Aggression-related alcohol expectancies and exposure to community alcohol-related aggression among students at the University of the Western Cape

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ABSTRACT

The relationship between alcohol consumption and alcohol-related violence has been firmly established in a wide array of studies concerning various forms of violence including intimate partner violence, domestic violence as well as sexual assault. One factor which has been highlighted as having a moderating effect on the relationship between alcohol consumption and alcohol-related aggression is the specific aggression-related alcohol expectancies concerning the effects of alcohol consumption on aggressive behaviour. In light of the prevalence of alcohol-related violence in South African communities it becomes important to examine the specific factors that moderate the relationship between alcohol consumption and alcohol-related aggression and violence. The aim of this study was to examine aggression-related alcohol expectancies as a moderating factor in the relationship between alcohol consumption and alcohol-related aggression and to examine the possible influence of exposure to community alcohol-related aggression in the formulation of aggression-related alcohol expectancies. The main objectives of this were to examine aggression-related alcohol expectancies as well as exposure to community alcohol-related aggression as domains for intervention to prevent alcohol-related violence. The focus is on establishing alternative areas for intervention aimed at the reduction of alcohol-related violence, specifically domestic violence and sexual assault, in South African communities. The sample was gathered through non-probability sampling methods and consisted of 262 undergraduate students from psychology courses. The study is a quantitative study employing a cross-sectional survey design. A significant relationship was found between alcohol consumption and alcohol-related aggression with aggression-related alcohol expectancies moderating this relationship, leading to higher alcohol-related aggression. Exposure to community alcohol-related aggression did not predict aggression-related alcohol expectancies.

DECLARATION

The author hereby declares that the following thesis, unless specifically indicated to the contrary in this text, is his own work.

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Renier du Toit

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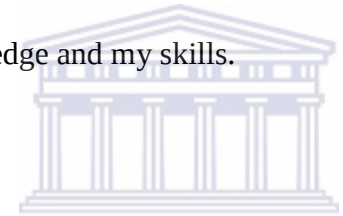

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CHAPTER 1

INTRODUCTION

1.1 Background

The relationship between alcohol consumption and alcohol-related violence has been firmly established in a wide array of studies concerning various forms of violence including intimate partner violence, domestic violence as well as sexual assault (Borders, Smucker-Barnwell & Earlywine, 2007; Giancola 2002a; Leonard, Connors & Quigley, 2003; Miller, Wilsnack & Cunradi, 2000; Swahn & Donovan, 2006).

Although the relationship between alcohol consumption and alcohol-related violence and aggression is well established in the literature, the specific factors that moderate this relationship remains elusive. One of the factors highlighted in previous studies as playing a moderating role in the relationship between alcohol consumption and alcohol-related aggression is the specific alcohol outcome expectancies or learned beliefs concerning the effects of alcohol consumption (Borders et al., 2007). These studies posit that beliefs or expectancies that alcohol consumption will lead to higher levels of aggression indeed facilitate higher levels of alcohol-related aggression (Borders et al., 2007; Paglia & Rooms, 1998; Smucker-Barnwell, Borders & Earlywine, 2006).

Alcohol consumption furthermore has been identified as a significant contributing factor in the perpetration of criminal behaviours associated with violence, specifically in the domains of domestic violence as well as sexual assault (Parry, 2008; World Health Organization, n.d.). Both domestic violence and sexual assault related to alcohol use pose significant and prevalent problems in South African communities (Dunkle et al., 2004; Jewkes & Abrahams, 2002; Jewkes, Dunkle, Koss, Levin & Nduna, 2006; Jewkes, Levin & Penn-Kekana, 2002).

Abrahams, Jewkes, Hoffman and Laubsher (2004) found that alcohol use was a significant predictor of intimate partner violence as well as sexual assault in a South African sample.

High levels of alcohol consumption is prevalent within student populations throughout the world (Berkowitz & Perkins, 1986; Harford, Yi & Hilton, 2006; Karam, Kypri & Salamoun, 2007). Similarly a high prevalence of alcohol consumption has also been found to permeate the student population at the University of the Western Cape. Rich (2004) found that 64% of students from a sample consisting of 777 participants reported drinking alcohol. 35.1% of the male participants reported drinking alcohol once or twice a week with a further 42.1% reporting that they drank alcohol only once or twice a month. Females reported drinking alcohol less frequently than their male counterparts with 18.7% reporting that they drank alcohol once or twice a week and a further 41% reporting alcohol consumption of only once or twice a month.

Considering the link between alcohol consumption and alcohol-related violence and aggression in light of the prevalence of the high levels of alcohol-related violence in South African communities, and especially student populations, it becomes important to expand the existing knowledge as to the specific factors that moderate the relationship between alcohol consumption and alcohol-related aggression and violence.

1.2 Rationale

The rationale behind the study will be to address the lack of knowledge concerning the moderating factors between alcohol consumption and alcohol-related aggression, namely aggression-related alcohol expectancies as well as exposure to community alcohol-related violence which may inform aggression-related alcohol expectancies. Although a myriad of

studies exist surrounding the moderating role of aggression-related alcohol expectancies in the relationship between alcohol consumption and alcohol-related aggression, these studies have mainly been based on American samples, specifically on American samples of college or university students, with very few studies of a similar nature having been conducted using local South African samples. Similarly although studies have been conducted to determine the influence of family history of alcohol consumption and violence on aggression and aggressive behaviours, minimal research exists regarding the specific influence or role of exposure of community alcohol-related violence on the formulation of aggression-related alcohol expectancies themselves.

The study will thus subsequently aim to bolster the lack of knowledge concerning the moderating role of aggression-related alcohol expectancies in the relationship between alcohol consumption and alcohol-related violence as well as the influence of exposure to community alcohol-related violence on the formulation of aggression-related alcohol expectancies in South-Africa.

Furthermore the study will attempt to address the issue of violence prevention in South Africa, both domestic and sexual violence, with the results serving to identify areas and at-risk groups or individuals at which intervention may be focussed. The study will further assist in guiding the choice of intervention, whether it be an intervention against alcohol consumption, cognitive behavioural interventions to alter beliefs pertaining to alcohol-related aggression or interventions aimed at reducing the subsequent effects of community histories of alcohol-related aggression. The study thus aims to identify possible alternative domains for intervention (in the domains of aggression-related alcohol expectancies or community

alcohol-related aggression) to prevent alcohol-related aggression and violence, including domestic violence and sexual assault.

1.3 Aims and objectives

1.3.1 Aims of the study:

The main aims of this study are to establish whether a relationship exists between aggression-related alcohol expectancies and alcohol-related aggression and subsequently whether a relationship exists between aggression-related alcohol expectancies and community history of alcohol consumption and aggression. Furthermore the study will aim to determine whether there are differences within the relationship between aggression-related alcohol expectancies and alcohol-related aggression as well as aggression-related alcohol expectancies and exposure to community alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as racial groups.

1.3.2 Objectives of the study:

- To determine if there is a relationship between alcohol consumption and alcohol-related aggression.

- To determine if there is a relationship between alcohol-related aggression and aggression-related alcohol expectancies in order to establish whether aggression-related alcohol expectancies moderate the relationship between alcohol consumption and alcohol-related aggression.

- To determine if there is a relationship between aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

- To determine if there is a difference in the relationship between aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as racial groups.

- To determine if there is a difference in the relationship between aggression-related alcohol expectancies and exposure to community alcohol-related violence for males and females, heavy and non-heavy alcohol consumption groups as well as racial groups.

- To determine if there is a significant difference between males and females, heavy and non-heavy alcohol consumption groups as well as racial groups for alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related violence.

1.4 Definition of concepts

Several concepts central to this thesis require some definition and elaboration in order to ensure enhanced clarity and understanding.

Alcohol-related aggression refers to all aggressive behaviours, including verbal aggression as well as physical aggression towards inanimate objects as well as other individuals, subsequent to alcohol consumption.

Aggression-related alcohol expectancies refer to learned beliefs about the effects regarding aggression associated with alcohol consumption.

Exposure to community alcohol-related aggression refers to the exposure of individuals to violent or aggressive acts within their communities which are perpetrated due to or following alcohol consumption.

Community refers to all individuals in a person's neighbourhood or environment and includes family and friends.

1.5 Overview of chapters

Chapter 2 will focus on literature relevant to this study, looking specifically at alcohol consumption, alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related aggression. Furthermore the chapter also presents the theoretical frameworks underlying the study.

Chapter 3 encompasses the methodology utilized in the study, with a focus on the hypotheses of the study, the sample, the measuring instruments, the methods of data analysis and the ethical considerations.

Chapter 4 presents the data analysis and results of the study.

Chapter 5 presents a discussion of the results as well as the limitations of the study. Suggestions for further research are also posited followed by a brief conclusion.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This literature review will be presented in two overarching sections. The first section of the literature review will focus on alcohol consumption and the link between alcohol consumption and aggression as well as the role of aggression-related alcohol expectancies in this relationship. Furthermore the influence of exposure to community alcohol-related violence on aggression-related alcohol expectancies will also be discussed. In the second section of the literature review the main theoretical frameworks underlying the study will be discussed with an examination of the ABC theory of psychopathology and expectancy theory.

2.1 Literature review

2.1.1 Alcohol consumption

Alcohol remains the most significant substance of abuse within South Africa and especially in the Western Cape with heavy alcohol consumption posing a key concern in terms of health as well as social well-being (Morojele et al., 2006; Parry et al., 2005; Parry et al., 2002; Van Heerden et al., 2009).

The prevalence of alcohol use in South Africa, for persons of 18 years of age and above, was reported to be 38.7% by Van Heerden et al. (2009) following their study examining the patterns of substance use in South Africa based on nationally representative data from the 2002-2004 South African Stress and Health study. Within the same study it was found that males showed a significantly higher level of alcohol use than females with Coloured and White racial groups also found to display a higher likelihood of alcohol use than other racial cohorts.

Within the Western Cape the prevalence of alcohol use among both males and females was found to be the highest in South Africa by the South African Demographic and Health survey with males reported to have a lifetime prevalence of 70.3% for alcohol use and females a lifetime prevalence of 39.2% (Medical Research Council, 2007).

Whilst several studies point to higher levels of alcohol use by males (Medical Research Council, 2007; Parry et al. 2004b) alcohol use among females also poses a major concern. Parry et al. (2004b) concluded that although the prevalence of binge drinking was higher among young males in the Cape Town area, high levels of binge-drinking was also prevalent among females with the prevalence and rate of binge-drinking increasing in both genders concurrent with age. In contrast to these findings the South African Demographic and Health Survey reported higher frequencies of binge-drinking among females than among males on weekends (Medical Research Council, 2007). Myers (2007) similarly found higher rates of daily alcohol use among females in a community-based study examining access to treatment. The high rate of Foetal Alcohol Syndrome in the Western Cape further highlights the high prevalence of alcohol consumption among females in the province (May et al., 2000; Viljoen et al., 2005).

In terms of racial cohorts studies indicate a higher prevalence of alcohol consumption among Coloured communities in comparison to African, White and Indian communities within the Western Cape (Shisana et al., 2005) in line with the findings concerning the national patterns of substance use reported by Van Heerden et al. (2009). In contradiction to this Parry, Morojele, Saban and Flisher (2004a) found that older white adolescents had a higher likelihood of drunkenness in a pilot study examining neighbourhood correlates of drunkenness in Cape Town.

2.1.2 Alcohol consumption in student populations

Student populations have repeatedly been found as being synonymous with high rates of alcohol consumption within the literature, both internationally and locally, with binge-drinking being highlighted as a fundamental factor in student drinking behaviours (Harford et al., 2006; Karam et al., 2007; Knight et al., 2002; Meyer, 2001; Rich, 2004; Wechsler et al., 2002).

The extensive use of alcohol during the university or college years has been variably associated with the specific factors inherent in this phase such as independence, intellectual, social and emotional vulnerability as well as high levels of peer influence and experimentation (Dawson, Grant, Stinson & Chou, 2004; Harford et al., 2006; Karam et al., 2007; Rich, 2004).

An international study, focussing on published articles during 2005 and 2006, to examine and compare alcohol consumption among college students (students in tertiary education) in Australia, Brazil, Ecuador, Egypt, Germany, Hong Kong, Ireland, Lebanon, New Zealand, Nigeria, Sweden, Netherlands and Turkey consistently found an elevated risk among college students for heavy alcohol consumption as well as alcohol dependence with results indicating only a slightly lower prevalence of alcohol consumption in Africa and Asia relative to Australasia, Europe, South America and North America (Karam et al., 2007).

In North America the prevalence of alcohol-use disorders among college students (age 18-29) has been estimated to be 8% for alcohol abuse and 10.9% for alcohol dependence based on the criteria for alcohol-use disorders stipulated by the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (DSM-IV) (Dawson et al., 2004). In addition Knight et al.

(2002) reported that 31% of undergraduates in the United States could be diagnosed as alcohol abusers and 6% as being dependent on alcohol, also based on the DSM-IV criteria.

Research suggests that high levels of alcohol consumption are also prevalent among South African University student populations (Peltzer & Ramlagan, 2009; Plüddemann, Theron & Steel, 1999; Rich, 2004). In their study, examining alcohol use trends in South Africa, Peltzer and Ramlagan (2009) reported that 22 to 80% of South African University students currently used alcohol with 6 to 43% reported as engaging in binge-drinking within the past month and 17.1 to 58% displaying hazardous or harmful drinking.

At the University of Stellenbosch, located in the Western Cape, Plüddemann et al. (1999) reported that 56,5% of male students and 40% of female students were heavier drinkers with a score of 8 or more on the AUDIT. Subsequently they also reported that 54% of male students at Stellenbosch University occasionally drink until drunk, while 12% always drink until drunk.

As previously stated alcohol consumption is also highly prevalent at the University of the Western Cape with 64% of students from a sample consisting of 777 participants reporting alcohol use. 35.1% of the male participants reported drinking alcohol once or twice a week with a further 42.1% reporting that they drank alcohol only once or twice a month. Females reported drinking alcohol less frequently than their male counterparts with 18.7% reporting that they drank alcohol once or twice a week and a further 41% reporting alcohol consumption of only once or twice a month (Rich, 2004).

Although high prevalence rates of alcohol consumption is evident within student populations, studies have indicated that the attendance of a tertiary institution may function as a protective factor against the formulation of future alcohol-use disorders and alcohol dependence (Harford et al., 2006). The report stemming from the National Longitudinal Alcohol Epidemiologic Survey (NLAES) in the U.S. indicated that the attendance of a tertiary institution decreased the ratio of both lifetime alcohol dependence as well as alcohol dependence in persons who drank within the 12 month period preceding the study among 18-24 year olds (Grant, 1997). Muthén and Muthén (quoted in Harford et al., 2006) similarly found significantly lower rates of alcohol dependence for persons who attended a tertiary institution in comparison to those who did not.

2.1.3 Alcohol consumption and alcohol-related aggression

As previously mentioned the link between alcohol consumption and alcohol-related violence is well established in the literature with alcohol consumption being specifically correlated with various types of violence including intimate partner violence, domestic violence as well as sexual assault (Borders et al., 2007; Bushman, 1997; Giancola, 2002b; Leonard et al., 2003; Miller et al., 2000; Swahn & Donovan, 2006). In a meta-analysis conducted by Bushman and Cooper (1990) on the literature concerning the relationship between alcohol consumption and human aggression, they postulate that a causal relationship does indeed exist between alcohol consumption and aggression, although this relationship may be moderated by an array of other factors. Furthermore, although this may vary across cultures and countries, alcohol has shown a higher association with violent acts than the combined effect of all other drugs with 40 to 50% of violent crimes in the U.S. involving at least one perpetrator who has consumed alcohol (Miczek, Weerts & DeBold, 1993; Murdoch, Phil & Ross, 1990).

Alcohol-related aggression has been found to be highly prevalent within student populations. In the United States of America excessive alcohol consumption among college students has received considerable attention, with the leading cause of injury and death among American college students contributable to binge-drinking (Karam et al., 2007). In a study examining the alcohol-related morbidity and mortality in American college students, Hingson, Heeren, Winter and Wechlser (2005) reported that 600 000 college students were injured due to alcohol-related reasons, 1700 died due to alcohol-related injuries and 696 000 students suffered at the hands of others as a result of alcohol-related aggression. Furthermore students have also been found to be significantly more involved in physical aggression following alcohol consumption (Wells, Graham & West, 2000).

