done in South Africa and elsewhere. Finally, the impact of demographic, social, and prototype-willingness variables on the likelihood of adolescent alcohol and other illicit substance use will be discussed.

### **5.2 Socio-demographic characteristics**

Students from grades 9 and 10 participated in the survey, ranging from ages 14 to 17 with a mean age of 15.5 years. In terms of gender, consistent with previous studies, the sample consisted of more females (54.9%) than males, (Brook et al., 2006; Govender et al, 2013; StatsSA, 2014; Visser & Routledge, 2007). The sample consisted of mostly Black students (53.1%), White

students (29.0%), Indian/Asian students (12.3%), and Coloured/Mixed Race students (4.3%), which, due to convenience sampling, where participants were from two schools in middle class urban areas, differs from the KwaZulu-Natal population estimates of 94% Black students, 3.6% Indian students, and 1.8% Colored students (Statistics South Arica, 2014). However, samples from previous studies have been extremely varied in terms of the ethnicity (Brook et al, 2006; Govender et al, 2013). In terms of socioeconomic status, the majority of the sample indicated an above average (37.7%) to high (54.9%) socioeconomic status, which would be expected in terms of the geographic location of the schools.

### **5.3 Psychometric properties of instruments used**

#### **5.3.1 Actor and abstainer prototypes of alcohol and substance users**

The Cronbach's alpha coefficient for the alcohol drinker prototype scale was .727, which was lower than that of previous studies .87 (Gerrard et al., 2002). The non-alcohol drinker prototype scale had a Cronbach's alpha coefficient of .776, which is slightly more consistent with previous studies, with a reported value of .84 (Gerrard et al., 2002).

The inter-item reliability coefficient for substance user and non-substance user prototype scales employed in this study were ( $\alpha=.761$ ) and ( $\alpha=.804$ ) respectively. There appears to be very limited research that investigated general substance user and non-substance user prototypes, where previous studies have focused on specific substances. The Cronbach's alpha coefficient found in this study appears to be similar to that obtained in a previous study focusing on methamphetamine use in Iran, where a Cronbach's alpha coefficient of .71 was reported for the methamphetamine substance user prototype investigated (Ataee, Jouybari, Alavijeh, Mahboubi, & Motlagh, 2014).

### **5.3.2 Behavioural willingness to drink alcohol and use substances**

The Cronbach's alpha coefficient for the construct of behavioural willingness to drink alcohol was .813, which is consistent with those found in previous studies .84 (Spijkerman, 2004) and .85 (Gerrard, 2002). Behavioural willingness to use substances revealed a Cronbach's alpha coefficient of .763 was also consistent with previous study findings of .70 (Litchfield & White, 2006), .75 (Gibbons 2010), and .81 (Ataee et al, 2014).

### **5.3.3 Perceived social support**

This study found a Cronbach's alpha coefficient of .88 for perceived social support, which is consistent with previous study findings of .88 (Zimet, Dahlem, Zimet & Farley, 1988) and .86 (Bruwer et al., 2008). In terms of the perceived social support subscales of significant other, family, and friends, the Cronbach's alphas were .848, .887, and .877 respectively. The highly satisfactory inter-item reliability coefficients correspond to previous findings of .91, .87, and .85 respectively (Zimet et al., 1988) and .92 for each subscale in the study of Bruwer et al., (2008).

## **5.4 Rates of cigarette, alcohol, and substance use**

The highest used substances included alcohol and cigarettes, followed by marijuana and ecstasy, with the least used substances being crack/cocaine, crystal meth, and heroin. Each finding regarding the rate of particular substances used will be discussed in relation to previous studies as well as to the findings reported by Reddy et. (2013) in the South African National Youth Risk Behaviour Survey (YRBS).

### **5.4.1 Alcohol**

As mentioned, the most commonly used substance among the participants in the sample was alcohol, where 75% of participants had used alcohol in their lifetime and 38.3% of participants had used alcohol in the past 30 days. Findings from previous studies have found lower rates for

adolescent lifetime alcohol use of 22.4% in Limpopo (Onya et al., 2012) and 62% in Cape Town (Patrick et al, 2009), as well as lower rates for adolescent current alcohol use of 7% in Cape Town and of 24% in Gauteng. This finding suggests that the rate of alcohol use among adolescents in KwaZulu-Natal is higher in comparison to the national prevalence of lifetime alcohol use, i.e. 49.2% and 32.3% for past month alcohol use, as well as in comparison to previous KwaZulu-Natal rates of 42.8% and 25.9% reported in the third YRBS (Reddy et al., 2013).

#### **5.4.2 Cigarettes**

The second most used substance in the sample was cigarettes, where 41.4% of participants had used cigarettes in their lifetime and 16% of participants reported smoking cigarettes in the past 30 days. This finding is higher than the lifetime rate found in a study in Limpopo 8.4% (Onya et al., 2012), but lower than the 60% rate found in the Cape Town study of Patrick et al., (2009). Again, compared to the national prevalence of 27.6% and the KwaZulu-Natal provincial rate of 22.6% for lifetime cigarette smoking among adolescents, as reported in YRBS, this finding suggests that a higher rate of adolescents had used cigarettes in their lifetime (Reddy et al., 2013). However, the rate of 16% for cigarettes used in the past 30 days is slightly lower than the national prevalence of 17.6%, but still higher than the provincial rate of 15.6% (Reddy et al., 2013).

#### **5.4.3 Other substances**

The third most used substance was marijuana, with a lifetime rate of 40.4%, which is consistent a previous finding of 39% (Patrick et al., 2009) but significantly higher than the national prevalence of 12.8% as well as the KwaZulu-Natal provincial rate of 11.5% (Reddy et al., 2013).

The study found that 8.6% of participants had used ecstasy in their lifetime, again higher than the national prevalence of 3.6% for “club drugs” as well as the provincial rate of 3.1%, as reported in the YRBS (Reddy et al., 2013). The least commonly used substances include

crack/cocaine (3.1%), crystal meth (2%) and heroin (2%), all of which were lower than both the national rates of 4.9%, 5.5% and 4.9% respectively as well as the KwaZulu-Natal rates of 3.4%, 3%, and 3.9% respectively, as reported in the YRBS (Reddy et al., 2013).

In order to compare the rates of substance use found in this study with those of previous studies, marijuana, ecstasy, crack/cocaine, crystal meth, and heroin, were grouped into a single group of 'other illicit substances', where the lifetime and current rates of use were found to be 38.3% and 13% respectively. This finding suggests that illicit substance use in KwaZulu-Natal is higher than a previously reported rate of 7.5% for a sample of school students in Limpopo (Visser & Routledge, 2012).

### **5.5 Associations between socio-demographic variables and substances used.**

The socio-demographic variables of gender, age, ethnicity, socioeconomic status, peer use, and parental use, were explored in relation to the outcome variables of current and lifetime cigarette, alcohol, and other illicit substance use.