In her review on the relationship between alcohol consumption and sexual assault in a sample comprising of college students, Abbey (2002) found that alcohol consumption was present in 50% of the cases in which sexual assault was perpetrated. Similarly Ullman (2003) found that alcohol consumption by the perpetrators of sexual assaults increased the severity as well as level of violence associated with the assaults. Alcohol consumption has thus been found to lead to sexual assaults and specifically aggressive sexual assaults.

Within the South African context alcohol consumption has also closely been linked with various types of violence. A review by the World Health Organization (n.d.) revealed that 65% of South African women who fell victim to intimate partner violence reported alcohol consumption by their partner prior to their victimization. Field, Caetano and Nelson (2004) further found in their study, conducted on a sample of 1462 couples, that alcohol consumption was positively correlated with intimate partner violence as well as domestic violence.

Jewkes et al. (2002) furthermore also identified alcohol consumption as a major risk factor for the occurrence of domestic violence as well as intimate partner violence in a study conducted in three South African provinces on a sample of 1306 women aged 18-49.These studies thus highlight the close link between alcohol consumption and various types of violence including domestic violence, intimate partner violence as well as sexual assault in the South African context. The specific prevalence of alcohol-related aggression within student populations in the South African has not been studied with a lack of knowledge thus existing regarding the manifestation and occurrence of alcohol-related aggression specifically within these populations.

Several demographic variables have been found to impact on the relationship between alcohol consumption and alcohol-related aggression including gender, consumption-level race, as well as the type of alcohol consumed and the setting in which alcohol was consumed (Bondy, 1996; Wells & Graham, 2003; Wells, Graham, Speechly & Koval, 2005). Generally the literature suggests that males are predominantly the main proponents of alcohol-related aggression (Hoaken & Pihl, 2000; Wilsnack, Wilsnack & Obot, 2005; McMurran, Egan, Cusens, van den Bree, Austin & Charlesworth, 2009).

The level of alcohol consumption also has been found to have a significant impact on subsequent alcohol-related aggression with the level of alcohol consumption being linked with the severity of aggression (Rossow, 1996; Sharps, Campbell, Campbell, Gary & Webster, 2001). Wells and Graham (2003) found a significant relationship between the level of alcohol consumption or drinking pattern and alcohol-related aggression in their study examining individuals who were involved in physical aggression in the preceding 12 months, whilst no relationship was found between alcohol consumption or drinking pattern and non-

alcohol-related aggression. Heavier drinkers were consequently found to display a higher prevalence of alcohol-related aggression after controlling for age as well as gender. Quigley Corbett and Tedeschi (2002) similarly found that heavier drinking was associated with a higher prevalence for alcohol-related aggression, but that this was only true for males. Wells et al. (2000) reported that of the 27% of the general population found to have been involved in physical aggression, 68% reported alcohol consumption prior to physical aggression whilst 38% reported alcohol consumption prior to verbal aggression. Higher levels and prevalence of alcohol consumption were also found to correlate highly with subsequent physical aggression as opposed to verbal aggression. The reasons highlighted within the literature which may contribute to higher levels of aggression for heavier drinkers are the disinhibitory pharmacological effects of alcohol as well as the possible moderating effect of aggression-related alcohol expectancies (Busman, 1997; Bushman & Cooper, 1990).

An important aspect highlighted by Giancola (2002b) which may impact on the relationship between alcohol consumption and alcohol-related aggression is the level of dispositional aggression (i.e. the general aggressive nature) of the person. Subsequently Giancola found that alcohol consumption had a significant effect on alcohol-related aggression in persons with a high level of dispositional aggression leading to higher levels of alcohol-related aggression in contrast to a non-significant effect for alcohol consumption on alcohol-related aggression for persons with a low level of dispositional aggression. Furthermore Giancola also reported no significant difference between males and females with low levels of dispositional aggression in terms of alcohol-related aggression whilst there was a significant difference between the gender groups with high levels of dispositional aggression, with the consumption of alcohol leading to higher levels of alcohol-related aggression only in males displaying high levels of dispositional aggression. In line with this Smucker-Barnwell et al.

(2006) found that dispositional aggression was a significant moderating factor in the relationship between alcohol consumption and alcohol-related aggression.

Another important factor which may have a significant impact on the relationship between alcohol consumption and alcohol-related aggression is the type of alcohol consumed. In a study examining the levels of alcohol-related aggression following the consumption of different types of alcohol, Gustafson (1999) found that the consumption of spirits lead to a higher prevalence of physical aggression than either beer or wine whilst controlling for differences in blood alcohol level.

2.1.4 Alcohol consumption, aggression-related alcohol expectancies and alcohol-related violence

The relationship between alcohol consumption and aggression or violence is complex and is moderated by various factors. One of these moderating factors is aggression-related alcohol expectancies or beliefs about the outcome effects of alcohol consumption regarding aggression. According to Goldman, Del Boca and Darkes (1999) aggression-related alcohol expectancies take the form of cognitive depictions of an ‘if-then’ relationship which can be formulated as follows: “if I drink, I will become more aggressive”. Meta-analytic studies suggest that alcohol consumption, in conjunction with aggression-related alcohol expectancies, fulfils a causal role in the perpetration of aggression (Bushman, 1997; Bushman & Cooper, 1990; Exum, 2006).

The moderating effect of aggression-related alcohol expectancies was demonstrated in the classic study by Lang, Goeckner, Adesso and Marlatt (1975) examining male social drinkers. Lang et al. utilized the Buss aggression apparatus as a measure for aggression with the level

of aggression being indicated by the duration and intensity of shocks administered by participants on this apparatus. The study concluded that participants who believed that they had consumed alcohol were more aggressive than those participants who believed that they did not, regardless of whether they had been administered a placebo or not, indicating that the expectancy that alcohol consumption leads to higher levels of aggression indeed facilitates higher levels of aggression. In a similar vein Dermen and George (1989) examined aggression-related alcohol expectancies as a moderating factor between alcohol-consumption and physical aggression in a sample of American male college students and found higher frequencies of aggression, and specifically physical aggression, in participants with the expectancy that alcohol increases aggression after controlling for age, attitudes towards drinking as well as hostility.

The moderating effect of aggression-related alcohol expectancies has also been examined in recent literature. Borders et al. (2007) found that aggression-related alcohol expectancies moderated the relationship between alcohol consumption and alcohol-related violence in an American sample consisting of 285 men and women, but only after controlling for dispositional aggression. In a subsequent study Smucker-Barnwell et al. (2006) also concluded the moderating effect of aggression-related alcohol expectancies between alcohol consumption and alcohol-related aggression and found that higher aggression-related alcohol expectancies lead to higher frequencies of aggressive acts during or after drinking for participants that hold these expectancies. This was specifically true for heavier drinkers.

In a longitudinal study conducted on a sample of 405 males age 16-19, Zhang, Welte and Wieczorek (2002) reported that participants with higher levels of alcohol consumption were more likely to have consumed alcohol before the perpetration of aggression with higher

levels of aggression reported for those who held the belief that alcohol consumption increases aggression. Furthermore Zhang et al. concluded that aggression-related alcohol expectancies conversely also predicted drinking behaviours as alcohol consumption was perceived by participants as an excuse for aggressive behaviour or as a means of increasing courage. Quigley et al. (2002) similarly reported the moderating effect of aggression-related alcohol expectancies on alcohol-related aggression in their study examining the effect of aggression-related beliefs concerning alcohol consumption for male and female participants age 18 with the belief that alcohol increases aggression being found to be positively correlated with subsequent alcohol-related aggression.

In a event-based study conducted by Leonard et al. (2003) examining the moderating effect of aggression-related expectancies between alcohol consumption and alcohol-related violence in a barroom setting, with a specific focus on male-to-male violence, it was found that although aggression-related alcohol expectancies facilitate the occurrence of alcohol-related aggression, alcohol expectancies were not a necessary factor in the relationship between alcohol-consumption and alcohol-related violence.

In relation to the perpetration of domestic violence, intimate partner violence and sexual assault, Field et al. (2004) found that aggression-related alcohol expectancies were present in 10% of the sample, consisting of 1462 couples, who also reported domestic violence and intimate partner violence after the consumption of alcohol by either partner.

The general belief that alcohol consumption leads to higher levels of aggression is expressed in the study conducted by Paglia and Room (1998) investigating public perception and beliefs regarding the effects of alcohol consumption on aggression. In their study, consisting of 994

participants in an American sample, they found that more than three quarters of the participants held the belief that alcohol consumption leads to higher levels of aggression. Females and non-heavy drinkers were reported to be more likely to hold this view.
In contrast to the findings reported above, Wall, Thrussel and Lalonde (2003) found that participants who held the expectancy that alcohol consumption increases aggression reported feeling less aggressive following alcohol consumption despite their aggression-related alcohol beliefs.

In addition to individual expectations (intra-psychic expectations) related to the effect of alcohol on behaviour, Graham et al. (1998) highlight the importance that broader socio-cultural beliefs (socio-cultural expectations) play in the relationship between alcohol consumption and alcohol-related aggression as well as on the intra-psychic expectations of individuals. The socio-cultural belief that alcohol-related aggression is accepted or normal behaviour following alcohol consumption may be an important determinant in informing the intra-psychic expectation that alcohol consumption leads to higher levels of aggression and that aggression-related alcohol aggression is an accepted consequence of alcohol consumption.

From the literature their thus seems to be substantial evidence for expectancy-based explanations for the effects of alcohol on alcohol-related aggressive behaviour or violence. Within the South African context however, the specific role of aggression-related alcohol expectancies in the relationship between alcohol consumption and alcohol-related aggression has not been investigated.

2.1.5 Exposure to community alcohol-related aggression, aggression-related alcohol expectancies and alcohol related violence

Although aggression-related alcohol expectancies may moderate the relationship between alcohol consumption and alcohol-related aggression or violence, it is important to consider the factors that influence the formulation of these aggression-related alcohol expectancies in the first place. One factor that might be considered as influential in the formulation of aggression-related alcohol expectancies is exposure to community alcohol-related aggression.

The link between exposure to violence and subsequent violent behaviour is clearly depicted in the literature (Attar, Guerra & Tolan, 1994; Bell & Jenkins, 1993; Chermack, Wryobeck, Walton & Blow, 2006; Halliday-Boykins & Graham, 2001). Halliday-Boykins and Graham (2001) conducted a study examining the relationship between exposure to community violence and subsequent violent behaviour and concluded that exposure to community violence indeed shows a positive relationship with subsequent violent behaviour by individuals suffering exposure to community violence. Halliday-Boykins and Graham further concluded that the pathways through which this relationship is established remain unclear.

In a meta-analytic study examining the effects of exposure to community violence, Buka, Stichick, Birdthistle and Earls (2001) concluded that the witnessing of violence leads to higher levels of aggression, especially among males. Ritter, Stewart, Bernet, Coe and Brown (2002) found that the exposure to familial violence impacted on the psychosocial functioning of adolescents. Specifically exposure to familial alcohol-related violence increased the prevalence of conduct-disorders, including aggressive behaviours, in females.

Foshee, Bauman and Linder (1999) examined the effect of exposure to familial violence on dating-related violence using social learning theory as explanatory framework. They concluded that exposure to familial violence was positively correlated with dating-related violence with the social learning theory variable of acceptance of violence mediating the relationship. The observation of violence thus impacted on the beliefs associated with violence with violence perceived as normal and accepted behaviour.

In light of the above-mentioned relationship between exposure to community violence and subsequent violent behaviour it may be posited that exposure to community alcohol-related violence might similarly show a positive relationship with subsequent alcohol-related aggression and violence. Although no studies have examined this specific relationship, or the pathways through which the relationship might be facilitated, an expectancy-based explanation might be considered as a pathway through which exposure to community alcohol-related violence may lead to subsequent alcohol-related aggression or violence. Exposure to community alcohol-related violence may be influential in the formulation of aggression-related alcohol expectancies which might in turn moderate the relationship between alcohol consumption and alcohol-related aggression or violence.

2.2 Theoretical framework

Two interrelated theories informed the theoretical framework inherent in this study namely the ABC theory of psychopathology and alcohol expectancy theory.

2.2.1 The ABC theory of psychopathology

The ABC theory of psychopathology which underlies Rational-Emotive therapy was used as an underlying and guiding theoretical framework in this study. The ABC theory of

psychopathology posits that activating events are not directly causally related to behavioural consequences but that the relationship between activating events and behavioural consequences is moderated by beliefs and that these beliefs are subsequently the main determinant of feelings and behaviours (Haaga & Davison, 1993; Russel & Brandsma, 1974). In relation to aggression-related alcohol expectancies this model posits that aggression-related alcohol expectancies may moderate the relationship between alcohol consumption and alcohol-related aggression.

2.2.2 Alcohol expectancy theory

Alcohol expectancies can be defined as the expected effects or learned beliefs of drinking alcohol (Goldman, Brown & Christiansen, 1987). Alcohol expectancies imply cognitive processes which inform the expected outcomes of behaviour. Subsequently these expectancies represent the anticipation of a systematic relationship between two events. In terms of the expectation that alcohol consumption will lead to increased levels of aggression the expectancy represents the anticipation of a systematic relationship between alcohol consumption and subsequent alcohol-related aggression (Goldman et al., 1987). Expectancies can thus be formulated as representative of an ‘if-then’ relationship: “If I drink, I will become more aggressive” (Goldman et al., 1999). According to Jones, Corbin and Fromme (2001) alcohol expectancies represent structures in long-term memory which influence cognitive processes and subsequent behaviour.

The learning of an expectancy is posited to originate from the correlation between an organismic response or situational cue and a specific outcome. In this respect the repeated correlation of alcohol consumption with subsequent aggression will lead to the formulation of the expectancy that alcohol consumption will lead to aggression (Goldman et al., 1987). The

learning of specific expectancy can occur in two ways. Firstly expectancies may be acquired through direct experience and secondly expectancies can be acquired through vicarious learning or the observation of others (Goldman, 1994; Goldman et al., 1987). Previous experiences of alcohol consumption and subsequent aggression are thus stored as specific memories of prior experience and learning concerning the effects of drinking on behaviour. Similarly the experiences of the effects of alcohol consumption on the behaviour of others through observation is also stored as specific memories of learning concerning the effects of alcohol consumption on behaviour. The reactivation of this stored information or expectancies during subsequent alcohol consumption may thus impact on behaviour following alcohol consumption. In this vein aggression-related alcohol expectancies may be activated during alcohol consumption and lead to higher levels of alcohol-related aggression subsequent to alcohol consumption (Goldman, 1994). According to Mcurram (2007) the regular co-occurrence of alcohol consumption and aggression, whether observed or experienced, may contribute to the formulation of aggression-related alcohol expectancies.

The alcohol expectancy model, in relation to aggression-related alcohol expectancies, thus posits that the strength of the aggression-related alcohol expectancies held by the individual may moderate the relationship between alcohol consumption and alcohol-related aggression.

CHAPTER 3

METHODOLOGY

For this study quantitative methodology was employed using instruments to measure constructs and statistical analysis to analyze and interpret the data.

3.1 Hypotheses

The hypotheses for the study were formulated as follows:

1. A significant positive relationship exists between alcohol consumption and alcohol-related aggression.

2. A significant positive relationship exists between alcohol-related aggression and aggression-related alcohol expectancies with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression.

3. There is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as for racial groups.

4. A significant positive relationship exists between aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

5. There is a difference in the relationship between aggression-related alcohol expectancies and exposure to community alcohol-related violence for males and females, heavy and

non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as for racial groups.

6. There are significant differences between males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as racial groups for alcohol consumption, alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

3.2 Research design

Following the aims of the study a positivist approach was adopted using a correlational, cross-sectional survey design with a sample selected through non-probability sampling.

3.3 Sample

The sample consisted of undergraduate Psychology students at the University of the Western Cape. Psychology is not a course which is restricted to merely one faculty and thus the sample comprised of students from different faculties. Approximately 300 students were invited to participate in the study.

The criteria for inclusion in the study were as follows:

- Participants should study undergraduate Psychology at the University of the Western Cape

Frequencies and crosstabulations were utilized to describe the sample in terms of age, gender, consumption-level and race.

Table 1:

Descriptive Statistics for Age

	N	Range	Minimum	Maximum	Mean	Std. dev
Age	262	31	17	48	21.401	3.503

The sample consists of 262 participants from 17 to 48 years of age. The mean age of the sample is 21.401 years of age with age being negatively skewed (Table 1). Figure 1 shows the distribution of age for the sample. Although several outliers are evident in the distribution of age for the sample, the outliers were included in the analyses as their inclusion does not impact significantly on the results.