In terms of gender, the only significant association found was between gender and lifetime alcohol use, where significantly more males than females had used alcohol in their lifetime. This finding reiterates the seemingly consistent notion that alcohol use is more prevalent among male adolescents than female adolescents both locally and internationally (Ghuman, Meyer-Weitz, & Knight, 2012; Onya et al, 2012; Svensson, 2003; Visser & Routledge, 2007). Onya et al., (2012) and Reddy et al., (2007) have suggested that males may be more likely to use alcohol due to not being supervised as strictly as females, as well as the more restrictive cultural norms adhered to by females. However, unlike findings of previous studies, in this study, the difference between male and female cigarette and substance use was not significant (Elliot, Huizinga & Mernard, 1989; Visser & Routledge, 2007; Brook et al, 2006; Govender et al, 2013). The lack of significant

differences found may be attributed to minimal differences in rates of cigarette and substance use according to gender, where only around 10% more males than females had used cigarettes in their lifetime and currently, and again, only around 7% more males than females had used substances in their lifetime and currently, compared to the difference in lifetime alcohol use, where 17.5% more males than females had used alcohol in their lifetime. Ghuman, Meyer-Weitz, and Knight (2012), although finding that current alcohol users were significantly more likely to be male, suggest that the gap between male and female alcohol use is closing, warranting more research into the frequencies and amounts of alcohol consumption among adolescent females.

Upon investigating the associations between age and substance use, again, the only significant association found was between age and lifetime alcohol use, where the participants in the older age group of 16-17 years had used alcohol in their lifetime than those from the younger age group of 14-15 years ( $p = .001$ ). This finding is consistent with previous studies in terms of the positive association between age and alcohol use, where the rate of alcohol use increases as age increases (Onya et al., 2012; Brook et al., 2006). However, previous studies have found further associations between age and cigarette use as well as age and substance use (Brook et al., 2006), where the rate of both cigarette and substance use increase as age increases.

Regarding the demographic variable of ethnicity, results indicated a significant difference between current and lifetime alcohol use, where in both instances, alcohol was used mostly among white high school students than any other ethnic group. This finding is consistent with previous studies where alcohol use was significantly higher among the White ethnic group than any other ethnic group (Ghuman, Meyer-Weitz, & Knight, 2012; Reddy et al., 2007; Reddy et al., 2013). This may be attributable to more acceptable and permissive cultural norms common to the White

ethnic group, as well as to White youth's access to greater amounts of disposable income (Ghuman, Meyer-Weitz, & Knight, 2012; Reddy et al., 2007).

Results pertaining to parental substance use behaviour indicated that parental alcohol use was significantly associated with current alcohol use ( $p=.043$ ) as well as lifetime alcohol use ( $p=.001$ ), suggesting that current and lifetime alcohol use was significantly higher among students who reported parental alcohol use than students who indicated their parents did not consume alcohol. Similar results were found for parental cigarette use and parental substance use, which were significantly associated with lifetime cigarette use ( $p=.05$ ) and lifetime substance use ( $p=.016$ ). This finding suggests that both lifetime cigarette use and lifetime substance use were significantly higher among students who reported parental cigarette use and parental substance use compared to those who reported that their parents had not used cigarettes and substances. However, no further significant associations were found between parental cigarette and substance use and past 30-day cigarette and substance use. These findings are mostly consistent with those of previous South African studies surrounding lifetime cigarette, alcohol and substance use, where parental cigarette, alcohol, and substance use have been significantly associated and correlated with lifetime cigarette, alcohol, and other substance use (Brook et al., 2006; Ghuman, Meyer-Weitz, & Knight, 2012, Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012). Meghdadpour et al. (2012) suggest that this may be attributable to adolescents' modelling behaviour of parents, as well as the normative influence of parents.

A significant association was found between peer alcohol use and current alcohol use ( $p<.001$ ), where current alcohol use was among students who perceived a greater number of peers to be consuming alcohol than those who did not. Lifetime cigarette use was significantly associated to peer cigarette use ( $p<.001$ ), where lifetime cigarette use was more prevalent among students

who perceived a greater number of peers to be smoking cigarettes than those who did not. Similarly, lifetime substance use and peer substance use were significantly associated ( $p < .001$ ), where lifetime substance use prevailed among those who perceived a greater number of peers to have used substances than those who did not. These findings echo those of previous studies, where peer cigarette, alcohol, and substance use have been positively associated with adolescent cigarette, alcohol, and substance use (Brook et al., 2006; Brook et al., 1990; King et al., 2003; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012; Visser & Routledge, 2008). Various studies have examined why adolescent substance use is so closely associated to peer substance use, and have suggested that this is a result of modelling behaviours (Brook et al., 2006; Meghdadpour et al., 2012), positive expectancies over drinking behaviour (Cumsille, Sayer, & Graham 2000; Smith et al., 2005) as well as peer socialization and selection (Farrell & White, 1998; Chassin et al., 1986).

This study further sought to investigate the associations between perceived social support and alcohol and substance use. Findings in this regard illustrated that students who had used alcohol in their lifetime and in the past 30 days reported significantly lower levels of perceived social support than those who had not used alcohol in their lifetime or in the past 30 days. Upon further investigation, it was found that the subscale of familial perceived social support was significantly associated with both current and lifetime alcohol use, where those who had used alcohol in their lifetime or in the past 30 days reported significantly lower levels of perceived social support from their families. Although total scores for perceived social support were not significantly associated with current or lifetime substance use, those who had used substances in their lifetime and in the past 30 days reported significantly lower levels of perceived social support from their families. These findings are consistent with the literature in that families play a significant role in adolescent alcohol and substance use (Morojele, 2012). The lack of significant



associations between adolescent alcohol or substance use and the subscales of perceived social support from both friends and significant others suggest that perhaps the behaviours and subjective norms of friends and significant others contribute more to adolescent substance use than perceived social support itself (Brook et al., 2006; Brook et al., 1990; King et al., 2003; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012; Visser & Routledge, 2008). Perhaps, as a result of low levels of perceived social support from parents, these adolescents spend more time with their peers, this may also be connected to lower levels of the protective factor of parental monitoring (Onya et al., 2012).

### **5.6 Associations between variables of the reasoned path and alcohol and other substances used**

Variables related to the reasoned path of the prototype-willingness model, namely that accounting for the intentional nature of adolescent risk behaviour, include attitude, subjective norms as well as behavioural intention, a comparison of the findings of this study and those of previous studies will be provided in relation to each variable.

Only a single significant association was found in terms of attitude towards alcohol and substance use, where students who used alcohol in the past 30 days had significantly more positive attitudes to alcohol use than those who had not used alcohol in the past 30 days ( $p = .001$ ). This finding is consistent with that of a previous study conducted among South African adolescents, where the risky behaviour of cigarette smoking was investigated, where it was found that smokers reported greater negative attitudes to non-smokers (Panday et al., 2007).

Regarding parental subjective norms around alcohol use, the proportion of students who had consumed alcohol in the past 30 days and in their lifetime, was higher among those who had perceived permissive parental norms around alcohol use. There were no significant associations

between permissive/restrictive parental subjective norms around substance use and current and lifetime time substance use. This finding suggests that perhaps permissive parental norms around risky behaviour, such as those around alcohol use, influence adolescent risk behaviour to a larger extent than restrictive parental norms, such as those around substance use (Reddy et al., 2007).

In terms of peer subjective norms: significant associations were found among both substance and alcohol use and respective peer norms around these behaviours, where the proportion of students who had used alcohol in the past 30 days and in their lifetime, was greater with higher perceived permissive peer norms around alcohol use. Similarly, a higher number of students who had engaged in current and lifetime substance use indicated more permissive peer norms compared to those students who reported restrictive peer norms. These findings are consistent with findings from a previous South African study that investigated adolescent cigarette smoking where those who did not smoke in the past month reported more social norms not to smoke from friends and family than those who had smoked cigarettes in the past month (Panday et al., 2007). It has been suggested that this may be attributable to the risk factors of deviant peers, as well as modelling behavior of peers (Brook et al., 2006; Meghdadpour et al., 2012).

Behavioural intention to drink alcohol was significantly associated with both current and lifetime alcohol use, where alcohol use was the higher among the group that definitely intended to use alcohol, slightly lower among those who maybe intended to use alcohol and lowest among those who indicated no intention to use alcohol. This finding appears to support the notion of the prototype-willingness model's reasoned path, where behavioural intention is postulated to ultimately influence risky behaviours (Gerrard et al., 2008). Similarly, differences in behavioural intention scores between lifetime substance users and abstainers were significant, where the proportion of students who had used substances in their lifetime increased as behavioural intention

increased. These findings are comparable with those from a previous South African study where students who had not engaged in past month smoking indicated lower intention not smoke in the future (Panday et al., 2007).

### **5.7 Differences in variables of the heuristic pathway in relation to current and lifetime alcohol and other substance use.**

Previous studies that have examined the impact of variables of the heuristic pathway of the prototype willingness model, the path that accounts for the reactional nature of adolescent risk behaviour, have done so through structural equation modelling as well as through linear regression models. This study conducted exploratory analyses on the associations between prototypes and willingness and current and lifetime alcohol and substance use through the use of independent samples t-tests as well as chi-square analyses of variance. In this regard, several significant associations among the variables were found in relation to actor prototypes (those who engage in a given risky behaviour), abstainer prototypes (those who do not engage in a given risky behaviour), and behavioural willingness. Unfortunately, structural equation modelling and linear regression could not be conducted in this study as they both require continuous dependent variables, and this study used dichotomous dependent variables.

Regarding alcohol use, significant associations were found between abstainer prototypes and lifetime as well as current alcohol use, where those students who did not engage in current and lifetime alcohol use reported higher ratings of the abstainer prototype than those who had engaged in current and lifetime use. This finding suggests that images of those who abstain from alcohol use play a significant protective role in adolescent risk behaviour. Furthermore, those who had not used alcohol in their lifetime reported a greater degree of favourability around the abstainer prototype (65.06%) than those who had not used alcohol in the past 30 days (62.06%), again

suggesting that perceptions of the abstainer prototype play a significant role in adolescents' decisions to abstain from using alcohol.

However, regarding actor prototypes, there was only a significant association between current alcohol use and the actor prototype, where those who had engaged in current alcohol use gave a more positive evaluation of the actor prototype than those who had not used alcohol in the past 30 days. This finding is in line with the antecedent of the prototype-willingness model, where constructs of the heuristic pathway, in this case the actor prototype, account for adolescent risk behaviour that is not intentional or planned.

In terms of the associations between substance use and respective prototypes, a significant association was found between current substance use and the abstainer prototype, where overall those who did not report using substances in the past 30 days gave higher ratings of the abstainer prototype than those who did report current substance use. On the other hand, a significant association was found between those who had used substances in their lifetime and the actor prototype, which overall, was rated more favourably among those who had used substances in their lifetime compared to those who had not used substances in their lifetime. It appears that the role of prototypes differs for the substance that is used. Lifetime alcohol users, differ from lifetime substance users in that they had a significantly more favourable actor prototype. This may suggest that, in terms of substance use, the actor prototype plays a more significant role in lifetime substances use while the abstainer prototype plays a more significant role in current substance use.

Previous studies investigating the prototype willingness model have done so in relation to cigarette smoking, alcohol use, risky sexual behaviours, as well as in relation to methamphetamine use and amphetamine use, whereas this study investigated constructs of the model in relation to both alcohol and general illicit substance use. Furthermore, previous studies have investigated the

model as a whole, rather than exploring the associations between each of the variables and substance use.

In terms of behavioural willingness, associations with alcohol and substance use were significant on every account. Students who had used alcohol in the past 30 days and in their lifetime, both indicated greater behavioural willingness to use alcohol in the future than those who had not used alcohol in the past 30 days or in their lifetime. Similarly, those who had used substances in the past 30 days and in their lifetime, indicated greater willingness to engage future substance use than those who had not used substances in the past 30 days or in their lifetime. These findings are consistent with the prototype willingness model; however, this finding cannot be compared to results from prior studies as only the predictive ability of the model and its constructs have been published (Rivis, Sheeran, & Armitage, 2006).

Although these findings are in relation to non-parametric tests, and are exploratory in nature, they appear to confirm that both actor and abstainer prototypes, as well as behavioural willingness, are associated with the risk behaviours of alcohol and substance use. Findings in relation to the predictive ability of the prototype willingness model constructs will now be discussed.

### **5.8 Predictors of current and lifetime substance use.**

The impact of socio-demographic predictors (age, gender, ethnicity, socioeconomic status, peer alcohol/substance use, parental alcohol/substance use, perceived social support from parents, peers and significant other) as well as behavioural intention and behavioural willingness were explored in relation to the likelihood of current use of alcohol and substances through logistic regression analyses.

Regarding alcohol use, the model as a whole was statistically significant ( $p < .001$ ), and explained between 45.4% and 62.2% of the variance in current alcohol use. However, only two predictors made a significant contribution to the model, namely ethnicity, where white students were more than 11 times likely to have engaged in current alcohol use, and behavioural willingness to drink alcohol in the future. In terms of demographics predictors, this study is consistent with the literature around ethnicity and alcohol use, where white South African males are more likely to drink alcohol than other ethnic groups (Reddy et al., 2007). Students with a higher behavioural willingness to engage in alcohol use were 1.339 times more likely to have used alcohol in the past 30 days. Regarding behavioural willingness, these findings are consistent with previous studies of the prototype-willingness model, where behavioural willingness has been found to significantly predict alcohol and substance use (Gibbons, 1998; Gibbons, Gerrard, Ouellette, & Burzette, 1998; Todd, Kothe, Mullan, & Monds, 2016; Zimmermann & Sieverding, 2010).

Unlike alcohol use, the model only explained between 24.3% and 47.4% of the variance of current substance use, but was statistically significant ( $p = <.001$ ). Again, only two variables made a significant contribution to the model, namely gender, where males were 7 times more likely to have used substances in the past 30 days, and behavioural willingness, where there was a positive association between behavioural willingness and past 30-day use of substances. These findings are similar to previous studies where the association between males and substance use has consistently been found in the literature (Brook et al, 2006; Elliot, Huizinga & Mernard, 1989; Govender et al, 2013; Visser & Routledge, 2007). Similarly, behavioural willingness to use substances has been found to be significant predictors of subsequent substance use (Gibbons et al., 1998; Gibbons et al., 1998; Todd, Kothe, Mullan, & Monds, 2016; Zimmermann & Sieverding, 2010).