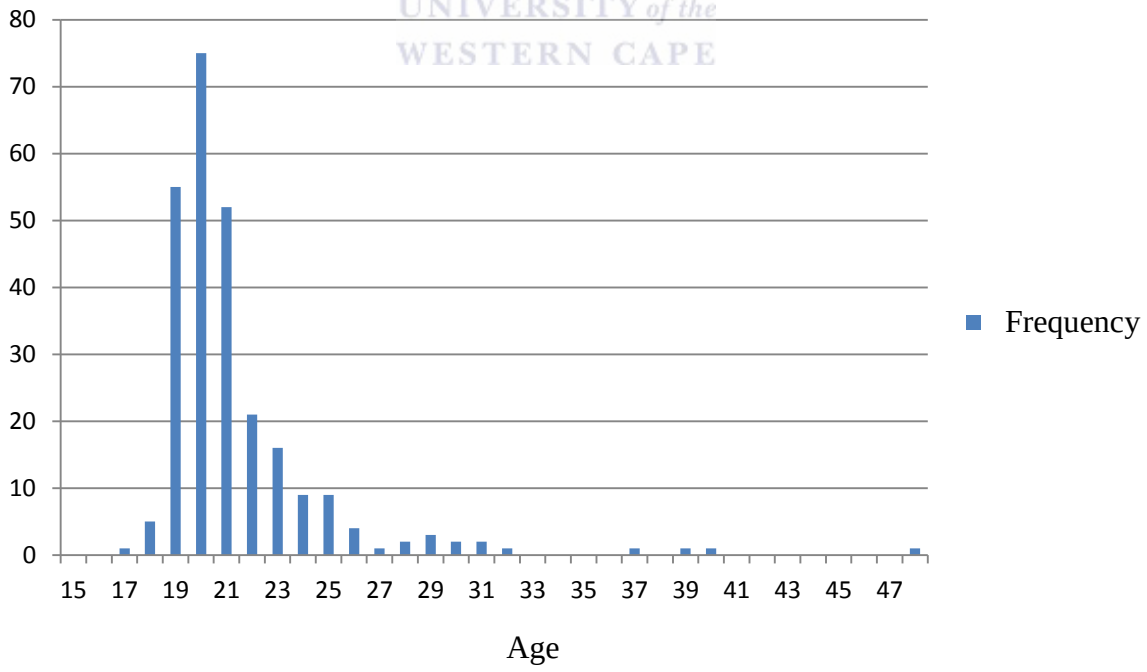

Figure 1: Frequency Distribution of Age

Table 2:

Frequencies and Percentages for Males and Females

Gender	Frequency	Percent
Male	85	32.4
Female	177	67.6

85 (32.4%) of the 262 participants in the sample are male with 177 (67.6%) participants being female (Table 2). The sample thus consists predominantly of female participants. Figure 2 illustrates the division of the sample according to gender.

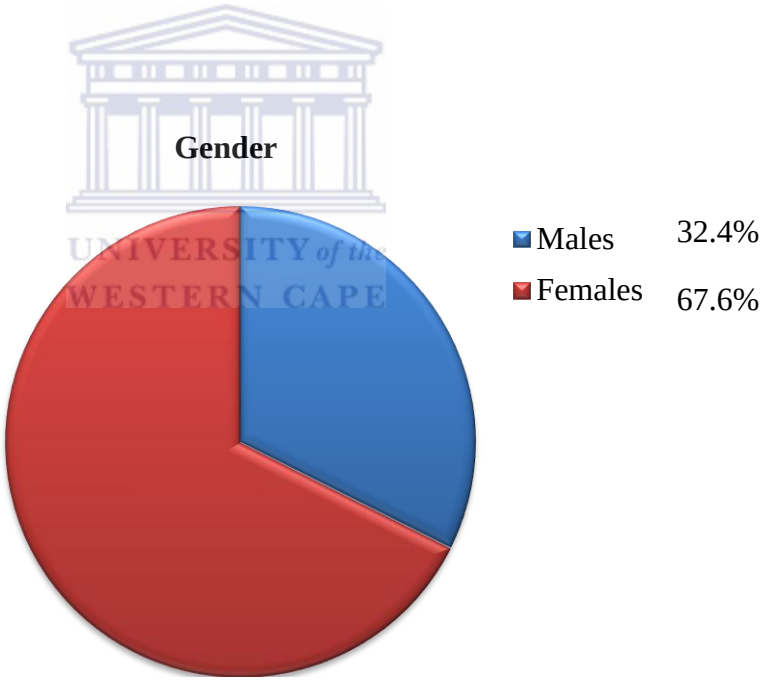

Figure 2: Pie Chart for distribution of Males and Females

Table 3:

Frequency and Percentages for Racial Groups

Race	Frequency	Percent
White	6	2.3
African	70	26.7
Coloured	179	68.3
Asian	3	1.1
Other	4	1.5

The sample consists predominantly of Coloured participants (179) which constitute 68.3% of the sample, followed by African participants (70), constituting 26.7% of the sample (Table 3). The White (6), Asian (3) and Other groups are not well represented within the sample only constituting 2.3%, 1.1% and 1.5% of the sample respectively (Table 3). Figure 3 illustrates the division of the sample according to race. Due to the small size of the White, Asian and Other racial groups, with a ratio of less than 5:1 for observations per predictor variable (Hair, Black, Babin & Anderson, 2010), only the African and Coloured groups will be considered in the subsequent analyses in the following chapter.

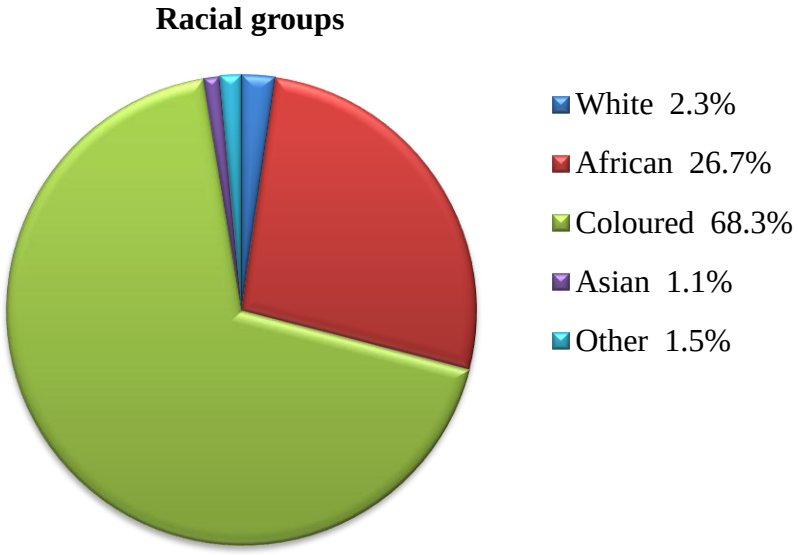

Figure 3: Pie Chart for Distribution for Racial Groups

Table 4:

Frequencies and Percentages for Consumption Groups

Consumption-level	Frequency	Percent
Heavy	103	39.3
Non-heavy	116	44.3
No consumption	43	16.4

The World Health Organization (WHO) provides specific criteria by which to identify harmful alcohol use. According to these criteria a score of 8 and higher on the AUDIT can be used to identify heavier alcohol users with harmful drinking habits (Babor, Higgins-Biddle, Saunders & Monteiro, 2001; Flemming, Barry & Macdonald, 1991). In line with this criteria, and previous research conducted in South Africa using the AUDIT (see Peltzer & Seoka, 2004 and Peltzer, Matseke, Aswihangwisi & Babor, 2008), participants with a score of 8 or

higher have been classified as the heavy alcohol consumption group with participants with a score below 8 classified as the non-heavy alcohol consumption group for the purposes of this study.

The heavy and non-heavy groups have similar group sizes with 103 (39.3%) and 116 (44.3%) respectively (Table 4). The no consumption group is considerably smaller consisting of 43 (16.4%) participants. Figure 4 illustrates the division of the sample according to consumption-level.

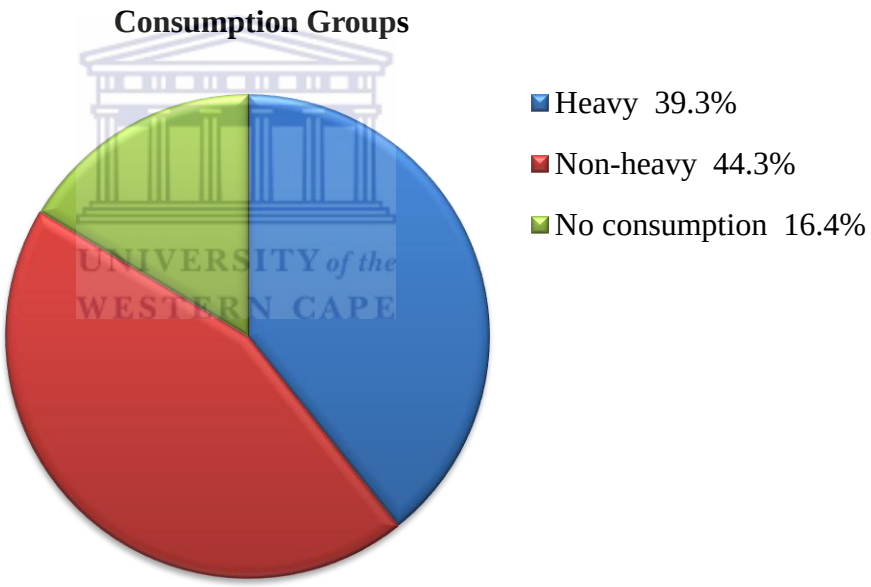

Figure 4: Pie Chart for Distribution for Consumption-level

Table 5:

Crosstabulation for Gender and Race

	White	African	Coloured	Asian	Other
Male	4	22	56	0	3
Female	2	48	123	3	1

Table 5 indicates that the majority of participants in both the male and female groups are Coloured, followed by African. The ratio of males to females for the African and Coloured groups is close to 1:2 within each group. The White, Asian and Other group is once again shown to be under-represented with only 4 males and 2 females within the White group, no males and 3 females in the Asian group and 3 males and 1 female in the group designated as Other (Table 5).

Table 6:

Crosstabulation for Gender and Consumption-level

	Heavy	Non-heavy	No consumption
Male	48	29	8
Female	55	87	35

Within the male group most of the participants are heavy drinkers (48) and non-heavy drinkers (29) with only 8 participants in the male group being non-drinkers (Table 6). Within the female group the non-heavy consumption group (87) accounts for most of the participants followed by the heavy consumption group (55) and the no consumption group (35) (Table 6).

In both the male and female group the no consumption group thus accounts for the least number of participants.

Table 7:

Crosstabulation of Race and Consumption-level

	Heavy	Non-heavy	No consumption
White	1	5	0
African	28	23	19
Coloured	73	83	23
Asian	0	2	1
Other	1	3	0

Table 7 indicates that if consumption-level is considered in relation to race the African group shows a similar number of participants within the heavy (28), non-heavy (23) and no consumption (19) groups with the heavy group being slightly larger. Within the Coloured group the heavy (73) and non-heavy (83) consumption groups have a similar size with the no consumption group being considerably smaller (23) (Table 7). The non-heavy group is thus the biggest within the Coloured group.

3.4 Sampling procedure

Non-probability sampling was used to select participants for the study following the obtainment of permission for the study from the University's Senate Research Committee. Undergraduate classes were approached to participate in the study with data being collected from students attending first, second and third year psychology lectures.

3.5 Data collection instruments

The measurement instruments that were used in the study included the following:

- The Alcohol Use Disorders Identification Test (AUDIT).
- The aggression subscale of the Alcohol Expectancies Regarding Sex, Aggression and Sexual Vulnerability.
- Buss-Perry Aggression Questionnaire (modified to measure alcohol-related violence).
- Buss-Perry Aggression Questionnaire (modified to measure exposure to community alcohol-related violence).

3.5.1 The Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT was developed by the World Health Organization as a screening instrument to detect risky alcohol behaviour. It was designed for use in primary health care settings but it is an appropriate and simple method of detecting harmful alcohol use in student prevention programs as well (Flemming et al., 1991). The AUDIT is a 10-item scale developed by the World Health Organization as a screening instrument to detect risky alcohol behaviour. The AUDIT has been found to be both valid and reliable with high convergent validity, high test-retest reliability as well as displaying high internal consistency, with the average Cronbach's alpha found for the AUDIT above .80. Furthermore the AUDIT has been extensively used for research purposes in university settings (Allen, Litten, Fertig & Babor, 1997; Flemming et al., 1991; Reinert & Allen, 2002).

3.5.2 The aggression subscale of the Alcohol Expectancies Regarding Sex, Aggression and Sexual Vulnerability

The seven-item aggression subscale of the Alcohol Expectancies Regarding Sex, Aggression and Sexual Vulnerability scale was used to measure aggression-related alcohol expectancies. The aggression subscale measures the beliefs of participants regarding the effect which alcohol consumption has on aggression levels. The subscale includes seven items in the form of "When drinking, I become hostile" measured on a summative Likert-scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Abbey, Ross, McAuslan and Zawacki, 1999). Higher aggression-related alcohol expectancies is indicated by higher summed scores. High discriminant and convergent validity was found for the subscale and the scale has previously been employed to determine aggression-related alcohol expectancies in studies conducted by Borders et al. (2007) as well as Smucker-Barnwell et al., (2006) (Abbey et al., 1999).

3.5.3 Buss-Perry Aggression Questionnaire (modified to measure alcohol-related violence)

The Physical Aggression (items 1-9) and the Verbal Aggression (items 10-14) subscales of the Buss-Perry Aggression Questionnaire were used to measure alcohol-related aggression by modifying the items to measure aggressive behaviour after the consumption of alcohol. For example "I have become so mad that I have broken things" will be modified to "After drinking, I have become so mad that I have broken things". The scale employs a summative Likert-scale ranging from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). The Buss-Perry Aggression Questionnaire has been found to be valid and reliable, especially in student populations, thus it is believed that the modified version will also be valid and reliable (Buss & Perry, 1992; Gerevich, Bácskai & Czobor, 2007).

3.5.4 Buss-Perry Aggression Questionnaire (modified to measure exposure to community alcohol-related violence)

The Physical Aggression (items 1-9) and the Verbal Aggression (items 10-14) subscales of the Buss-Perry Aggression Questionnaire were used to measure exposure to community alcohol-related aggression by modifying the items to measure the exposure or the witnessing of alcohol-related aggression and violence in the community setting. For example "I have become so mad that I have broken things" will be modified to "After seeing people in my community drink, I have seen them become so mad that they have broken things". The scale will employ a summative Likert-scale ranging from 1 (extremely rarely) to 5 (extremely often). The Buss-Perry Aggression Questionnaire has been found to be valid and reliable, especially in student populations, thus it is believed that the modified version will also be valid and reliable (Gerevich et al., 2007).

3.6 Data collection procedure

Data collection involved the completion of several measurement instruments in the form of a survey. The completion of the survey transpired during first-year, second-year and third- year Psychology lectures. Approximately 20-25 minutes was required for the completion of the survey.

3.7 Data analysis

The Statistical Package for the Social Sciences (SPSS) software was used for data analysis employing both descriptive and inferential statistics. Two-tailed Pearson's product-moment correlation coefficients will be used to examine relationships. Furthermore simple linear regression as well as hierarchical multiple regression models were used to assess the relationship between the different variables. Hierarchical multiple regression models were

used to examine the hypothesis that aggression-related alcohol expectancies moderate the relationship between alcohol consumption and alcohol-related aggression and multiple-regression models were further employed to test the hypothesis that exposure to community alcohol-related violence has an influence on the formation of aggression-related alcohol expectancies and subsequent alcohol-related violence. Independent t-tests and analyses of variance were used to determine whether significant differences existed between the groups in terms of alcohol consumption, aggression-related alcohol expectancies, exposure to community alcohol-related violence and alcohol-related aggression.

The ultimate aims of the study are to identify possible alternative domains for intervention to address alcohol-related aggression as well as to identify at risk individuals at which intervention may be focussed. The regression analyses will thus serve to identify significant predictors for alcohol-related aggression in order to determine whether the predictors may serve as domains for intervention. Furthermore the independent t-tests and analyses of variance will further serve in the identification of possible at risk individuals.

3.8 Ethical considerations

Participation in the study was entirely voluntary and was preceded by steps to ensure that participants gave their informed consent. These steps included the provision of a consent letter to potential participants which informed them of the nature of the study as well as the benefits and risks associated with the study. Participants were further informed that if they wish to withdraw from the study that they may do so at any point in time. Participants were also assured of confidentiality throughout the study as the questionnaires did not require their name to be entered at any stage.