However, no other demographic factors were found to be significant predictors of alcohol or substance use. This is inconsistent with previous studies that have found age (Onya et al., 2012; Brook et al., 2006) and peer and parental alcohol/substance use (Brook et al., 2006; Brook et al., 1990; King et al., 2003; Meghdadpour et al., 2012; Morojele et al., 2006; Onya et al., 2012; Visser & Routledge, 2008) to be significant predictors of current alcohol and substance use.

Behavioural intention was not found to significantly predict alcohol or substance use as in other previous studies (Gibbons et al., 1998; Gibbons et al., 1998; Todd, Kothe, Mullan, & Monds, 2016; Zimmermann & Sieverding, 2010). It has, however, been argued by several authors (Kremers, Mudde, de Vries, Brug, & de Vries, 2004; Gerrard et al., 2008) that behavioural intention does not necessarily predict adolescent risk behaviours, and that behavioural willingness may play a larger role in the unintentional, context-specific risk behaviours of adolescents, such as alcohol and substance use.

The challenges inherent in relating the study findings to those of other studies will be explained in the limitations section of the subsequent chapter.

## **5.9 Chapter Summary**

This chapter discussed study findings in relation to literature pertaining to adolescent substance use in South Africa as well as globally. Results from this study have illustrated significantly high rates of alcohol, cigarette, and marijuana use among the sample of high school adolescents, all of which were higher than rates of substance use found in previous studies as well as those reported the national Youth Risk Behaviour Survey. Consistent with previous studies investigating the Prototype-Willingness Model, the constructs of peer and parental subjective norms, risk images, and behavioural willingness, all appear to play a significant role adolescents' decision making in relation to alcohol and substance use.

## **Chapter Six: Summary of Findings, Limitations and Recommendations**

### **6.1 Introduction**

This chapter addressed the summary of findings, conclusions, limitations and recommendations of the study. Conclusions of the study will first be presented in relation to study aims, followed by a discussion of the limitations of the study, and finally, recommendations regarding future research and the development of prevention intervention planning.

### **6.2 Summary of findings**

#### **6.2.1 The rate of substance use among high school adolescents in KwaZulu-Natal**

The first research question of this study was to examine the rate of adolescent substance use in two high schools in KwaZulu-Natal. The highest used substances included alcohol and cigarettes, followed by marijuana and ecstasy, with the least used substances being crack/cocaine, crystal meth, and heroin. Lifetime cigarette use was more prevalent among students who were male, younger, and who reported belonging to the Black ethnic group. Demographic characteristics of alcohol users indicated that alcohol was mostly by students who were older, male, and by students belonging to the white ethnic group. Similarly, students who had used substances were mostly older and male, however, more Black students than students from any other ethnic group had used “other illicit substances”.

#### **6.2.2 Associations between socio-demographics, psychosocial variables and substance use among high school students.**

To address the second research question of the study, namely whether or not there were any significant associations between socio-demographics, psychosocial variables and substance use among the study sample, chi-square analyses and independent t-tests were conducted.



### *Associations between socio-demographics and substance use*

A significant association was found between gender and lifetime alcohol use, where more males than females had used alcohol in their lifetime, however, in relation to gender, no further significant associations were found. Similarly, age was only significantly associated with lifetime alcohol use, where a larger proportion of older students than younger students had used alcohol in their lifetime. In terms of ethnicity, results indicated that significantly more white students had used alcohol in the past 30 days and in their lifetime compared to those students of other ethnic groups. No further significant associations were found in this regard. Lifetime cigarette, alcohol and other substance use was significantly more prevalent among students who reported parental alcohol use than those who did not. The rate of current alcohol use was also significantly more likely among those who reported parental alcohol use than those who did not. Rates of lifetime cigarette and substance use were significantly higher among those who reported peer cigarette and substance use than those who did not. Conversely, the rate of current alcohol use was significantly higher among those who reported peer alcohol use than those who did not. Finally, the perceived social support subscale of family was significantly negatively associated with both current and lifetime alcohol and substance use, suggesting that parental support is a protective factor against adolescent substance use.

### *Differences between prototype variables and substance use*

Psychosocial variables examined in this study included subjective norms, attitudes, behavioural intention, actor and abstainer prototypes and behavioural willingness. These variables were specific to either alcohol or other substance use, and were assessed in relation to the outcome variables of current and lifetime use.

Current alcohol use was significantly more prevalent among those who had a positive attitude to alcohol than those who did not. The rate of current alcohol use was significantly higher among students who reported permissive parental subjective norms around alcohol use. However, the associations between peer norms and current and lifetime use of alcohol and substances were significant on all accounts. Strong behavioural intention to use alcohol was significantly associated with both current and lifetime alcohol use. However, in terms of “other illicit substances”, strong behavioural intention to use other substances was only significantly associated with lifetime substance use.

Abstainer prototypes were significantly associated with lower rates of current and lifetime alcohol use as well as with lower rates of current substance use. Actor prototypes were significantly associated with higher levels of current and alcohol use and with higher levels of lifetime substance use. Behavioural willingness significant on all accounts, where rates of current and lifetime alcohol and substance use was higher among students who indicated stronger behavioural willingness to engage in alcohol or substance use.

### **6.2.3 The best predictors of substance use among high school adolescents in the study**

The best predictors of current alcohol use were ethnicity, where white students were 11 times more likely than any other ethnic group to have used alcohol in the past 30 days, as well as behavioural willingness, where students with a stronger behavioural willingness to use alcohol were more likely than those with lower levels of behavioural willingness to have used alcohol in the past 30 days.

The best predictors of other illicit substance use were gender, where males were 7 times more likely than females to engage in current substance use, as well as behavioural willingness,

where students with stronger behavioural willingness to use substance were more likely to have used substances in the past 30 days. The other predictors were not significant.

### **6.3 Limitations**

The study sample was selected using convenience sampling, and therefore, these findings are not generalizable to the population of adolescents in KwaZulu-Natal. Furthermore, the cross-sectional nature of this study makes causality impossible to infer as well as adds to the lack of generalizability of study findings, where previous studies investigating the prototype-willingness model have been longitudinal. This study relied on self-reported information, where responses could have been influenced by the participants' truthfulness, introspective ability, varied interpretations of scales as well as the phenomena of response bias and social desirability. The dependent variables of alcohol and substance use were categorical rather than continuous which ultimately, in hindsight, limited statistical analyses that could be applied, including linear regression, mediation, and structural equation modelling – all of which have been used in previous studies of the prototype-willingness model, and may have better clarified the relationships between the constructs of the prototype-willingness model among the South African sample of high school students. Finally, the realized sample size was relatively small in relation to the number of variables examined in the study despite efforts to motivate learners to gain consent from their parents to participate in the study.