Potential risks of the study included the potential re-experiencing of past traumatic episodes related to exposure to alcohol use and violence and subsequent negative feelings or emotions. To ensure that participants did experience any lingering effects the details for receiving counseling at the Student Counseling Centre were provided after the study.

Potential benefits included the knowledge gained by participants about their underlying beliefs related to alcohol use which may inform behaviour and assist participants in better understanding their own behaviours.

Results of the study were available if requested by the participants.

CHAPTER 4

ANALYSIS AND RESULTS

For the purpose of analysis this chapter will be presented in three sections, each addressing certain hypotheses inherent in the study. The first section will address hypotheses 1 to 3, using multiple regression models to determine if a significant positive relationship exists between alcohol-related aggression and aggression-related alcohol expectancies, with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression, and furthermore to determine if there is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as for racial groups. The second section will address hypotheses 4 and 5, utilizing regression models to determine if a significant positive relationship exists between aggression-related alcohol expectancies and exposure to community alcohol-related aggression and subsequently to determine if there is a difference in the relationship between aggression-related alcohol expectancies and exposure to community alcohol-related violence for males and females, heavy, non-heavy and no alcohol consumption groups, alcohol consumers and non-consumers as well as for racial groups. Finally the third section will centre on hypothesis 6, using independent t-tests and analysis of variance to determine whether there are significant differences between males and females, heavy and non-heavy alcohol consumption groups as well as racial groups for alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related violence.

4.1 Section 1

In this section hypothesis 1 to 3 will be examined using various hierarchical multiple regression models.

The relevant hypotheses and null hypotheses are as follows:

Hypothesis 1

H_0: There is no significant relationship between alcohol consumption and alcohol-related aggression.

H_1: A significant positive relationship exists between alcohol consumption and alcohol-related aggression.

Hypothesis 2

H_0: There is no significant relationship between alcohol-related aggression and aggression-related alcohol expectancies with aggression-related alcohol expectancies not moderating the relationship between alcohol consumption and alcohol-related aggression.

H_1: A significant positive relationship exists between alcohol-related aggression and aggression-related alcohol expectancies with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression.

Hypothesis 3

H_0: There is no difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as for racial groups.

H_1: There is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as for racial groups.

4.1.1 Analysis for entire sample

A hierarchical multiple regression model was used to test hypothesis 1 and 2 with alcohol consumption entered first as predictor variable, aggression-related alcohol expectancies entered second as predictor variable and alcohol-related aggression serving as criterion variable.

Table 8:

Correlation Matrix for Hierarchical Regression Model

		Alcohol-related aggression	Alcohol consumption	Aggression-related alcohol expectancies
Pearson Correlation	Alcohol-related aggression Alcohol consumption Aggression-related alcohol expectancies	1.000 .427 .557	.427 1.000 .340	.557 .340 1.000
Sig. (1-tailed)	Alcohol-related aggression Alcohol consumption Aggression-related alcohol expectancies	 **.000** **.000**	**.000** **.000**	**.000** **.000**
N	Alcohol-related aggression Alcohol consumption Aggression-related alcohol expectancies	219 219 219	219 219 219	219 219 219

From the correlation matrix presented in Table 8 it is clear that all the predictor variables are significantly ($p < .01$) positively correlated with the criterion variable, alcohol-related aggression. Aggression-related alcohol expectancies has the highest bivariate correlation, showing a significant strong positive correlation with alcohol-related aggression with $r = .557$, $p < .01$ (Table 8). Alcohol consumption also has a medium to strong significant correlation with alcohol-related aggression with $r = .427$, $p < .01$ (Table 8). The predictors are

also shown in Table 1 to be significantly positively correlated ($p < .01$) with each other. The sample size for the hierarchical regression model is 219 (Table 8) due to the fact that 43 participants out of the entire sample of 262 do not consume alcohol.

Table 9:

Model Summary for Alcohol Consumption Entered First as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor

			Change Statistics					
Model	R	R^2	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin Watson
1 (a)	.427	.182	.182	48.397	1	217	**.000**	
2 (b)	.612	.374	.192	66.297	1	216	**.000**	2.101

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

In the hierarchical regression model with alcohol consumption entered first as predictor variable alcohol consumption has a medium to large significant positive correlation with alcohol-related aggression (as previously shown in Table 8) and explains 18.2% ($R^2 = .182$) of the variance in alcohol-related aggression (Table 9). In the second step of the hierarchical regression, with aggression-related alcohol expectancies further entered as a predictor variable, alcohol consumption and aggression-related alcohol expectancies together have a strong positive multiple correlation with alcohol-related aggression with $R = .612$ (Table 9). The predictors together thus explain 37.4% ($R^2 = .374$) of the variance in alcohol-related aggression (Table 9). The model including both alcohol consumption and aggression-related alcohol expectancies thus explains 19.2% more of the variance in alcohol-related aggression.

The model including both alcohol consumption and aggression-related alcohol expectancies as predictors explains significantly more of the variance in alcohol-related aggression than the model only including alcohol consumption as predictor with F Change = 66.297, $p < .01$. The inclusion of aggression-related alcohol expectancies in the model thus significantly improves the prediction of alcohol-related violence and it can be concluded that aggression-related alcohol expectancies moderates the relationship between alcohol consumption and alcohol-related aggression.

Table 10:

ANOVA for Model with Alcohol Consumption Entered First as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor in Hierarchical Multiple Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
1(a) Regression	3329.009	1	3329.009	48.397	**.000**
Residual	14926.534	217	68.786		
Total	18255.543	218			
2(b) Regression	6834.500	2	3417.250	64.629	**.000**
Residual	11421.044	216	52.875		
Total	18255.543	218			

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Table 10 indicates that both the model including only alcohol consumption as predictor and the model containing alcohol consumption and aggression-related alcohol expectancies as predictors significantly predict alcohol-related aggression ($p < .01$). The second model utilizing both predictors however explains significantly more of the variance in alcohol-related aggression as indicated in the previous section.

Table 11:

Coefficients for Multiple Regression Model with Alcohol Consumption and Aggression-related Alcohol Expectancies as Predictors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
2(b)	Alcohol Consumption	.396	.084	.268	4.691	**.000**	.884	1.131
	Aggression-related alcohol expectancies	.669	.082	.466	8.142	**.000**	.884	1.131

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Table 11 indicates the parameters for the second model in the hierarchical multiple regression with alcohol consumption and aggression-related alcohol expectancies entered as predictor variables. From the standardized beta coefficients in the model it is clear that both alcohol consumption and aggression-related alcohol expectancies make significant contributions in the prediction of alcohol-related aggression with $\beta = .268$, $p < .01$ and $\beta = .466$, $p < .01$

respectively (Table 11). Aggression-related alcohol expectancies is shown to be the most important predictor with a higher standardized beta coefficient than alcohol consumption.

4.1.1.1 Evaluation of assumptions

With the hierarchical regression model proving significant on both counts it is important to briefly evaluate the model in terms of outliers and pertinent assumptions including multicollinearity and independence of error terms.

Table 12:

Casewise Diagnostics for the Model to Examine Outliers

Case Number	Std. Residual	Alcohol-related aggression	Predicted Value	Residual
203	4.659	63.000	29.121	33.879

Table 13:

Residual Statistics for Hierarchical Multiple Regression Model

	Minimum	Maximum	Mean	Std. Deviation	N
Cook's Distance	.000	.167	.006	.014	219

Table 12 indicates that one outlier exists within the data set for the criterion variable Alcohol-related aggression, namely case 203 with standardized residual 4.659 > 3. The outlier

however does not significantly influence the regression model as a whole. This is indicated by Cook's distance < 1 and a maximum value of .167 (Table 13).

No concern for multicollinearity exists despite significant positive correlations ($p < .01$) between the predictor variables with the tolerance statistics all > .1 and the variance inflation factor (VIF) statistics < 10 (Table 11).

No concern exists relating to the assumption of the independence of error terms. The Durbin-Watson statistic for the model < 3 and > 1 with Durbin-Watson = 2.101 (Table 16). The error terms can thus be considered to be independent.

The sample size is adequate with more than 20 observations per predictor variable (Hair et al., 2010).

From the analysis it thus becomes evident that there is a significant relationship between alcohol consumption and alcohol-related aggression and furthermore there is a significant relationship between aggression-related alcohol expectancies and alcohol related aggression with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression. The null hypotheses relating to hypothesis 1 as well as hypothesis 2 thus have to be rejected.

In order to examine hypothesis 3 similar hierarchical regression models will be utilized to determine whether the model described above holds equally well for the different groups in order to establish if there is a difference in the relationship between alcohol consumption,

aggression-related alcohol expectancies and alcohol-related aggression for males and females, heavy and non-heavy alcohol consumption groups as well as for racial groups.

4.1.2 Analysis for males and females

Similar to the analysis above hierarchical multiple regression models were used to test hypothesis 1 and 2 for males and females respectively in order to subsequently determine if there is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for males and females.

Table 14:

Correlation Matrix for Hierarchical Regression Model for Males and Females

Gender			Alcohol-related aggression	Alcohol consumption	Aggression-related alcohol expectancies
Male	Pearson Correlation	Alcohol-related aggression	1.000	.463	.644
		Alcohol consumption	.463	1.000	.308
		Aggression-related alcohol expectancies	.644	.308	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.000**	**.000**
		Alcohol consumption	**.000**		**.003**
		Aggression-related alcohol expectancies	**.000**	**.003**	
	N	Alcohol-related aggression	77	77	77
		Alcohol consumption	77	77	77
		Aggression-related alcohol expectancies	77	77	77
Female	Pearson Correlation	Alcohol-related aggression	1.000	.368	.495
		Alcohol consumption	.368	1.000	.337
		Aggression-related alcohol expectancies	.495	.337	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.000**	**.000**
		Alcohol consumption	**.000**		**.000**
		Aggression-related alcohol expectancies	**.000**	**.000**	
	N	Alcohol-related aggression	142	142	142
		Alcohol consumption	142	142	142
		Aggression-related alcohol expectancies	142	142	142

Table 14 indicates significant positive correlations ($p < .01$) between all the predictor variables and the criterion variable for both the male and female group. Aggression-related alcohol expectancies has the highest bivariate correlation, showing a significant strong positive correlation with alcohol-related aggression for both groups with $r = .644$, $p < .01$ and $r = 495$, $p < .01$ (Table 14) for the male and female group respectively. Alcohol consumption also has a medium to strong significant correlation with alcohol-related aggression for both groups with $r = .463$, $p < .01$ for the male group and $r = .368$, $p < .01$ for the female group (Table 14). The male group thus exhibits higher correlations for both alcohol consumption and aggression-related alcohol expectancies with the criterion variable, alcohol-related aggression.

Table 15:

Model Summary for Alcohol Consumption Entered First as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor for Males and Females

				Change Statistics					
Gender	Model	R	R^2	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin Watson
Male	1 (a)	.463	.214	.214	20.433	1	75	**.000**	
	2 (b)	.702	.492	.278	40.504	1	74	**.000**	2.331
Female	1 (a)	.368	.136	.136	21.997	1	140	**.000**	
	2 (b)	.539	.291	.155	30.349	1	139	**.000**	2.025

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

The hierarchical regression model with alcohol consumption entered first as predictor variable indicates a medium to strong significant positive correlation between alcohol consumption and alcohol-related aggression for both males and females (as discussed above). Alcohol consumption explains 21.4% ($R^2 = .214$) of the variance in alcohol-related aggression for the male group and 13.6% ($R^2 = .136$) of the variance in alcohol-related aggression for the female group (Table 15). In the second step of the hierarchical regression, with aggression-related alcohol expectancies further entered as a predictor variable, alcohol consumption and aggression-related alcohol expectancies together have a strong positive multiple correlation with alcohol-related aggression for both groups with $R = .702$ and $R = .539$ for the male and female groups respectively (Table 15). The predictors together thus explain 49.2% ($R^2 = .492$) of the variance in alcohol-related aggression for the male group and 29.1% ($R^2 = .291$) of the variance in alcohol-related aggression for the female group (Table 15). For the male group the addition of aggression-related alcohol expectancies thus improves the prediction of alcohol-related aggression with 27.8% (R^2 change = .278) whilst the addition of aggression-related alcohol expectancies improves the prediction of alcohol-related aggression with 15.5% (R^2 change = .155). The addition of aggression-related alcohol expectancies thus improves prediction in both groups explaining significantly more of the variance in alcohol-related aggression for both groups with the F Change statistics for both groups being significant ($p < .01$). Alcohol consumption and aggression-related expectancies predict alcohol-related aggression better for the male group though aggression-related alcohol expectancies moderate the relationship between alcohol consumption for both the male and female groups.

Table 16:

ANOVA for Model with Alcohol Consumption entered first as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor in Hierarchical Multiple Regression Model for Males and Females

Gender	Model	Sum of Squares	df	Mean Square	F	Sig.
Male	1(a) Regression	1482.495	1	1482.495	20.433	**.000**
	Residual	5441.505	75	72.553		
	Total	6924.000	76			
	2(b) Regression	3407.348	2	1703.674	35.850	**.000**
	Residual	3516.652	74	47.522		
	Total	6924.000	76			
Female	1(a) Regression	1471.211	1	1471.211	21.977	**.000**
	Residual	9363.380	140	66.881		
	Total	10834.592	141			
	2(b) Regression	3149.206	2	1574.603	28.479	**.000**
	Residual	7685.386	139	55.291		
	Total	10834.592	141			

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Both the model including only alcohol consumption as predictor and the model containing alcohol consumption and aggression-related alcohol expectancies as predictors significantly predict alcohol-related aggression for both groups with $p < .01$ (Table 16). Similar to the analysis in the previous section, examining the entire sample, the second model utilizing both

predictors explains significantly more of the variance in alcohol-related aggression for both males and females.

Table 17:

Coefficients for Multiple Regression Model with Alcohol Consumption and Aggression-related Alcohol Expectancies as Predictors for Males and Females

Gender	Model		Standardized Coefficients	t	Sig.	Collinearity Statistics	
			Beta			Tolerance	VIF
Male	2(b)	Alcohol Consumption	.292	3.355	**.000**	.905	1.105
		Aggression-related alcohol expectancies	.554	6.364	**.000**	.905	1.105
Female	2(b)	Alcohol Consumption	.228	3.003	**.000**	.887	1.128
		Aggression-related alcohol expectancies	.418	5.509	**.000**	.887	1.128

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

For both the male and female group alcohol consumption and aggression-related alcohol expectancies are significant predictors for alcohol-related aggression ($p < .01$). Furthermore aggression-related alcohol expectancies is the most important predictor for alcohol-related aggression for both males and females with $\beta = .554$ and $\beta = .418$ respectively (Table 17).

4.1.2.1 Evaluation of assumptions

The hierarchical regression model thus holds for both the male and female groups. In order to further evaluate the model a brief overview of outliers and important assumptions is required.

Table 18:

Casewise Diagnostics for the Model to Examine Outliers for Males and Females

Gender	Case Number	Std. Residual	Alcohol-related aggression	Predicted Value	Residual
Males	No outliers	-	-	-	-
Female	203	4.659	63.000	29.121	33.879

Table 19:

Residual Statistics for Hierarchical Multiple Regression Model for Females

Gender		Minimum	Maximum	Mean	Std. Deviation	N
Female	Cook's Distance	.000	.458	.011	.041	142

No outliers on the criterion variable exist within the data for the male group with only one outlier present within the female group namely case 203 with standardized residual 4.659 > 3 (the same case as in the initial analysis) (Table 18). The outlier has no significant effect on the model with Cook's distance < 1 with a maximum value of .102 (Table 19).

Multicollinearity is not a concern despite the significant positive correlations ($p < .01$) between the predictor variables (Table 14) with the tolerance statistics all > .1 and the variance inflation factor (VIF) statistics < 10 (Table 17). In addition no concern exists relating to the assumption of the independence of error terms. The Durbin-Watson statistic for the models are < 3 and > 1 for both groups (Table 15). The error terms can thus be considered to be independent for both the male and female group.

The sample size is adequate with more than 20 observations per predictor variable for the male as well as for the female group (Hair et al., 2010).