### **6.4 Conclusion**

Results from this study have illustrated significantly high rates of alcohol, cigarette, and marijuana use among the sample of high school adolescents. This study has contributed to South African research literature as it is the first to examine variables from the prototype-willingness model in relation to adolescent alcohol use as well as adolescent substance use. Several constructs

from the prototype-willingness model had significant associations to current and lifetime alcohol and substance use, namely perceived peer and parental subjective norms, risk-images (actor and abstainer prototypes) and behavioural willingness. Logistic regression analyses further indicated that those who had used alcohol and substances in the past 30 days were more likely to have a stronger behavioural willingness to engage in future alcohol and substance use. Although further research is warranted, these findings have provided evidence of the relevance of using the prototype-willingness model in understanding adolescent alcohol and substance use.

### **6.5 Recommendations**

This study found that the constructs of prototype-willingness may possibly contribute significantly to South African adolescent alcohol use, and to a lesser extent, adolescent substance use. Therefore, adolescent alcohol and substance use prevention interventions should concentrate their efforts on changing heuristic representations of alcohol and substance use in an attempt to reduce adolescents' favourability of images of people who use alcohol and substances. Furthermore, study findings relating to the abstainer prototype suggest that alcohol and substance use prevention interventions may want to explore the potential impact of promoting the abstainer prototype through various intervention strategies in order to ultimately reduce alcohol and substance use rates among youth. Finally, it was interesting to note the critical influence that parents have in relation to substance use among the youth. Parents should therefore be made aware of the significant role they play, in terms of modelling behaviours, they play in their children's substance use behaviours. Prevention interventions may consider informing parents of the vital role they have in terms of their actual behaviours as well as in their norms regarding substance use.

Further research is required to investigate the applicability of the prototype-willingness model on the risk behaviours of South African adolescents. Recommendations for future research include the following:

- It is recommended that future studies on the prototype-willingness model use probability sampling methods as well as longitudinal research designs, where subsequent findings can be generalizable.
- More research is needed in the areas of specific substances used and associated prototypes, such as the prototype for an adolescent marijuana user compared to an adolescent cocaine user.
- Research into the applicability of the prototype-willingness model on different age groups and on nationally representative samples from different geographic locations.
- A longitudinal study, assessing the impact of a prevention intervention based on the prototype-willingness model could shed light on the usefulness of this model in the South African context.

## **6.6 Chapter Summary**

A summary of study findings in relation to the rate of adolescent substance use, the associations between sociodemographic variables, psychosocial variables and substance use as well as the best predictors of adolescent substance use is provided. This followed by a description of limitations of the study and finally recommendations relating to future research and intervention efforts.

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## Appendix 1: Department of Education Approval



education

Department:  
Education  
**PROVINCE OF KWAZULU-NATAL**

Enquiries: Nomangisi Ngubane

Tel: 033 392 1004

Ref.:2/4/8/457

Ms CJ Lester  
PO Box 114  
DURBAN  
4319

Dear Ms Lester

### PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **“SOUTH AFRICAN ADOLESCENTS: THE PREVALENCE AND CORRELATES OF SUBSTANCE ABUSE AND ASSOCIATED RISK FACTORS”**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 25 June 2015 to 31 July 2016.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Umlazi District

**Nkosinathi S.P. Sishi, PhD**  
Head of Department: Education  
Date: 19 June 2015

#### KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa ...dedicated to service and performance  
PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004 beyond the call of duty  
EMAIL ADDRESS: [kehologile.connie@kzndoe.gov.za](mailto:kehologile.connie@kzndoe.gov.za) / [Nomangisi.Ngubane@kzndoe.gov.za](mailto:Nomangisi.Ngubane@kzndoe.gov.za)  
CALL CENTRE: 0860 596 363; Fax: 033 392 1203 WEBSITE: [WWW.kzneducation.gov.za](http://WWW.kzneducation.gov.za)

## **Appendix 2: Letter to School**

### **The Prevalence and Risk Factors of South African Adolescent Substance Use**

#### **Project Information Statement/Letter of Invitation to School Principals**

My name is Carli Lester, and I am a Master of Social Sciences student at the University of KwaZulu-Natal (UKZN). I am conducting research on adolescent substance use under the supervision of Prof. Anna Meyer-Weitz, Department of Psychology and Mthokozisi Hlengwa, Department of Psychology. The Provincial Department of Education has given approval to approach schools for my research. A copy of their approval is contained with this letter. I invite you to consider taking part in this research in the beginning of the first term next year (2016). This study will meet the requirements of the UKZN Humanities and Social Sciences Research Ethics Committee.

#### **Aims of the Research**

The research aims to:

- Determine the prevalence of substance abuse among high school students in KwaZulu-Natal.
- Investigate the risk factors of substance abuse among high school students in KwaZulu-Natal.

#### **Significance of the Research Project**

1. To enhance the understanding of South African adolescent substance use.
2. Results of this study may contribute to an ever-growing evidence-base of adolescent substance use that can be used at both local and national levels to inform future policy and practice.

#### **Benefits of the Research to Schools**

1. Dissemination of results to schools.
2. The results may contribute to curriculum development of the Life Orientation subject.

#### **Research Plan and Method**

Permission will be sought from the learners and their parents prior to their participation in the research. Only those who consent and whose parents consent will participate. The survey will take fifteen minutes to complete. All information collected will be treated in strictest confidence and neither the school nor individual learners will be identifiable in any reports that

are written. Participants may withdraw from the study at any time without penalty. The role of the school is voluntary and the School Principal may decide to withdraw the school's participation at any time without penalty. If a learner requires support as a result of their participation in the survey steps can be taken to accommodate this.

### **School Involvement**

Once I have received your consent to approach learners to participate in the study, I will

- arrange for informed consent to be obtained from participants' parents
- arrange a time with your school for data collection to take place
- obtain informed consent from participants

### **Further information**

Attached for your information are copies of the Parent Information and Consent Form, the Participant Information Statement and Consent Form, as well as a copy of the survey.

### **Invitation to Participate**

If you would like your school to participate in this research, please would you complete the attached form and contact me to come and collect.

Thank you for taking the time to read this information.

Carli Lester

**Email:** [lestercarli@gmail.com](mailto:lestercarli@gmail.com)

**Phone:** 072 874 0781

### Appendix 3: School A Principle Consent



#### The Prevalence and Risk Factors of South African Adolescent Substance Use School Principal Consent Form

I give consent for you to approach learners in grades 9, 10, and 11 to participate in the study.

I have read the Project Information Statement explaining the purpose of the research project and understand that:

- The role of the school is voluntary
- I may decide to withdraw the school's participation at any time without penalty
- Learner in grades 9, 10, and 11 will be invited to participate and that permission will be sought from them and also from their parents.
- Only learners who consent and whose parents consent will participate in the project
- All information obtained will be treated in strictest confidence.
- The learners' names will not be used and individual learners will not be identifiable in any written reports about the study.
- The school will not be identifiable in any written reports about the study.
- Participants may withdraw from the study at any time without penalty.
- A report of the findings will be made available to the school.
- I may seek further information on the project from Carli Lester on 072 874 0781

pp Carl  
Principal

M.G. RICH.  
Signature

04/12/15  
Date

## Appendix 4: School B Principle Consent



### The Prevalence and Risk Factors of South African Adolescent Substance Use School Principal Consent Form

I give consent for you to approach learners in grades 9, 10, and 11 to participate in the study.