The analysis thus indicates that there is a significant relationship between alcohol consumption and alcohol-related aggression for both males and females. Furthermore the analysis shows that there is a significant relationship between aggression-related alcohol expectancies and alcohol related aggression with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression. The null hypotheses relating to hypothesis 1 as well as hypothesis 2 thus have to be rejected for both males and females. In light of the above it can be concluded that although the regression model explains different amounts of variance in alcohol-related aggression for the male and female group, the fact that the model is significant for both indicates that there is no significant difference between the groups concerning the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression and thus the null hypothesis related to hypothesis 3 cannot be rejected.

4.1.3 Analysis for heavy and non-heavy alcohol consumption groups

Further hierarchical multiple regression models were used to also test hypothesis 1 and 2 for heavy and non-heavy alcohol consumption groups respectively in order to subsequently determine if there is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for heavy and non-heavy alcohol consumption groups.

Table 20:

Correlation Matrix for Hierarchical Regression Model for Heavy and Non-heavy Consumption Groups

Alcohol consumption -level			Alcohol-related aggression	Alcohol consumption	Aggression-related alcohol expectancies
Heavy	Pearson Correlation	Alcohol-related aggression	1.000	.464	.656
		Alcohol consumption	.464	1.000	.397
		Aggression-related alcohol expectancies	.656	.397	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.000**	**.000**
		Alcohol consumption	**.000**		**.000**
		Aggression-related alcohol expectancies	**.000**	**.000**	
	N	Alcohol-related aggression	103	103	103
		Alcohol consumption	103	103	103
		Aggression-related alcohol expectancies	103	103	103
Non-heavy	Pearson Correlation	Alcohol-related aggression	1.000	.205	.383
		Alcohol consumption	.205	1.000	.057
		Aggression-related alcohol expectancies	.383	.057	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.014**	**.000**
		Alcohol consumption	**.014**		**.272**
		Aggression-related alcohol expectancies	**.000**	**.272**	
	N	Alcohol-related aggression	116	116	116
		Alcohol consumption	116	116	116
		Aggression-related alcohol expectancies	116	116	116

There are significant positive correlations ($p < .01$) between both predictor variables and the criterion variable for the heavy consumption group as well as the non-heavy consumption group (Table 20). Aggression-related alcohol expectancies once again has the highest bivariate correlation with alcohol-related aggression for both groups. The heavy consumption group shows a significant strong correlation with $r = 656$, $p < .01$ between aggression-related alcohol expectancies and alcohol-related aggression while the non-heavy consumption group shows a significant medium to strong positive correlation with $r = .383$, $p < .01$ (Table 20). Alcohol consumption also has a strong significant correlation with alcohol-related aggression for both groups with $r = .464$, $p < .01$ for the heavy consumption group and $r = .205$, $p < .05$ for the non-heavy consumption group (Table 20). The heavy consumption group thus has higher bivariate correlations for aggression-related alcohol expectancies and alcohol consumption with alcohol-related aggression. The correlation between alcohol consumption and alcohol-related aggression is only significant at the .05 level for the non-heavy consumption group, in contrast with significance at the .01 level in previous analyses.

Table 21:

Model Summary for Alcohol Consumption Entered First as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor for Heavy and Non-heavy Consumption Groups

				Change Statistics					
Level	Model	R	R^2	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin Watson
Heavy	1 (a)	.464	.215	.215	27.693	1	101	**.000**	
	2 (b)	.692	.479	.264	50.713	1	100	**.000**	2.090
Non-heavy	1 (a)	.205	.042	.042	5.015	1	114	**.027**	
	2 (b)	.425	.181	.139	19.125	1	113	**.000**	2.129

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Table 21 indicates a significant medium to strong positive correlation ($p < .05$) between alcohol consumption and alcohol-related aggression for both groups. Alcohol consumption explains 21.5% ($R^2 = .215$) of the variance in alcohol-related aggression for the heavy consumption group and only 4.2% ($R^2 = .042$) of the variance in alcohol-related aggression for the non-heavy consumption group (Table 21). The second step of the hierarchical regression, with aggression-related alcohol expectancies further entered as a predictor variable, indicates that alcohol consumption and aggression-related alcohol expectancies together has a strong positive multiple correlation with alcohol-related aggression for the heavy consumption group with $R = .656$ and a medium to strong multiple correlation for the non-heavy consumption group with $R = .425$ (Table 21). 47.9% ($R^2 = .479$) of the variance in alcohol-related aggression is explained by the predictors together for the heavy consumption

group and 18.1% ($R^2 = .181$) of the variance in alcohol-related aggression for the non-heavy consumption group (Table 21). The addition of aggression-related alcohol expectancies improves prediction of alcohol-related aggression with 26.4% (R^2 change = .264) for the heavy consumption group and with 13.9% (R^2 change = .139) for the non-heavy consumption group (Table 21). The addition of aggression-related alcohol expectancies thus explains significantly more of the variance in alcohol-related aggression for both groups with the F Change statistics for both groups being significant ($p < .01$). Alcohol-related aggression is predicted better by alcohol consumption and aggression-related alcohol expectancies in the heavy consumption group with 29.8% more of the variance in alcohol-related aggression explained by the predictors in this group than in the non-heavy consumption group.

Table 22:

ANOVA for Model with Alcohol Consumption entered first as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor in Hierarchical Multiple Regression Model for Heavy and Non-heavy Consumption Groups

Level	Model	Sum of Squares	df	Mean Square	F	Sig.
Heavy	1(a) Regression	2049.299	1	2049.299	27.693	**.000**
	Residual	7474.041	101	74.000		
	Total	9523.340	102			
	2(b) Regression	4564.222	2	2282.111	46.018	**.000**
	Residual	4959.118	100	49.591		
	Total	9523.340	102			
Non-heavy	1(a) Regression	317.431	1	317.431	5.015	**.027**
	Residual	7216.319	114	63.301		
	Total	7533.750	115			
	2(b) Regression	1362.000	2	681.000	12.469	**.000**
	Residual	6171.750	113	54.617		
	Total	7533.750	115			

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Both models significantly predict alcohol-related aggression for both groups with $p < .05$ (Table 22). For the non-heavy consumption group the model with only alcohol consumption as predictor is only significant at the .05 level. The second model utilizing both predictors explains significantly more of the variance in alcohol-related aggression for both groups.

Table 23:

Coefficients for Multiple Regression Model with Alcohol Consumption and Aggression-related Alcohol Expectancies as Predictors for Heavy and Non-heavy Consumption Groups

Level	Model		Standardized Coefficients	t	Sig.	Collinearity Statistics	
			Beta			Tolerance	VIF
Heavy	2(b)	Alcohol Consumption	.242	3.072	**.003**	.842	1.187
		Aggression-related alcohol expectancies	.560	7.121	**.000**	.842	1.187
Non-heavy	2(b)	Alcohol Consumption	.184	2.158	**.033**	.997	1.003
		Aggression-related alcohol expectancies	.373	4.373	**.000**	.997	1.003

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Aggression-related alcohol expectancies and alcohol consumption are significant predictors for alcohol-related aggression in both groups with aggression-related alcohol expectancies being the most important predictor with $\beta = .560$ and $\beta = .373$ for the heavy and non-heavy consumption groups respectively (Table 23).

4.1.3.1 Evaluation of assumptions

Next the assumptions pertaining to the model will be briefly evaluated looking at outliers, multicollinearity and the independence of error terms.

Table 24:

Casewise Diagnostics for the Model to Examine Outliers for Heavy and Non-heavy Consumption Groups

Level	Case Number	Std. Residual	Alcohol-related aggression	Predicted Value	Residual
Heavy	44	3.051	51.00	29.511	21.489
Non-heavy	195	4.552	63.000	29.358	33.642

Table 25:

Residual Statistics for Hierarchical Multiple Regression Model for Heavy and Non-heavy Consumption Groups

Level		Minimum	Maximum	Mean	Std. Deviation	N
Heavy	Cook's Distance	.000	.220	.011	.025	103
Non-heavy	Cook's Distance	.000	.085	.010	.018	116

Table 24 indicates one outlier within each group with standardized residual 3.051 and 4.552 > 3 for the heavy and non-heavy consumption groups respectively. Cook's distance < 1 with

a maximum value of .220 and .085 for the heavy consumption and non-heavy consumption groups respectively (Table 25).

No multicollinearity concerns exist with the tolerance statistics all > .1 and the variance inflation factor (VIF) statistics < 10 (Table 23). Furthermore there is no concern regarding the assumption of the independence of error terms. The Durbin-Watson statistic for the models are < 3 and > 1 for both groups (Table 21). The error terms can thus be considered to be independent for both the male and female group.

The sample size is adequate with more than 20 observations per predictor variable for the heavy consumption as well as the non-heavy consumption (Hair et al., 2010).

From the analysis it can be concluded that there is a significant relationship between alcohol consumption and alcohol-related aggression for the heavy consumption as well as the non-heavy consumption groups. There is also a significant relationship between aggression-related alcohol expectancies and alcohol related aggression with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression in both groups. The null hypotheses relating to hypothesis 1 as well as hypothesis 2 thus have to be rejected for both groups. Although the heavy consumption group shows a stronger relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression, the model, utilizing both predictors, is significant for both groups and thus it can be concluded that no significant difference exists between the groups concerning this relationship and consequently the null hypothesis related to hypothesis 3 cannot be rejected.

4.1.4 Analysis for racial groups

Hierarchical multiple regression was again utilized to test hypothesis 1 and 2 for the different racial groups and to further determine if there is a difference in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression for the different racial groups. Due to the small size of the White, Asian and Other racial groups, with a ratio of less than 5:1 for observations per predictor variable (Hair et al., 2010), only the African and Coloured groups will be considered in this analysis.

Table 26:

Correlation Matrix for Hierarchical Regression Model for Racial Groups

Race			Alcohol-related aggression	Alcohol consumption	Aggression-related alcohol expectancies
African	Pearson Correlation	Alcohol-related aggression	1.000	.634	.786
		Alcohol consumption	.634	1.000	.606
		Aggression-related alcohol expectancies	.786	.606	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.000**	**.000**
		Alcohol consumption	**.000**		**.000**
		Aggression-related alcohol expectancies	**.000**	**.000**	
	N	Alcohol-related aggression	51	51	51
		Alcohol consumption	51	51	51
		Aggression-related alcohol expectancies	51	51	51
Coloured	Pearson Correlation	Alcohol-related aggression	1.000	.285	.463
		Alcohol consumption	.285	1.000	.228
		Aggression-related alcohol expectancies	.463	.228	1.000
	Sig. (1-tailed)	Alcohol-related aggression		**.000**	**.000**
		Alcohol consumption	**.000**		**.002**
		Aggression-related alcohol expectancies	**.000**	**.002**	
	N	Alcohol-related aggression	156	156	156
		Alcohol consumption	156	156	156
		Aggression-related alcohol expectancies	156	156	156

The predictor variables are significantly correlated ($p < .01$) with the criterion variable for both the African and Coloured group (Table 26). Aggression-related alcohol expectancies has a significant strong positive correlation with alcohol-related aggression for the African group with $r = .786$, $p < .01$ and a medium to strong significant positive correlation for the Coloured group with $r = 463$, $p < .01$ (Table 26). For both groups aggression-related alcohol expectancies has the highest bivariate correlation with alcohol-related aggression. Furthermore alcohol consumption also has a strong significant positive correlation with alcohol-related aggression for the African group with $r = .638$, $p < .01$ and a significant medium positive correlation for the Coloured group with $r = .285$, $p < .01$ (Table 26). The African group shows higher bivariate correlations between both predictors and the criterion.

Table 27:

Model Summary for Alcohol Consumption Entered First as Predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor for Racial Groups

				Change Statistics					
Race	Model	R	R^2	R^2 Change	F Change	df1	df2	Sig. F Change	Durbin Watson
African	1 (a)	.634	.402	.402	32.971	1	49	**.000**	
	2 (b)	.811	.657	.255	35.673	1	48	**.000**	2.455
Coloured	1 (a)	.285	.081	.081	13.635	1	154	**.000**	
	2 (b)	.498	.248	.167	34.008	1	153	**.000**	2.223

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

The first step in the hierarchical regression, with only alcohol consumption as predictor, indicates that alcohol consumption significantly predicts alcohol-related aggression for both groups ($p < .01$), predicting 40.2% ($R^2 = .402$) of the variance in alcohol-related aggression for the African group and 8,1% ($R^2 = .081$) of the variance in alcohol-related aggression for the Coloured group (Table 27). The addition of aggression-related alcohol expectancies in the second step of the hierarchical regression model indicates that alcohol consumption together with aggression-related alcohol expectancies has a strong positive multiple correlation with alcohol-related aggression for both groups with $R = .811$ for the African group and $R = .498$ for the Coloured group (Table 27). For the African group the model utilizing both predictors thus explains 65.7% ($R^2 = .657$) of the variance in alcohol-related aggression for the African group and 24.8% ($R^2 = .248$) of the variance in alcohol-related aggression for the Coloured group (Table 27). Aggression-related alcohol expectancies thus improves prediction with 25.5% (R^2 change = .255) for the African group and with 16.7% (R^2 change = .167) for the Coloured group (Table 27).The inclusion of aggression-related alcohol expectancies in the model thus explains significantly more of the variance in alcohol-related aggression for both groups with the F Change statistics for both groups being significant ($p < .01$). 40.9% more variance is thus explained by the model utilizing both predictors in alcohol-related aggression for the African group than for the Coloured group.

Table 28:

ANOVA for Model with Alcohol Consumption entered first as predictor and Aggression-related Alcohol Expectancies Entered Second as Predictor in Hierarchical Multiple Regression Model for Racial Groups

Race	Model	Sum of Squares	df	Mean Square	F	Sig.
African	1(a) Regression	2690.172	1	2690.172	32.971	**.000**
	Residual	3997.985	49	81.592		
	Total	6688.157	50			
	2(b) Regression	4394.675	2	2197.328	45.987	**.000**
	Residual	2293.500	48	47.781		
	Total	6688.157	50			
Coloured	1(a) Regression	875.873	1	875.873	13.635	**.000**
	Residual	9892.608	154	64.238		
	Total	10768.481	155			
	2(b) Regression	2674.874	2	1337.437	25.283	**.000**
	Residual	8093.607	153	52.899		
	Total	10768.481	155			

a Predictor: Alcohol consumption

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Alcohol-related aggression is significantly predicted ($p < .01$) by both models for the African group as well as for the Coloured group (Table 28). The second model utilizing both predictors significantly predicts more variance in alcohol-related aggression for both groups.

Table 29:

Coefficients for Multiple Regression Model with Alcohol Consumption and Aggression-related Alcohol Expectancies as Predictors for Racial Groups

Race	Model		Standardized Coefficients	t	Sig.	Collinearity Statistics	
			Beta			Tolerance	VIF
African	2(b)	Alcohol Consumption	.250	2.353	**.023**	.633	1.579
		Aggression-related alcohol expectancies	.634	5.973	**.000**	.633	1.579
Coloured	2(b)	Alcohol Consumption	.189	2.630	**.009**	.948	1.055
		Aggression-related alcohol expectancies	.420	5.832	**.000**	.948	1.055

b Predictors: Alcohol consumption, Aggression-related alcohol expectancies

Aggression-related alcohol expectancies and alcohol consumption are significant predictors for alcohol-related aggression in both groups ($p < .05$). Aggression-related alcohol expectancies is the most important predictor with $\beta = .634$ and $\beta = .420$ for the African and Coloured groups respectively (Table 29).

4.1.4.1 Evaluation of assumptions

With the regression models all found to be significant it is important to also further evaluate the models by examining the pertinent assumptions associated with the multiple regression analysis.

Table 30:

Casewise Diagnostics for the Model to Examine Outliers for Racial Groups

Race	Case Number	Std. Residual	Alcohol-related aggression	Predicted Value	Residual
African	No outliers	-	-	-	-
Coloured	215	4.619	63.000	29.407	33.592

Table 31:

Residual Statistics for Hierarchical Multiple Regression Model for Racial Groups

Race		Minimum	Maximum	Mean	Std. Deviation	N
Coloured	Cook's Distance	.000	.108	.007	.015	156

Table 30 indicates one outlier within the Coloured group with standardized residual 4.619 > 3. Cook's distance is < 1 with a maximum value of .220 (Table 31). The outlier thus has no significant effect on the model.

The tolerance statistics are all > .1 and the variance inflation factor (VIF) statistics are all < 10 (Table 29). No concern thus exists for multicollinearity. Furthermore the assumption of the independence of error terms is tenable. The Durbin-Watson statistic for the models are < 3 and > 1 for both groups (Table 27). The error terms can thus be considered to be independent for both the male and female group.