I have read the Project Information Statement explaining the purpose of the research project and understand that:

- The role of the school is voluntary
- I may decide to withdraw the school's participation at any time without penalty
- Learner in grades 9, 10, and 11 will be invited to participate and that permission will be sought from them and also from their parents.
- Only learners who consent and whose parents consent will participate in the project
- All information obtained will be treated in strictest confidence.
- The learners' names will not be used and individual learners will not be identifiable in any written reports about the study.
- The school will not be identifiable in any written reports about the study.
- Participants may withdraw from the study at any time without penalty.
- A report of the findings will be made available to the school.
- I may seek further information on the project from Carli Lester on 072 874 0781

P. J. JENKINS

Principal

[Signature]

Signature

26.02.2016

Date



## Appendix 5: Humanities and Social Sciences Research Ethics Approval



19 January 2016

Miss Carli Jeanne Lester 214583761  
School of Applied Human Sciences  
Howard College Campus

Dear Miss Lester

**Protocol reference number: HSS/1513/015M**

**Project Title: The prevalence of substance use and its associated risk factors among South African adolescents, in two schools in Durban North, KwaZulu-Natal**

### Full Approval – Full Committee Reviewed Protocol

In response to your application received 19 October 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol 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)**  
**Humanities & Social Sciences Research Ethics Committee**

/pm

Cc Supervisor: Prof Anna 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 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: [ximbap@ukzn.ac.za](mailto:ximbap@ukzn.ac.za) / [snymann@ukzn.ac.za](mailto:snymann@ukzn.ac.za) / [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

## **Appendix 6: Parent Information Sheet and Consent Form**

Dear parent or guardian



I am conducting a research study to examine the prevalence and associated risk factors of adolescent substance use. We hope that this study will enhance the understanding of South African adolescent substance use at both local and national levels as to inform future policy and practice.

I am requesting your child's participation, which will require your child to complete an anonymous survey that should take about fifteen minutes of their time.

Your child's participation in this study is voluntary. If you choose not to have your child participate or to withdraw your child from the study at any time, there will be no penalty of any kind. If your child participates, the results of the research study may be published, but your child's name will not be used. All precautions will be taken to ensure your child's confidentiality.

**Opportunities to Question:** If you have concerns about participation or have other questions about this project or wish to be informed when a report of results is available, please contact: myself, Carli Lester, [lestercarli@gmail.com](mailto:lestercarli@gmail.com), or alternatively my Supervisor, Prof. Anna Meyer-Weitz, [meyerweitz@ukzn.ac.za](mailto:meyerweitz@ukzn.ac.za), 031 260 7618, Professor at the School of Applied Human Sciences

Questions regarding your child's rights as a research participant or research-related injuries may be directed to the UKZN Humanities & Social Sciences Research Ethics Committee at the University of KwaZulu-Natal, Email: [hssrec@ukzn.ac.za](mailto:hssrec@ukzn.ac.za); Tel: 031 260 4557.

Please complete the form below and **return to school by the 30 January 2016**.

- 
- I give consent for my child to participate in the above study.
- I do not give consent for my child to participate in the above study.

\_\_\_\_\_  
Parent/Guardian Name

\_\_\_\_\_  
Child's Name

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Researcher

\_\_\_\_\_  
Date

### **Appendix 7: Participant Information Sheet**

22 May 2015

Good Day

I am a student in the Department of Psychology at the School of Applied Human Sciences at the University of KwaZulu-Natal.



You are being invited to consider participating in a study that involves research into the prevalence and correlates of adolescent substance abuse. The aim and purpose of this research is to determine how many adolescents are using substances and to find out the most common risk factors that are associated with adolescent substance use. Your participation will involve completing a survey that consists of 8 pages. The duration of your participation if you choose to enroll and remain in the study is expected to be 15 minutes.

We hope that the study will enhance the understanding of South African adolescent substance use at both local and national levels as to inform future policy and practice.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval number\_\_\_\_\_).

In the event of any problems or concerns/questions you may contact the researcher, Carli Lester, at [lestercarli@gmail.com](mailto:lestercarli@gmail.com) or the UKZN Humanities & Social Sciences Research Ethics Committee, Email: [hssrec@ukzn.ac.za](mailto:hssrec@ukzn.ac.za); Tel: 031 260 4557.

Participation in this research is voluntary, participants may withdraw participation at any point. In the event of refusal/withdrawal of participation the participants will not incur penalty or loss of treatment or other benefit to which they are normally entitled.

All questionnaires will remain anonymous. Completed questionnaires will be stored in a locked facility and destroyed after data analysis has been completed.

For further information or any queries, please do not hesitate to contact either myself or my supervisor, Mr Hlengwa.

Mr Mthokozisi Hlengwa  
School of Applied Human Sciences  
University of KwaZulu-Natal  
Howard College Campus  
Tel: 031 260 7982  
Email: [hlengwam1@ukzn.ac.za](mailto:hlengwam1@ukzn.ac.za)

Miss Carli Lester  
Tel: 031 572 3806  
Email: [lestercarli@gmail.com](mailto:lestercarli@gmail.com)

Thank you for your time and participation.

Regards

Carli Lester

## Appendix 8: Participant Assent Form

### PARTICIPANT ASSENT FORM

**Please initial box**

- |  |                          |
|--|--------------------------|
| 1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.                        | <input type="checkbox"/> |
| 2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason.  | <input type="checkbox"/> |
| 3. I agree to take part in the above study.  | <input type="checkbox"/> |
| 4. I agree that my data gathered in this study may be stored (after it has been anonymised) in a specialist data centre and may be used for future research. | <input type="checkbox"/> |

Name of Participant	Date	Signature
---------------------	------	-----------

Name of Researcher	Date	Signature
--------------------	------	-----------

**Appendix 9: Questionnaire****SECTION 1: DEMOGRAPHICS**

The following questions relate to general information about yourself. Please indicate your response by marking the most appropriate answer with a "✓".

**1. What is your gender?**

- Male
- Female

**2. What is your age?****3. In what grade are you?**

- Grade 9
- Grade 10
- Grade 11
- Grade 12

**4. To which ethnic group do you belong?**

- Indian/Asian
- Black African
- Coloured/Mixed Race
- White
- Other

**5. How would you classify your family?**

- Not enough money for basic things like food, clothes
- Have money for food and clothes but short on many other things
- We have the basics but not enough money for expensive things
- Have some extra money to save to buy expensive things

**SECTION 2: DRUG USE**

**6. Have you ever smoked a cigarette?**

- Yes
- No

**7. How often have you smoked cigarettes in the past month?**

- Never
- Sometimes
- Everyday

**8. Have you ever drunk an alcoholic beverage?**

- Yes
- No

**9. How often have you drunk alcohol in the past month?**

- Never
- Sometimes
- Everyday

**10. Over the past 12 months, how many times did you drink roughly five or more drinks in a row?**

**11. Have you ever used any drug or substance in your life?**

- Yes
- No

**12. If yes, tick below the drugs you have ever used:**

- Marijuana (Dagga, Weed, Dope, Gunja, Cannabis, Doobie, Mary J)
- Glue
- Mandrax (Buttons, MX, White Pipe)
- Whoonga, Nyaope
- Ecstasy ("E", MDMA, "X", Beans, Candy, Disco Biscuits, Molly)
- Crack/Cocaine (Coke, Rock, Sugar, Blow, Bubble-gum, Crackers)
- Crystal Meth (Tik, "Crystal", "Meth", Ice)
- Heroine (H, Smack, Brown Sugar)
- I have not used drugs

**13. Have you used a drug in the past month?**

- Yes
- No

**14. How many of your friends smoke cigarettes?**

- None of them
- Few of them
- Some of them
- Most of them
- All of them

**15. How many of your friends drink alcohol?**

- None of them
- Few of them
- Some of them
- Most of them
- All of them

**16. How many of your friends use substances?**

- None of them
- Few of them
- Some of them
- Most of them
- All of them

**17. Do your parents/guardians smoke cigarettes?**

- Yes
- No

**18. Do your parents/guardians drink alcohol?**

- Yes
- No

**19. Have your parents/guardians used substances?**

- Yes
- No

### SECTION 3: SOCIAL SUPPORT

Please indicate the extent to which you agree/disagree with the following statements by circling the appropriate number on the scale provided:

	Strongly Disagree				Strongly Agree
20. There is a special person who is around when I am in need	1	2	3	4	5
21. There is a special person with whom I can share my joys and my sorrows	1	2	3	4	5
22. My family tries to help me	1	2	3	4	5
23. I get the emotional help and support I need from my family	1	2	3	4	5
24. I have a special person who is a real source of comfort to me	1	2	3	4	5
25. My friends really try to help me	1	2	3	4	5
26. I can count on my friends when things go wrong	1	2	3	4	5
27. I can talk about my problems with my family	1	2	3	4	5
28. I have friends with whom I can share my joys and sorrows	1	2	3	4	5
29. There is a special person in my life who cares about my feelings	1	2	3	4	5
30. My family is willing to help me make decisions	1	2	3	4	5
31. I can talk about my problems with my friends	1	2	3	4	5

The next set of questions is about 'images.'

Images are pictures we have in our mind about people and groups. For example, we all have ideas about what the type of kid who plays rugby is like. We might say that the typical rugby player is strong and tough or that the typical movie star is rich and good looking. We are not saying that all of these people are alike, only that some of them are similar in some ways. In the next set of questions, you will be asked to think about different images you have.



**SECTION 4: PROTOTYPES AND WILLINGNESS**

**ALCOHOL DRINKER IMAGES**

Think about the type of people your age **who drink alcohol** and indicate the extent to which you agree or disagree with the following descriptions by circling your response.

		<b>Strongly Disagree</b>						<b>Strongly Agree</b>
<b>32.</b>	Smart	1	2	3	4	5	6	7
<b>33.</b>	Confused	1	2	3	4	5	6	7
<b>34.</b>	Popular	1	2	3	4	5	6	7
<b>35.</b>	Immature	1	2	3	4	5	6	7
<b>36.</b>	Cool	1	2	3	4	5	6	7
<b>37.</b>	Confident	1	2	3	4	5	6	7
<b>38.</b>	Independent	1	2	3	4	5	6	7
<b>39.</b>	Careless	1	2	3	4	5	6	7
<b>40.</b>	Unattractive	1	2	3	4	5	6	7
<b>41.</b>	Boring	1	2	3	4	5	6	7
<b>42.</b>	Considerate	1	2	3	4	5	6	7
<b>43.</b>	Self-centred	1	2	3	4	5	6	7

**44. How often have you thought about this type of person?**

- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Often
- Very Often

Think about the type of people your age *who do not drink alcohol* and indicate your agreement or disagreement with the following descriptions by circling your response.

		Strongly Disagree					Strongly Agree	
45.	Smart	1	2	3	4	5	6	7
46.	Confused	1	2	3	4	5	6	7
47.	Popular	1	2	3	4	5	6	7
48.	Immature	1	2	3	4	5	6	7
49.	Cool	1	2	3	4	5	6	7
50.	Confident	1	2	3	4	5	6	7
51.	Independent	1	2	3	4	5	6	7
52.	Careless	1	2	3	4	5	6	7
53.	Unattractive	1	2	3	4	5	6	7
54.	Boring	1	2	3	4	5	6	7
55.	Considerate	1	2	3	4	5	6	7
56.	Self-centred	1	2	3	4	5	6	7

57. How often have you thought about this type of person?

- Never  
 Rarely  
 Occasionally  
 Sometimes  
 Frequently  
 Often  
 Very Often

Suppose you were with some friends at a party and one of them offered you some kind of alcoholic drink, how likely are you to:

	Not at all					Definitely	
58. Take it and try it	1	2	3	4	5	6	7
59. Tell them "no thanks"	1	2	3	4	5	6	7
60. Leave the situation	1	2	3	4	5	6	7



**DRUG USER IMAGES**

Think for a minute about the type of people your age *who use drugs frequently* and indicate your agreement or disagreement with the following descriptions by circling your response.

		Strongly Disagree					Strongly Agree	
61.	Smart	1	2	3	4	5	6	7
62.	Confused	1	2	3	4	5	6	7
63.	Popular	1	2	3	4	5	6	7
64.	Immature	1	2	3	4	5	6	7
65.	Cool	1	2	3	4	5	6	7
66.	Confident	1	2	3	4	5	6	7
67.	Independent	1	2	3	4	5	6	7
68.	Careless	1	2	3	4	5	6	7
69.	Unattractive	1	2	3	4	5	6	7
70.	Boring	1	2	3	4	5	6	7
71.	Considerate	1	2	3	4	5	6	7
72.	Self-centred	1	2	3	4	5	6	7

73. How often have you thought about this type of person?

- Never
- Rarely
- Occasionally
- Sometimes
- Frequently
- Often
- Very Often

Think about the type of people your age **who do not use drugs** and indicate your agreement or disagreement with the following descriptions by circling your response.

		Strongly Disagree					Strongly Agree	
74.	Smart	1	2	3	4	5	6	7
75.	Confused	1	2	3	4	5	6	7
76.	Popular	1	2	3	4	5	6	7
77.	Immature	1	2	3	4	5	6	7
78.	Cool	1	2	3	4	5	6	7
79.	Confident	1	2	3	4	5	6	7
80.	Independent	1	2	3	4	5	6	7
81.	Careless	1	2	3	4	5	6	7
82.	Unattractive	1	2	3	4	5	6	7
83.	Boring	1	2	3	4	5	6	7
84.	Considerate	1	2	3	4	5	6	7
85.	Self-centred	1	2	3	4	5	6	7

86. How often have you thought about this type of person?

- Never  
 Rarely  
 Occasionally  
 Sometimes  
 Frequently  
 Often  
 Very Often

Suppose you were with some friends at a party and one of them offered you some kind of drug, how likely are you to:

	Not at all					Definitely	
87. Take it and try it	1	2	3	4	5	6	7
88. Tell them "no thanks"	1	2	3	4	5	6	7
89. Leave the situation	1	2	3	4	5	6	7

Think about the type of person you are and indicate your agreement or disagreement with the following descriptions of by circling your response.