The sample size is adequate for the African and Coloured group with more than 20 observations per predictor variable with the White, Asian and Other groups excluded from the analysis due to group sizes which are too small (Hair et al., 2010).

The analysis thus indicates significant relationships between alcohol consumption and alcohol-related aggression for the African as well as Coloured groups. Furthermore there is also a significant relationship between aggression-related alcohol expectancies and alcohol related aggression, with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression, in both groups. The null hypotheses relating to hypothesis 1 as well as hypothesis 2 thus have to be rejected for both groups.

From the analysis it is evident that alcohol-related aggression is predicted to a greater degree by the model utilizing both predictors for the African group although the model is also significant for the Coloured group. With the model being significant for both groups it can be concluded that no significant difference exists between the groups concerning the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression and consequently the null hypothesis related to hypothesis 3 cannot be rejected.

4.1.5 Summary of results

In summary the analyses indicated a significant positive relationship between alcohol consumption and alcohol-related aggression for the entire sample as well as for the different groups. Furthermore alcohol consumption and aggression-related alcohol expectancies significantly predict alcohol-related aggression for the entire sample as well as for all the groups, with aggression-related alcohol expectancies moderating the relationship between alcohol consumption and alcohol-related aggression. In this regard the model utilizing both alcohol consumption and aggression-related alcohol expectancies as predictors explained the most variance in alcohol-related aggression firstly for the African group (65.7%), secondly for the male group (49.2%), thirdly for the Heavy consumption group (47.9%), fourthly for the female group (29.1%), fifthly for the Coloured group (24.8%) and finally for the Non-heavy consumption group (18.1%). Within the model aggression-related alcohol expectancies was the most important predictor in the entire sample as well as in all the groups although alcohol consumption was also a significant predictor in every instance.

The null hypotheses related to hypothesis 1 and 2 can thus be rejected in all the above analyses with a significant relationship being found between alcohol consumption and alcohol-related aggression. Furthermore the null hypothesis related to hypothesis 3 cannot be rejected with no difference being found in the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression with the model utilizing both alcohol consumption and aggression-related alcohol expectancies as predictors significantly predicting alcohol-related aggression for all the groups.

4.2 Section 2

In this section hypothesis 4 and 5 will be examined using linear regression models.

The relevant hypotheses are as follows:

Hypothesis 4

H_0: There is no significant relationship between aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

H_1: A significant positive relationship exists between aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

Hypothesis 5

H_0: There is no difference in the relationship between aggression-related alcohol expectancies and exposure to community alcohol-related violence for males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as for racial groups.

H_1: There is a difference in the relationship between aggression-related alcohol expectancies and exposure to community alcohol-related violence for males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as for racial groups.

4.2.1 Analysis for entire sample

A linear regression model was utilized to examine hypothesis 4 for the entire sample with exposure to community alcohol-related violence entered as predictor variable and aggression-related alcohol expectancies entered as criterion variable.

Table 32:

Model Summary for Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion

Model	R	R^2	Durbin-Watson
1(a)	.119	.014	1.663

a Predictor: Exposure to community alcohol-related aggression

Table 32 indicates a small positive correlation between exposure to community alcohol-related aggression and aggression-related alcohol expectancies with R = .119. 1.4% (R^2 = .014) of the variance in aggression-related alcohol expectancies is thus explained by exposure to community alcohol-related aggression (Table 32).

Table 33:

ANOVA for Model with Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion

Model	Sum of Squares	df	Mean Square	F	Sig.
1(a) Regression	169.342	1	169.342	3.747	**.054**
Residual	11750.613	260	45.195		
Total	11919.954	261			

a Predictor: Exposure to community alcohol-related aggression

The model is non-significant with $F(1, 260) = 3.737$, $p = .054$ (Table 33). Exposure to community alcohol-related aggression thus does not significantly predict aggression-related alcohol expectancies.

4.2.1.1 Evaluation of assumptions

No outliers were found within the data and the assumption of independence of error terms is tenable with the Durbin-Watson statistic < 3 and > 1 (Table 32). The analyses in section 3.1 indicate that sample size is not a concern.

From the analysis it is clear that exposure to community alcohol-related aggression does not significantly predict aggression-related alcohol expectancies and the null hypothesis related to hypothesis 4 can thus not be rejected.

4.2.2 Analysis for males and females

Linear regression models were employed to examine hypothesis 4 for males and females as well as to test hypothesis 5 by examining whether a difference exist between males and females in terms of the relationship between exposure to community alcohol-related aggression and aggression-related alcohol expectancies.

Table 34:

Model Summary for Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for Males and Females

Gender	Model	R	R^2	Durbin-Watson
Male	1(a)	.075	.006	1.686
Female	1(a)	.138	.013	1.679

a Predictor: Exposure to community alcohol-related aggression

Table 34 indicates a small positive correlation between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for both groups with R = .075 and R = .138 for males and females respectively. Exposure to community alcohol-related aggression explains only .6% (R^2 = .006) of the variance in aggression-related alcohol expectancies for males and 1.3% (R^2 = 0.13) of the variance in aggression-related alcohol expectancies for females (Table 34).

Table 35:

ANOVA for Model with Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for Males and Females

Gender	Model	Sum of Squares	df	Mean Square	F	Sig.
Male	1(a) Regression	18.601	1	18.601	.471	**.494**
	Residual	3277.351	83	39.486		
	Total	3295.953	84			
Female	1(a) Regression	164.395	1	164.395	3.404	**.067**
	Residual	8450.667	175	48.290		
	Total	8615.062	176			

a Predictor: Exposure to community alcohol-related aggression

Table 35 indicates that the model is non-significant for both groups with $F(1, 83) = .471$, $p = .494$ and $F(1, 175) = 3.404$, $p = .067$ for males and females respectively. Although exposure to community alcohol-related aggression seems to predict aggression-related alcohol expectancies better in the female group the model thus not significantly predict aggression-related alcohol expectancies significantly for either group.

4.2.2.1 Evaluation of assumptions

Table 36:

Casewise Diagnostics for the Model to Examine Outliers for Males and Females

Gender	Case	Std. Residual	Aggression-related alcohol expectancies	Residual
Male	43	3.136	35.000	19.704

Table 37:

Residual Statistics for Hierarchical Multiple Regression Model for Males

Gender		Minimum	Maximum	Mean	Std. Deviation	N
Male	Cook's Distance	.000	.088	.012	.017	85

One outlier exists within the data for the male group with standardized residual 3.136 > 3 (Table 36). The outlier does not have a significant effect on the model with Cook's distance < 1 and a maximum of .088 (Table 37). Furthermore no concern exists concerning the assumption of the independence of error terms with the Durbin-Watson statistic < 3 (Table 34). From the analyses in section 3.1 it is also clear that sample size is not a concern with 20 observations per predictor.

Exposure to community alcohol-related aggression does not significantly predict aggression-related alcohol expectancies for males or females and the null hypothesis related to hypothesis 4 can thus not be rejected. Furthermore the null hypothesis related to hypothesis 5 can also not be rejected as there is no difference in the relationship between exposure to

community alcohol-related aggression and aggression-related alcohol expectancies for the groups with exposure to community alcohol-related aggression not significantly predicting aggression-related alcohol expectancies for either group.

4.2.3 Analysis for heavy, non-heavy and no alcohol consumption groups

Linear regression models were further used to test hypothesis 4 for heavy, non-heavy and no alcohol consumption groups as well as hypothesis 5 for these groups to determine if there is a difference in the relationship between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for heavy, non-heavy and no alcohol consumption groups.

Table 38:

Model Summary for Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for Heavy, Non-heavy and No Consumption Groups

Level	Model	R	R^2	Durbin-Watson
Heavy	1(a)	.103	.011	1.753
Non-heavy	1(a)	.027	.001	1.849
No consumption	1(a)	.232	.054	1.722

a Predictor: Exposure to community alcohol-related aggression

The heavy and non-heavy alcohol consumption groups both show a small positive correlation between exposure to community alcohol-related aggression and aggression-related alcohol expectancies with R = .103 and R = .027 respectively (Table 38). The no consumption group shows a small to medium positive correlation between these variables with R = .232 (Table

38). 1.1% (R^2 = .011) of the variance in aggression-related alcohol expectancies for the heavy consumption group is explained by exposure to community alcohol-related aggression, .1% (R^2 = .001) of the variance in aggression-related alcohol expectancies for the non-heavy consumption group is explained by exposure to community alcohol-related aggression and 5.4% (R^2 = .054) of the variance in aggression-related alcohol expectancies is explained by exposure to community alcohol-related aggression (Table 38).

Table 39:

ANOVA for Model with Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for Heavy, Non-heavy and No Consumption Groups

Level	Model	Sum of Squares	df	Mean Square	F	Sig.
Heavy	1(a) Regression	48.441	1	48.441	1.084	**.300**
	Residual	4515.306	101	44.706		
	Total	4563.748	102			
Non-heavy	1(a) Regression	2.797	1	2.797	.082	**.775**
	Residual	3891.754	114	34.138		
	Total	3894.552	115			
No consumption	1(a) Regression	136.823	1	136.823	2.327	**.135**
	Residual	2410.805	41	58.800		
	Total	2547.628	42			

a Predictor: Exposure to community alcohol-related aggression

The linear model is non-significant for all the groups with $F(1, 101) = 1.084$, $p = .300$ for the heavy consumption group, $F(1, 114) = .082$, $p = .775$ for the non-heavy consumption group and $F(1, 41)$, $p = .135$ for the no consumption group (Table 39).

4.2.3.1 Evaluation of assumptions

No outliers were found in the data for any of the groups. There is also no concern relating to the assumption of independence of error terms as the Durbin-Watson statistic is < 3 and > 1 for all the groups (Table 38). From the analyses in section 3.1 it is also clear that sample size is not a concern with 20 observations per predictor.

The null hypothesis relating to hypothesis 4 thus cannot be rejected for all three groups with exposure to community alcohol-related aggression not significantly predicting aggression-related alcohol expectancies for any of the groups. Following from this the null hypothesis related to hypothesis 5 can also not be rejected as the model is non-significant for all the groups, indicating no difference in the relationship between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for the groups, despite the fact that exposure to community alcohol-related aggression predicts more variance in aggression-related alcohol expectancies for the no consumption group in comparison with the heavy and non-heavy consumption groups.

4.2.4 Analysis for racial groups

As in the previous analyses linear regression models were used to test hypotheses 4 and 5 for the different racial groups. White, Asian and Other racial groups were once again omitted from the analysis, due to the small predictor to participant ratio and the omission of these

groups from the previous analyses. Only the African and Coloured groups are thus again considered in this analysis.

Table 40:

Model Summary for Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for African and Coloured Groups

Race	Model	R	R^2	Durbin-Watson
African	1(a)	.197	.039	1.412
Coloured	1(a)	.095	.009	1.822

a Predictor: Exposure to community alcohol-related aggression

Table 40 indicates a small to medium positive correlation between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for the African group with R = .197 and a small positive correlation between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for the Coloured group with R = .095. For the African group exposure to community alcohol-related aggression explains 3.9% (R^2 = .039) in aggression-related alcohol expectancies whilst exposure to community alcohol-related aggression explains .9% (R^2 = .009) of the variance in aggression-related alcohol expectancies for the Coloured group (Table 40).

Table 41:

ANOVA for Model with Exposure to Community Alcohol-related Aggression as Predictor and Aggression-related Alcohol Expectancies as Criterion for African and Coloured Groups

Race	Model	Sum of Squares	df	Mean Square	F	Sig.
African	1(a) Regression	149.474	1	149.474	2.738	**.103**
	Residual	3712.012	68	54.588		
	Total	3861.486	69			
Coloured	1(a) Regression	64.211	1	64.211	1.611	**.206**
	Residual	7057.018	177	39.870		
	Total	7121.229	178			

a Predictor: Exposure to community alcohol-related aggression

From Table 41 it is clear that exposure to community alcohol-related aggression does not significantly predict aggression-related alcohol expectancies for either group with $F(1, 68) = 2.738$, $p = .103$ for the African group and $F(1, 177) = 1.611$, $p = .206$ for the Coloured group.

4.2.4.1 Evaluation of assumptions

Table 42:

Casewise Diagnostics for the Model to Examine Outliers for African and Coloured Groups

Race	Case	Std. Residual	Aggression-related alcohol expectancies	Residual
Coloured	97	3.177	35.00	20.061

Table 43:

Residual Statistics for Hierarchical Multiple Regression Model for Coloured Group

Race		Minimum	Maximum	Mean	Std. Deviation	N
Coloued	Cook's Distance	.000	.059	.006	.008	179

One outlier, case 97, exists within the data for the Coloured group with standardized residual 3.177 > 3 (Table 42). The outlier has no significant effect on the model with Cook's distance < 1 with a maximum of .059 (Table 43). Furthermore independence of error terms is tenable with the Durbin-Watson statistic < 3 and > 1 for both groups.

Similarly to the analysis in section 3.1 examining racial groups the sample size is adequate for the African and Coloured group with more than 15 observations per predictor variable

with the White, Asian and Other groups excluded from the analysis due to group sizes which are too small (Hair et al., 2010).

Exposure to community alcohol-related aggression does not significantly predict aggression-related alcohol expectancies for the African or Coloured group and the null hypothesis related to hypothesis 4 can thus not be rejected. The null hypothesis related to hypothesis 5 can subsequently also not be rejected as there is no difference in the relationship between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for the groups with exposure to community alcohol-related aggression not significantly predicting aggression-related alcohol expectancies for either group.

3.2.5 Summary of results

From the analyses it can be conclude that exposure to community alcohol-related aggression does not significantly predict aggression-related alcohol expectancies for any of the groups. Subsequently it can also be concluded that there is no difference in the relationship between exposure to community alcohol-related aggression and aggression-related alcohol expectancies for any of the groups as all the linear models were found to be non-significant.

4.3 Section 3

In this section hypothesis 6 will be examined using independent samples t-tests as well as analysis of variance (ANOVA).

The relevant hypotheses are as follows:

Hypothesis 6

H_0: There are no significant differences between males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as racial groups for alcohol consumption, alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

H_1: There are significant differences between males and females, heavy and non-heavy alcohol consumption groups, alcohol consumers and non-consumers as well as racial groups for alcohol consumption, alcohol-related aggression, aggression-related alcohol expectancies and exposure to community alcohol-related aggression.

4.3.1 Comparisons on alcohol consumption

T-tests were used to compare the various groups on alcohol consumption to determine if any significant differences exist between the groups and also to determine if any group shows a significantly higher consumption. The heavy, non-heavy and no alcohol consumption groups were omitted from the analysis as consumption is inherent in the delineation of the groups.

Table 44:

Comparison of Males and Females on Alcohol Consumption

Gender	N	Mean	Std. Dev	Mean difference	t	Sig.
Male	77	10.519	6.265	3.125	3.656	**.000**
Female	142	7.394	5.914			

Table 44 indicates that males (M = 10.159) obtained a higher score than females (M = 7.394) on alcohol consumption with a mean difference of 3.656. The difference between the groups is significant ($p < .01$) with males thus having a significantly higher level of alcohol consumption than females.

Table 45:

Comparison of African and Coloured Groups on Alcohol Consumption

Race	N	Mean	Std. Dev	Mean difference	t	Sig.
African	51	10.078	7.194	1.950	1.760	**.083**
Coloured	156	8.128	5.756			

The African group (M = 10.078) scored slightly higher on alcohol consumption than the Coloured group (M = 8.125) with a mean difference of 1.950 (Table 45). The difference between the groups however is non-significant with $p = .083$ (Table 45). There is thus no significant mean difference between the groups in terms of alcohol consumption.

4.3.2 Comparisons on alcohol-related aggression

Firstly a Pearson product-moment correlation coefficient was used to describe alcohol-related aggression in terms of physical alcohol-related aggression and verbal alcohol-related aggression. Further t-tests were used to compare the groups on alcohol-related aggression to determine if significant differences exist between the groups. Groups were also compared on physical alcohol-related aggression and verbal alcohol-related to see whether significant differences exist between the groups in terms of the type of alcohol-related aggression

perpetrated. The no alcohol consumption group was omitted from the analysis as they do not have scores on alcohol-related aggression.

Table 46:

Pearson Correlation between Physical and Verbal Alcohol-related Aggression

Correlation coefficient	Sig.	N
.503	**.000**	219

Table 46 indicates that there is a significant strong positive bivariate correlation ($p < .01$) between physical and verbal alcohol-related aggression. Alcohol-related regression thus consists of both a physical and verbal aggression component.

Table 47:

Comparison of Males and Females on Alcohol-related Aggression

Gender	N	Mean	Std. Dev	Mean difference	t	Sig.
Male	77	33.000	9.545			
Female	142	29.845	8.766	3.155	2.464	**.015**

Table 47 indicates that males (M = 33.000) scored higher on alcohol-related aggression than females (29.845) with a mean difference of 3.155. The mean difference between the groups is significant ($p < .05$) with males thus exhibiting more aggression following alcohol consumption (Table 47).

Table 48:

Pearson Correlation between Physical and Verbal Alcohol-related Aggression for Males and Females

Gender	Correlation coefficient	Sig.	N
Male	.524	**.000**	85
Females	.486	**.000**	177

For both males and females there is a significant strong positive bivariate correlation ($p < .01$) between physical and verbal alcohol-related aggression (Table 48). Alcohol-related aggression for both gender groups thus consists of a physical and verbal aggression component.

Table 49:

Comparison of Males and Females on Physical and Verbal Alcohol-related Aggression

Type	Gender	N	Mean	Std. Dev	Mean difference	t	Sig.
Physical	Male	77	18.507	5.644			
	Female	142	16.035	5.059	2.471	3.313	**.001**
Verbal	Male	77	14.636	5.472	.784	1.055	**.292**
	Female	142	13.852	5.127			

Males (18.507) have a significantly higher mean score ($p < .01$) for physical alcohol-related aggression than females (16.035) with no significant difference ($p = .292$) between the groups

in terms of verbal alcohol-related aggression (Table 49). Males thus exhibit higher levels of physical alcohol-related aggression than females following alcohol consumption.

Table 50:

Comparison of Heavy and Non-Heavy Consumption Groups on Alcohol-related Aggression

Level	N	Mean	Std. Dev	Mean difference	t	Sig.
Heavy	103	33.437	9.663	4.687	3.905	**.000**
Non-heavy	116	28.750	8.094			

The heavy consumption group (M = 33.437) scored significantly higher (p < .01) on alcohol-related aggression than the non-heavy consumption group (M = 28.750) with a mean difference of 4.697 (Table 50). This may be due to the significant relationship found between alcohol consumption and alcohol-related aggression, with alcohol consumption significantly predicting alcohol-related aggression, in the analysis in section 3.1.

Table 51:

Pearson Correlation between Physical and Verbal Alcohol-related Aggression for Heavy and Non-heavy Consumption Groups

Consumption-level	Correlation coefficient	Sig.	N
Heavy	.494	**.000**	103
Non-heavy	.463	**.000**	116

Table 51 indicates a significant strong positive bivariate correlation between physical and verbal alcohol-related aggression for both the heavy and non-heavy consumption groups. For both consumption-level groups there is thus a physical and verbal aggression component in alcohol-related aggression.

Table 52:

Comparison of Heavy and Non-Heavy Consumption Groups on Physical and Verbal Alcohol-related Aggression

Type	Consumption-level	N	Mean	Std. Dev	Mean difference	t	Sig.
Physical	Heavy	103	18.272	5.776			
	Non-heavy	116	15.689	4.726	2.582	3.636	**.000**
Verbal	Heavy	103	15.223	5.392			
	Non-heavy	116	13.155	4.946	2.068	2.960	**.000**

The heavy consumption group has a significantly higher mean score ($p < .01$) for both physical and verbal aggression than the non-heavy consumption group (Table 52). Heavier drinking thus leads to higher levels of both physical and verbal alcohol-related aggression.

Table 53:

Comparison of African and Coloured Groups on Alcohol-related Aggression

Race	N	Mean	Std. Dev	Mean difference	t	Sig.
African	51	32.392	11.566			
Coloured	156	30.558	8.335	1.834	1.047	**.299**

There is no significant difference (p = .299) between the African (M = 32.392) and the Coloured group (M = 30.558) in terms of alcohol-related aggression although the African groups has a slightly higher mean score (Table 53).

Table 54:

Pearson Correlation between Physical and Verbal Alcohol-related Aggression for African and Coloured Groups

Race	Correlation coefficient	Sig.	N
African	.644	**.000**	51
Coloured	.442	**.000**	156

Table 54 indicates significant strong positive bivariate correlations (p < .01) between physical and verbal alcohol-related aggression for both the African and Coloured groups. There is thus a component of physical and verbal aggression to alcohol-related aggression for both groups.

Table 55:

Comparison of African and Coloured Groups on Physical and Verbal Alcohol-related Aggression

Type	Race	N	Mean	Std. Dev	Mean difference	t	Sig.
Physical	African	51	17.431	6.836			
	Coloured	156	16.756	4.897	.675	.653	**.516**
Verbal	African	51	14.922	5.895			
	Coloured	156	13.853	4.947	1.069	1.276	**.203**

No significant differences exist between the groups in terms of physical alcohol-related aggression or verbal alcohol-related aggression with p = .516 and p = .203 respectively (Table 55).

4.3.3 Comparisons on aggression-related alcohol expectancies

To test for significant differences between males and females as well as African and Coloured groups on aggression-related alcohol expectancies t-test were utilized with an analysis of variance (ANOVA) used to test for significant differences between the heavy, non-heavy and no alcohol consumption groups.

Table 56:

Comparison of Males and Females on Aggression-related Alcohol Expectancies

Gender	N	Mean	Std. Dev	Mean difference	t	Sig.
Male	85	14.977	6.264			
Female	177	14.582	6.996	.395	.442	**.659**

Table 56 indicates no significant mean difference between males (M = 14.977) and females (M = 14.582) in terms of aggression-related alcohol expectancies with p = .659.

Table 57:

ANOVA for Heavy, Non-Heavy and No Alcohol Consumption

Groups for Aggression-related Alcohol Expectancies

Level	N	Mean	Std. Dev	F	Sig.
Heavy	103	15.495	.659		
Non-heavy	116	12.828	.540		
No consumption	43	17.907	1.188	10.755	**.000**

Table 57 indicates that there are significant differences ($p < .01$) between the heavy, non-heavy and no consumption groups on aggression-related alcohol expectancies with $F(2, 259) = 10{,}755$. The no consumption group has the highest mean ($M = 17.907$), followed by the heavy consumption group ($M = 15.495$) and the non-heavy consumption group ($M = 12.828$). In order to determine between which groups significant differences exist post hoc comparisons were conducted.

Table 58:

Test of Homogeneity of Variances for Aggression-related Alcohol Expectancies

Levene statistic	df 1	df 2	Sig.
3.450	2	259	**.033**

The assumption of homogeneity of variance is not tenable with a significant ($p < .05$) Levene's statistic (Table 58).

Table 59:

Games-Howell Post Hoc Multiple Comparisons for

Aggression-related Alcohol Expectancies

(i)Consumption-level	(j)Consumption-level	Mean difference	Sig.
Heavy	Non-heavy	2.668	**.006**
	No consumption	-2.412	**.185**
Non-heavy	Heavy	-2.668	**.006**
	No consumption	-5.079	**.001**
No consumption	Heavy	2.412	**.185**
	Non-heavy	5.079	**.001**

Due to the violation of the assumption of homogeneity of variance and unequal sample sizes Games-Howell post hoc comparisons were utilized. Table 59 indicates that there is firstly a significant difference ($p < .01$) between the heavy consumption group and the non-heavy consumption group. Secondly there is also a significant difference ($p < .01$) between the non-heavy and no consumption group (Table 59). No significant difference exists ($p = .185$) between the heavy and no consumption group in terms of aggression-related alcohol expectancies (Table 59). Both the heavy consumption group and the no consumption groups thus hold significantly higher aggression-related alcohol expectancies than the non-heavy consumption group with the no consumption group having the highest mean score pertaining to aggression-related alcohol expectancies, although this score is not significantly higher than the mean score of the heavy consumption group.

Table 60:

Comparison of African and Coloured Groups on

Aggression-related Alcohol Expectancies

Race	N	Mean	Std. Dev	Mean difference	t	Sig.
African	70	14.486	7.481	-.106	-.113	**.910**
Coloured	179	14.592	6.325			

Table 60 indicates no significant difference (p = .910) between the African (M = 14.486) and Coloured (M = 14.592) groups in terms of aggression-related alcohol expectancies.

4.3.4 Comparisons on exposure to community alcohol-related aggression

T-tests were once again used to test for significant differences between males and females as well as African and Coloured groups with an analysis of variance (ANOVA) used to test for significant differences between the heavy, non-heavy and no alcohol consumption groups on alcohol-related aggression.

Table 61:

Comparison of Males and Females on

Exposure to Community Alcohol-related Aggression

Gender	N	Mean	Std. Dev	Mean difference	t	Sig.
Male	85	46.071	11.691	-1.466	-.870	**.385**
Female	177	47.537	13.255			

Females (M = 47.537) have a slightly higher mean score than males (M = 46.071) on exposure to community alcohol-related aggression (Table 61). The difference between the groups however is not significant with p = .358 (Table 61).

Table 62:

ANOVA for Heavy, Non-Heavy and No Alcohol Consumption

Groups for Exposure to Community Alcohol-related Aggression

Level	N	Mean	Std. Dev	F	Sig.
Heavy	103	49.117	11.681		
Non-heavy	116	44.060	13.648		
No consumption	43	50.233	11.212	6.097	**.003**

Significant differences (p < .01) exist between the heavy, non-heavy and no consumption groups on exposure to community alcohol-related aggression with F(2, 259) = 6,097 (Table 62). The no consumption group has the highest mean (M = 50.233), followed by the heavy consumption group (M = 49.117) and the non-heavy consumption group (M = 44.060). Post hoc comparisons were conducted to determine between which groups significant differences exist.

Table 63:

Test of Homogeneity of Variances for

Exposure to Community Alcohol-related Aggression

Levene statistic	df 1	df 2	Sig.
2.848	2	259	**.060**

Levene's statistic is non-significant (p = .060) and the assumption of homogeneity is thus tenable (Table 63).

Table 64:

Games-Howell Post Hoc Multiple Comparisons for

Exposure to Community Alcohol-related Aggression

(i)Consumption-level	(j)Consumption-level	Mean difference	Sig.
Heavy	Non-heavy	5.056	**.010**
	No consumption	-1.116	**.851**
Non-heavy	Heavy	-5.056	**.010**
	No consumption	-6.172	**.013**
No consumption	Heavy	1.116	**.851**
	Non-heavy	6.172	**.013**

Games-Howell post hoc comparisons were conducted due to the difference in sample sizes between the groups. Firstly there is a significant difference (p < .05) between the heavy consumption group and the non-heavy consumption group in terms of exposure to

community alcohol-related aggression (Table 64). Furthermore there is also a significant difference ($p < .05$) between the non-heavy and no consumption group on exposure to community alcohol-related aggression (Table 64). No significant difference exists ($p = .851$) between the heavy and no consumption group in terms of aggression-related alcohol expectancies (Table 64). The heavy consumption group and the no consumption groups thus both have significantly higher mean scores on exposure to community alcohol-related aggression than the non-heavy consumption group. The no consumption group has the highest mean score on exposure to community alcohol-related aggression followed by the heavy consumption group with no significant mean difference between these groups.

Table 65:

Comparison of African and Coloured Groups on

Exposure to Community Alcohol-related Aggression

Race	N	Mean	Std. Dev	Mean difference	t	Sig.
African	70	49.486	11.752			
Coloured	179	46.620	12.798	2.866	1.624	**.106**

Table 65 indicates no significant mean difference ($p = .106$) between the African ($M = 49.486$) and Coloured ($M = 46.620$) groups on exposure to community alcohol-related aggression with the African group displaying a slightly higher mean score.

4.3.5 Summary of results

A significant difference was found between males and females on alcohol consumption with males having a significantly higher mean score. Furthermore no significant difference was

found in terms of alcohol consumption between the African and Coloured groups. The null hypothesis related to hypothesis 6, in relation to alcohol consumption, can thus only be rejected for gender groups but cannot be rejected for the racial groups.

In terms of alcohol-related aggression a significant difference exists between males and females as well as between heavy and non-heavy consumption groups with males and heavy drinkers having a significantly higher score on alcohol-related aggression. The null hypothesis relating to hypothesis 6 for alcohol-related aggression has to be rejected for the gender groups and the consumption-level groups. The null hypothesis can however not be rejected for the racial groups with no significant difference being found between the African and Coloured groups for alcohol-related aggression. Alcohol-related aggression was found to consist of both a physical and verbal aggression component. This finding extended to all the groups. Males were found to have a significantly higher score than females in terms of physical alcohol-related aggression with no difference being found between the groups for verbal alcohol-related aggression. For the heavy and non-heavy consumption groups the heavy consumption group was found to have a significantly higher mean score for both physical and verbal aggression than the non-heavy consumption group. For the racial groups no difference was found between the groups for either physical or verbal alcohol-related aggression.

No significant difference was found on aggression-related alcohol expectancies for the gender groups or the racial groups. The null hypothesis related to hypothesis 6 for aggression-related alcohol expectancies thus cannot be rejected for these groups. Significant differences were however found between the consumption-level groups with the heavy and no consumption group having a significantly higher mean score on aggression-related alcohol

expectancies than the non-heavy consumption group. The null hypothesis thus has to be rejected for these groups.

Finally no significant difference was found between males and females or between the African and Coloured groups on exposure to community alcohol-related aggression. Subsequently the null hypothesis related to hypothesis 6 for exposure to community alcohol-related aggression thus cannot be rejected for these groups. Similar to the case concerning aggression-related alcohol expectancies, significant differences were found between the consumption-level groups with the heavy and no consumption group having a significantly higher mean score on exposure to community alcohol-related aggression than the non-heavy consumption group. The null hypothesis thus has to be rejected for these groups.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Discussion

Alcohol consumption was found to be highly prevalent in the sample in concurrence with the literature which suggests the high prevalence of alcohol consumption in student populations (Dawson et al., 2004; Harford et al., 2006; Karam et al., 2007; Knight et al., 2002; Meyer, 2001; Peltzer & Ramlagan, 2009; Rich, 2004; Wechsler et al., 2002). 83.6% of participants reported drinking alcohol with 39.3% being classified as heavier drinkers, according to the World Health Organization criteria, and 44.3% being classified as non-heavy drinkers. Only 16.4% of the sample reported no alcohol consumption and were non-drinkers. Consequently males and females were distributed fairly evenly within the heavy consumption group with 44 males and 55 females constituting the group. The non-heavy and no consumption groups were both found to be predominantly female.

In conjunction with previous findings males were found to have a significantly higher level of alcohol consumption than females, suggesting that males are heavier drinkers than females (Medical Research Council, 2007; Parry et al., 2004; Plüddemann et al., 1999; Rich, 2004; Van Heerden et al., 2009). This is supported by the fact that females predominantly fell within the non-heavy and no alcohol consumption groups as mentioned above. In contrast to the literature pertaining to alcohol consumption among South African racial groups (Shisana et al., 2005; Van Heerden et al., 2009), no significant difference was found between Coloured and African groups in terms of alcohol consumption.

A significant relationship was found between alcohol consumption and aggression in line with local and international research (Borders et al., 2007; Bushman, 1997; Giancola 2002b;

Jewkes et al., 2002; Leonard et al., 2003; Miller et al., 2000; Swahn & Donovan, 2006). The significant relationship between alcohol consumption and aggression extended to all the groups examined, indicating a significant link between drinking and subsequent aggressive behaviour.

As was suggested in previous research both males and heavier drinkers were found to have significantly higher levels of alcohol-related aggression (Rossow, 1996; Sharps, Campbell, Campbell, Gary & Webster, 2001; Quigley et al., 2002; Wells & Graham, 2003). According to Bushman (2007) this may be due to the disinhibitory pharmacological effects of alcohol as well as aggression-related alcohol expectancies. Furthermore alcohol-related aggression was found to contain both a physical and verbal aggression component. Males were found to exhibit significantly higher levels of physical alcohol-related aggression than females with no significant difference found between the gender groups in terms of verbal aggression. This may suggest that verbal alcohol-related aggression may be converted and extended into physical alcohol-related aggression for males but not for females. Heavier drinkers were also found to exhibit higher levels of both physical and verbal alcohol-related aggression than their non-heavy drinking counterparts, indicating that the level of alcohol consumption plays a significant role in determining the level of subsequent aggression. This further suggests that the pharmacological effects may play a contributing role in the relationship between alcohol consumption and aggression with higher levels of alcohol consumption leading to less inhibition in terms of aggressive behaviours (Bushman, 1997).