		Strongly Disagree					Strongly Agree	
90.	Smart	1	2	3	4	5	6	7
91.	Confused	1	2	3	4	5	6	7
92.	Popular	1	2	3	4	5	6	7
93.	Immature	1	2	3	4	5	6	7
94.	Cool	1	2	3	4	5	6	7
95.	Confident	1	2	3	4	5	6	7
96.	Independent	1	2	3	4	5	6	7
97.	Careless	1	2	3	4	5	6	7
98.	Unattractive	1	2	3	4	5	6	7
99.	Boring	1	2	3	4	5	6	7
100.	Considerate	1	2	3	4	5	6	7
101.	Self-centred	1	2	3	4	5	6	7

Think about the type of person you would like to be and indicate your agreement or disagreement with the following descriptions by circling your response.

		Strongly Disagree					Strongly Agree	
102.	Smart	1	2	3	4	5	6	7
103.	Confused	1	2	3	4	5	6	7
104.	Popular	1	2	3	4	5	6	7
105.	Immature	1	2	3	4	5	6	7
106.	Cool	1	2	3	4	5	6	7
107.	Confident	1	2	3	4	5	6	7
108.	Independent	1	2	3	4	5	6	7
109.	Careless	1	2	3	4	5	6	7
110.	Unattractive	1	2	3	4	5	6	7
111.	Boring	1	2	3	4	5	6	7
112.	Considerate	1	2	3	4	5	6	7
113.	Self-centred	1	2	3	4	5	6	7

114. Do you think that you will drink alcohol in the future?

- Yes, definitely
- Maybe yes
- Maybe no
- Definitely not

115. Do you think that you will drink 5 or more alcoholic drinks in the future?

- Yes, definitely
- Maybe yes
- Maybe no
- Definitely not

116. How do you think your parents feel about people your age drinking alcohol?

- Very bad
- Bad idea
- Neither good nor bad idea
- Good idea
- Very good idea

117. How do you think your friends feel about people your age drinking alcohol?

- Very bad
- Bad idea
- Neither good nor bad idea
- Good idea
- Very good idea

118. If someone offered you alcohol, would you consider it impolite to refuse?

- Yes, definitely
- Maybe yes
- Maybe no
- Definitely not

119. How much do you think a person your age risks hurting themselves (health or other ways) by having 5 or more alcoholic drinks every weekend?

- A lot
- Some
- A little
- Not at all

120. At your age, if you had five or more alcoholic drinks every weekend, do you think it would hurt you?

- Yes
- Probably
- Probably not
- No

**Do you think that you will use any drugs in the future?**

- Yes, definitely
- Maybe yes
- Maybe no
- Definitely not

**121. How do you think your parents feel about people your age using drugs?**

- Very bad
- Bad idea
- Neither good nor bad idea
- Good idea
- Very good idea

**122. How do you think your friends feel about people your age using drugs?**

- Very bad
- Bad idea
- Neither good nor bad idea
- Good idea
- Very good idea

**123. If a friend offered you drugs, would you consider it impolite to refuse?**

- Yes, definitely
- Maybe yes
- Maybe no
- Definitely not

**124. How much do you think a person your age risks hurting themselves (health or other ways) by using drugs?**

- A lot
- Some
- A little
- Not at all

**125. At your age, if you had to use drugs, do you think it would hurt you?**

- Yes
- Probably
- Probably not
- No

**End of Survey**

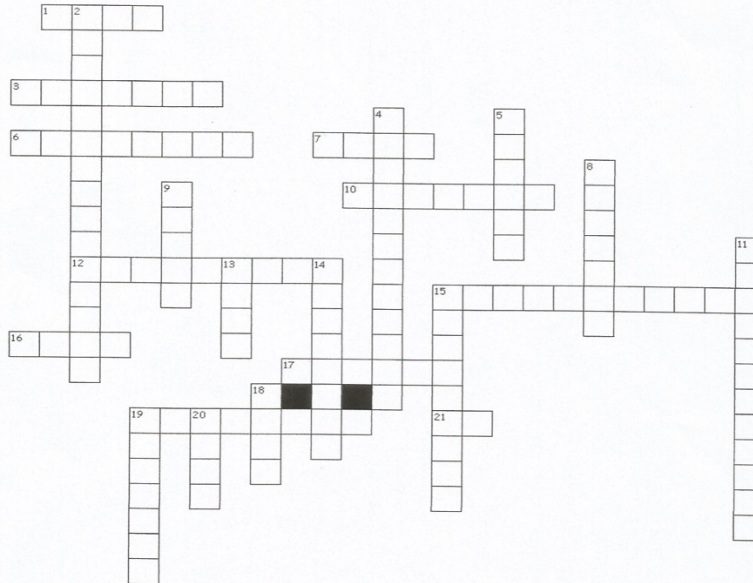
Thank you for your participation



## Appendix 10: Crossword

Answer Key: **Across** 2.Experimentation 4.Hallucinogen 5.Memory 8.Smoking 9.Brain 11.Prescription 13.True 14.Nicotine 15.Poisoning 18.Meth 19.Cocaine 20.Four **Down** 1.Weed 3.Steroid 6.Skittles 7.Oral 10.Alcohol 12.Addiction 15.Preventable 16.Shot 17.Stress 19.Caffiene 21.No

### Substance Abuse Crossword



bjcschooloutreach.org

#### Down

2. This is the first stage of addiction
4. This type of drug can cause a person to see or hear things that are not real
5. Marijuana causes damage to your \_\_\_\_\_
8. Every day 1,200 people die diseases caused by this
9. All drugs cause damage to this organ
11. These drugs should only be used with your doctor's consent
13. True or False: Most teens do not smoke
14. This is the addictive drug found in tobacco products
15. Consuming alcohol to the point that a person passes out is called alcohol \_\_\_\_\_
18. This drug can be very damaging to the teeth
19. This drug is a stimulant and comes in the form of a white powder
20. There are \_\_\_ stages of addiction

#### Across

1. This is a slang word for marijuana
3. This drug is considered an athletic performance enhancer
6. This slang name for Ecstasy has the same name as a candy
7. Chewing tobacco can cause this type of cancer
10. Underage use of this drug leads to about 5,000 deaths in the United States each year
12. This occurs when a person cannot stop using a substance
15. Smoking is the #1 \_\_\_\_\_ cause of death in the U.S.
16. A small glass of alcohol is called this
17. This is the #1 reason why teens misuse drugs
19. This is a mild stimulant drug found in coffee
21. One way to refuse to use drugs is to "just say \_"

## Appendix 12: Turn it in Report

Postgrad Research 2016 Draft Checks - DUE 30-Dec-2016

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BY CARLI LESTER

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The Rate of Substance Use and Associated Risk Factors Among High School Students in KwaZulu-Natal  
by  
Carli Jeanne Lester (214 583 761)

Submitted in partial fulfillment of the requirements for the degree Master of Social Sciences in Health Promotion in the School of Applied Human Sciences, Psychology.

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