The relationship between alcohol consumption and alcohol-related aggression was found to be significantly moderated by aggression-related alcohol expectancies with aggression-related alcohol expectancies, and specifically the belief that alcohol consumption increases

aggression, associated with higher levels of alcohol-related aggression. Subsequently aggression-related alcohol expectancies significantly moderated the relationship between alcohol consumption and alcohol-related aggression for all the groups examined. This finding is in line with previous research exhibiting the significant moderating effect of aggression-related alcohol expectancies on alcohol-related aggression (Borders, et al., 2007; Paglia & Rooms, 1998; Smucker-Barnwell et al., 2006).

The heavy consumption group and no consumption group were both found to have significantly higher aggression-related alcohol expectancies than the non-heavy consumption group in contrast with the finding of Paglia and Room (1998) that non-heavy drinkers were more likely to hold the belief that alcohol increases aggression. The significantly higher aggression expectancies found for the heavier drinking groups is in line with previous research (Smucker-Barnwell, 2006) and it can be hypothesised that the higher level of aggression-related expectancies in this group may be the determining factor for the higher levels of alcohol-related aggression for the heavy consumption group as opposed to the specific pharmacological effects of alcohol.

The fact that similar levels of aggression-related alcohol expectancies were found for the heavy and no alcohol consumption group may suggest that the formulation of aggression-related alcohol expectancies for these groups may stem from similar origins. Considering the high level of alcohol-related aggression found for the heavy consumption group and the inherent lack of alcohol-related aggression for the no consumption group it may be alternatively however be hypothesised that the expectancies for the groups may be informed by entirely different factors. The expectancies of the heavy consumption group may be

predominantly informed by direct experience whilst the expectancies of the no consumption group may be inherently and predominantly informed through observational learning.

The demographic variables of gender and race were not found to play a significant role in the level of aggression-related alcohol expectancies held by participants in contrast with the findings of Paglia and Room (1998) suggesting that females were more likely to hold the view that alcohol increases aggression.

In the examination of whether exposure to community alcohol-related aggression informs aggression-related alcohol expectancies, exposure to community alcohol-related aggression did not significantly predict aggression-related alcohol expectancies for any of the groups examined, suggesting that the aggression-related alcohol expectancies are not learnt or formulated through observation but rather through some other pathway or factors such as direct experience or alternatively through broader cultural beliefs and expectancies (Graham et al., 1998).

Similar as in the case of aggression-related alcohol expectancies, the heavy and no consumption group were found to have significantly higher exposure to community alcohol-related aggression. Although exposure to community alcohol-related aggression did not predict aggression-related alcohol expectancies for either of these groups, the fact that both groups were found to have significantly higher levels of exposure to community alcohol-related aggression and aggression-related alcohol expectancies suggests that there may be a link between these variables for both groups, despite the insignificance of the relationship between the variables. This finding supports the conclusion that the aggression-related alcohol expectancies for the heavy and no alcohol consumption groups may be informed by

similar factors related to observational learning. Desensitization provides a framework which may explain the insignificant prediction of aggression-related alcohol expectancies by exposure to community alcohol-related aggression. According to Anderson and Bushman (2002) the repeated exposure to alcohol-related aggression may produce aggression-related knowledge structures which may influence the beliefs of a person in terms of aggression. Repeated exposure to aggression has been found to be associated with higher levels of aggression and a reduced response to violence and aggression (Anderson, 2004; Funk, Baldacci, Pasold & Baumgardner, 2004). Whilst desensitization may thus be associated with higher levels of aggression, a reduced response to aggression may have an impact on the reporting of exposure to community alcohol-related aggression on the self-report measure utilized in the study.

In all the analyses the demographic variable of race did not seem to have an influence. It must be remembered however that only the Coloured and African groups were considered in the analyses. The fact that the racial variable did not have an impact may be attributed to a possible similarity between the cultures in terms of alcohol consumption and alcohol-related behaviours as well as cultural beliefs and norms related to alcohol use. Due to the lack of knowledge concerning the specific cultural norms, beliefs and behaviours of the cultures as well as the consideration that participants, in spite of their racial designation, all originate from different communities and areas, further investigation is necessary in this respect.

5.2 Summation

The main aims of the study were to establish aggression-related alcohol expectancies and exposure to community alcohol-related aggression as alternative domains of intervention against alcohol-related aggression and subsequently to identify at-risk individuals at which

interventions in these domains may be aimed. Despite the fact that differences were found between the groups in terms of alcohol consumption, alcohol-related aggression and aggression-related alcohol expectancies the fact that the aggression-related alcohol expectancies significantly moderated the relationship between alcohol consumption and alcohol-related aggression for all the groups examined. It can thus be concluded that aggression-related alcohol expectancies provide a viable alternative domain for intervention with no specific at risk group being identified, apart from the student population itself, as aggression-related alcohol expectancies was a significant moderating variable for all the groups. Furthermore exposure to community alcohol-related aggression did not significantly predict aggression-related alcohol expectancies for any of the groups and thus cannot be considered a viable alternative domain for intervention.

5.3 Limitations of the study

Although this study aims to increase the knowledge concerning the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression several methodological limitations have to be considered in the application of the findings.

Firstly convenience sampling was used, resulting in a non-randomized sample which may make generalization of the findings to the general population impossible due to the unrepresentative nature of the sample. Furthermore the unequal nature of the sample sizes for the different groups as well as the unequal distribution of the groups in terms of the demographic variables of gender and race further inhibits generalizability. Small sample sizes also inhibited the further division of the sample into subgroups in order to determine specific at-risk groups. Secondly the sensitive nature of some elements of the study and survey may lead to socially desirable answers or underreporting on some items, impacting on the

accuracy of the findings and the subsequent application of the findings. Thirdly the fact that self-administered questionnaires are used may influence the degree to which the variables are accurately measured also impacting on generilizability, significance and application of finding. Fourthly the study did not control for several confounding variables which may have influenced the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression including dispositional aggression (Giancola, 2002b), pharmacological effects (Bushman, 1997), broader cultural beliefs and expectancies (Graham et al., 1998) as well as type of alcohol consumed (Gustafson, 1999) and the setting in which alcohol consumption occurs (Bondy, 1996). A final limitation is the fact that the measures used for the purposes of this test to measure alcohol-related aggression as well as exposure to community alcohol-related aggression were adapted from the Buss-Perry Aggression Questionnaire. Further research is thus required on these measures to ensure their use in this format. The seven-item aggression subscale of the Alcohol Expectancies Regarding Sex, Aggression and Sexual Vulnerability scale has also never been utilized in the South African context and further research is thus also needed to examine the validity of the measure in this context.

5.4 Recommendations for future research

To the researchers knowledge this study provides the first exploration of the effect of aggression-related alcohol expectancies on the relationship between alcohol consumption and alcohol-related aggression in a South African sample of University students, or any South African sample. Considering the significant moderating effect found in this study of aggression-related alcohol expectancies on alcohol-related aggression it is important to better understand the specific role that aggression-related alcohol expectancies play in this relationship and how expectancies function. In light of this it is important to examine

confounding variables in future research which may impact on aggression-related alcohol expectancies and the relationship between aggression-related alcohol expectancies and alcohol-related violence such as dispositional aggression, cultural expectancies, pharmacological effects of alcohol and effects of type of drink.

Furthermore it is important to determine the specific contributing factors through which aggression-related alcohol expectancies are formed in order to design effective interventions in the expectancy domain.

Considering the fact that attendance of a tertiary education institution has been found to be a protective factor for future alcohol-use disorders and consequently alcohol-related behaviours (Harford et al., 2006), it is important to examine the relationship between alcohol consumption, aggression-related alcohol expectancies and alcohol-related aggression in the broader population and communities as these communities may constitute higher risk for alcohol-related problems such as alcohol-related aggression.

Finally bigger sample sizes obtained through random sampling methods will improve generalizability of results as well as the ability to further subdivide groups in order to identify at-risk groups at which interventions may be aimed.

5.5 Conclusion

The findings stemming from this study should be utilized and approached with caution as a variety of limitations permeate the study. Despite the fundamental limitations inherent in the study, it does provide an initial exploratory basis for the examination of aggression-related alcohol expectancies as a viable alternative domain for intervention in the South African

context in the constant fight against the high prevalence of intimate partner violence, domestic violence and sexual assault which manifest at every level of society.

Aristotle was the first to advance the idea that the whole is greater than the sum of its parts. In order to change and achieve the desired whole however, attention needs to be refocused on the parts as it is in these that the origins for change are found. Considering the extent of alcohol-related violence and crimes in South Africa it is important to exhaust every possible avenue and part in order to remedy the problems and elements endangering the social well-being of the nation.

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☐☐☐ ID (Official use only)

ALCOHOL CONSUMPTION, AGGRESSION-RELATED ALCOHOL EXPECTANCIES AND EXPOSURE TO COMMUNITY ALCOHOL-RELATED AGGRESSION

This questionnaire will ask questions concerning your alcohol use, alcohol-related aggression expectancies, alcohol-related aggression as well as exposure to community alcohol-related aggression. The questionnaire should take you no longer than 30 min to complete.

Participants in this study will remain anonymous, which means that no-one will know your name. You are free to withdraw from the study at any time of the process. Please answer the questions correctly and honestly. Your cooperation in completing the questionnaire will be greatly appreciated.

ACADEMIC YEAR ☐

AGE: ☐

RACE: WHITE ☐ AFRICAN ☐ COLOURED ☐ ASIAN ☐ OTHER (SPECIFY) ☐ _____

COMMUNITY/AREA WHERE YOU GREW UP: _____

Please answer the following questions about your alcohol-use. Your answers will remain confidential so please be honest.

Place an **X** in the box that best describes your answer to each question:

Questions	0	1	2	3	4
How often do you drink alcohol	Never ☐	Once a Month ☐	2-4 times a month ☐	2-3 times a week ☐	4 or more times a week ☐
How many alcoholic drinks do you have at a time when drinking	1 or 2 ☐	3 or 4 ☐	5 or 6 ☐	7 to 9 ☐	10 or more ☐
How often do you have six or more alcoholic drinks on one occasion	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
How often during the last year have you felt that you couldn't stop once you started drinking	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
How often during the last year did you feel you couldn't do what you were suppose to do because of drinking alcohol	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
How often in the last year did you need a drink in the morning to feel better after heavy drinking the night before	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
How often during the last year have you felt bad or guilty after drinking	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
How often during the last year could you not remember what happened the night before because of drinking	Never ☐	Less than once a month ☐	Monthly ☐	Weekly ☐	Daily or almost daily ☐
Have you or someone else been injured because of your drinking	No ☐		Yes, but not in the last year ☐		Yes, during the last year ☐
Has someone ever been worried about your drinking or suggested you cut down	No ☐		Yes, but not in the last year ☐		Yes, during the last year ☐

Indicate to what extent you *agree or disagree* with the following statements regarding your expected aggression after alcohol consumption (HOW YOU EXPECT ALCOHOL TO EFFECT YOUR BEHAVIOUR) by using the following scale:

1 = STRONGLY DISAGREE
2 = DISAGREE
3 = NOT SURE
4 = AGREE
5 = STRONGLY AGREE

When drinking alcohol . . .	**1**	**2**	**3**	**4**	**5**
I expect that it may be more likely for me to have a fight or argument after alcohol consumption	☐	☐	☐	☐	☐
I expect that I may be more likely to become mean after alcohol consumption	☐	☐	☐	☐	☐
I expect that I may be more likely to say and do rude things after alcohol consumption	☐	☐	☐	☐	☐
I expect that I may be more likely to become hostile after alcohol consumption.	☐	☐	☐	☐	☐
I expect that I may be more likely to become short-tempered after alcohol consumption.	☐	☐	☐	☐	☐
I expect that alcohol consumption may make me more likely to feel angry.	☐	☐	☐	☐	☐
I expect that I may be more likely to hit or slap after alcohol consumption.	☐	☐	☐	☐	☐

Please use the following scale to indicate how characteristic or uncharacteristic each of the following statements is in describing you after drinking alcohol based on your previous actions and experiences (HOW YOU ACTUALLY ACT OR HAVE ACTED IN THE PAST).

1 = extremely uncharacteristic of me
2 = somewhat uncharacteristic of me
3 = neither uncharacteristic nor characteristic of me
4 = somewhat characteristic of me
5 = extremely characteristic of me

	1	2	3	4	5
Once in a while, after drinking, I can't control the urge to strike another person.	☐	☐	☐	☐	☐
Given enough provocation after drinking, I may hit another person.	☐	☐	☐	☐	☐
If somebody hits me after I have been drinking, I hit back.	☐	☐	☐	☐	☐
After drinking, I get into fights a little more than the average person.	☐	☐	☐	☐	☐
After drinking, if I have to resort to violence to protect my rights, I will.	☐	☐	☐	☐	☐
After drinking there are people who pushed me so far that we came to blows.	☐	☐	☐	☐	☐
After drinking, I can think of no good reason for ever hitting a person.	☐	☐	☐	☐	☐
I have threatened people I know after drinking.	☐	☐	☐	☐	☐
After drinking, I have become so mad that I have broken things.	☐	☐	☐	☐	☐

1 = extremely uncharacteristic of me

2 = somewhat uncharacteristic of me

3 = neither uncharacteristic nor characteristic of me

4 = somewhat characteristic of me

5 = extremely characteristic of me

	1	**2**	**3**	**4**	**5**
After drinking, I tell my friends openly when I disagree with them.	☐	☐	☐	☐	☐
After drinking, I often find myself disagreeing with people.	☐	☐	☐	☐	☐
When people annoy me, I may tell them what I think of them after drinking.	☐	☐	☐	☐	☐
After drinking, I can't help getting into arguments when people disagree with me.	☐	☐	☐	☐	☐
My friends say that I'm somewhat argumentative after drinking.	☐	☐	☐	☐	☐

Please use the following scale to indicate how often or rarely you have seen or witnessed each of what is described in the following statements in your community after seeing people in your community drinking alcohol. (HOW YOU HAVE SEEN OTHERS ACT IN YOUR COMMUNITY)

1 = extremely rarely
2 = rarely
3 = sometimes
4 = often
5 = extremely often

	1	**2**	**3**	**4**	**5**
Once in a while, after seeing people in my community drink, I have seen them unable to control the urge to strike another person.	☐	☐	☐	☐	☐
Given enough provocation after drinking, I have seen people in my community hit other persons.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them hit back another person after being hit.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them get into fights a little more than the average person.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them resort to violence to protect their rights.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them pushed so far that they came to blows.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them finding no good reason for ever hitting a person.	☐	☐	☐	☐	☐

1 = extremely rarely

2 = rarely

3 = sometimes

4 = often

5 = extremely often

	1	**2**	**3**	**4**	**5**
After seeing people in my community drink, I have seen them threaten people they know	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them become so mad that they have broken things.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them tell their friends openly when they disagree with them.	☐	☐	☐	☐	☐
After seeing people in my community drink, I often seen them disagreeing with people.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them tell others what they think of them when annoyed.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have seen them unable to help getting into arguments when people disagree with them.	☐	☐	☐	☐	☐
After seeing people in my community drink, I have heard their friends say that they are somewhat argumentative after drinking.	☐	☐	☐	☐	☐

THANK YOU FOR YOUR PARTICIPATION

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DEAR STUDENT

I am currently completing my masters degree in research psychology at UWC and am conducting research concerning the aggression-related alcohol expectancies and exposure to community alcohol-related aggression among male students at the university. Although the relationship between alcohol consumption and alcohol-related violence has been firmly established in a wide array of studies, the mediating factors in this relationship remain unclear. One factor which has been highlighted as having a mediating effect is the specific aggression-related alcohol expectancies concerning the effects of alcohol consumption on aggressive behaviour. In light of the prevalence of alcohol-related violence in South Africa it becomes important to examine and better understand the specific factors that mediate the relationship between alcohol consumption and alcohol-related aggression. Your participation in the study will be of great value in contributing to the knowledge and understanding of this relationship.

Participation in the study is voluntary and involves the completion of a short questionnaire asking about your alcohol consumption, aggression-related alcohol expectancies, alcohol-related aggression and exposure to community alcohol-related aggression. The questionnaire should take no longer than 30 minutes to complete. You do not have to enter your name, ensuring your anonymity, and you are entitled to withdraw from the process at any point without negative ramifications. The findings of the study will be made available to you on request.

Your assistance with this research study will be greatly appreciated

Renier du Toit

PLEASE NOTE THE FOLLOWING

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be made known and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name……..

Participant's signature…….

Date……