Alcohol Use and Addiction: The Moderating Role of Psychological Stress.

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2014/HD03/2362U

A Dissertation Submitted to the School of Psychology in Partial Fulfillment of the Requirements for the Award of a Master of Science in Clinical Psychology Degree of Makerere University

October 2018
Declaration

I declare that dissertation is my work and the sources that I have used have been indicated and acknowledged by means of complete references. This work has been produced for the attainment of the award for the Master of Science degree in Clinical Psychology and it has not been submitted to any university for any degree.

Signature ..............................................

Nabwire Martha
Approval

This is to certify that the following research was conducted under my supervision and is now ready for submission to the Makerere University School of Psychology.

Signature ..............................................................

Date .................................................................

30th October, 2018

Supervisor: Dr. Kajumba Mayanja, (PhD)
Abstract

Various literatures indicate that psychological stress can influence the amount of alcohol consumed and high alcohol consumption can later lead to addiction. The aim of the study was to examine the role of psychological stress as a predictor of alcohol use and addiction. One hundred and seventy-eight (178) adults of which 36 were females and 142 were males from Omoro district participated in the study. They were aged between 18 to 50 years. These participants were consuming alcohol at a minimum of three days in a week. These participants answered a self-scoring questionnaire which included the perceived stress scale and the AUDIT. The perceived stress scale was used to assess the stress score, AUDIT subscales were used to measure for alcohol use and addiction. The study was guided by four hypotheses. Linear regression was used to test the first three hypotheses and the fourth hypothesis was tested using the PROCESS macro for SPSS method. The results obtained from the study indicated that psychological stress was a significant predictor of alcohol use ($t=3.631, F=13.185, R^2=.070, p <.001$), psychological stress was a significant predictor of addiction ($t=5.607,F=31.433, R^2=.152, p<.001$), alcohol use was a significant predictor of addiction ($t=13.722, F=188.304, R^2=.517, p<.001$) and the relationship between alcohol use and addiction was significantly dependent on the level of psychological stress ($t=29.8014, p=.8088$).
Acknowledgement

I thank my supervisor, Dr. Kajumba Mayanja for the guidance, support and supervision in writing this research.
Dedication

I dedicate this research to my parents who have sacrificed a lot for the benefit of my education
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Abbreviations

ACTH………………………..………………Adrenocorticotropic Hormone

AUD…………………………………………Alcohol Use Disorders

AUDIT……………………………………….Alcohol Use Disorder Identification Test

CRH…………………………………………Corticotrophin Releasing Hormone

HPA………………………………………Hypothalamic-Pituitary-Adrenal axis

(H-PFC)…………………………………Hippocampo-Prefrontal pathway

LGBT……………………………………….Lesbian, Gay, Bisexual and Transgender

NAc……………………………………….Nucleus Accumbens

NIAAA………………………………….National Institute on Alcohol Use and Alcoholism

POMC……………………………………..Propiomelanocortin

STI……………………………………….Sexually Transmitted Infections

VTA……………………………………….Ventral Tegmental Area
Chapter One

Introduction

Background

Whereas alcohol has been used as a social activity for many millennia and it is often associated with addiction, a situation where the body becomes tolerant to alcohol and can only function normally under the influence of alcohol. Studies have indicated that many factors influence addiction including stress. Stress is defined by Lazarus (1999) as a process that involves perception, appraisal and response to harmful, threatening, or challenging events or stimuli. Life experiences like unemployment, marital conflicts, academics and work conditions were associated with many temporary stressors and these produced different reactions from person to person (Dohrenwend, 2000). Stress of mild and moderate levels can be challenging to an individual but with time the person can be able to prevail over the stress. However, if an individual cannot handle extreme stress they will be at risk of becoming sick (McEwen, 2007). Numerous methods can be used to reduce the negative effects of stress like alcohol.

Alcohol is a psychoactive substance that produces dependence characteristics (World Health organization, 2010). The International Centre for Alcohol Policies (2002) defined alcohol as a drink that contains ethanol from 3% to 40% and it could be in the nature of wines, spirits or beers. Since 75% of the population in Uganda is rural based most of the alcohol is usually made from sugarcane, banana juice, pineapple juice, maize flour and cassava flour and since they are easy and cheaper to get (Uganda Youth Developmental Link 2008). According to the WHO (2010) the average consumption for alcohol in the world per person was 6.2 liters, which translated into 13.5 grams of pure alcohol per day. However, these statistics don’t include homemade alcohol that is illegally produced or sold. The global status on alcohol and health (2014) indicated that the prevalence of drinkers in Africa is at 29% and Uganda has the highest consumption in East Africa with 23.7 liters per capita.
A study by Willis (2001) showed that the informal sector in Uganda consumed about 4.39 liters per capita among adult drinkers. By 2011, it was estimated that the unrecorded alcohol consumption in Uganda was at 10.4 liters per capita (European addiction research, 2011). This estimate could be higher since locally most produced alcohol doesn’t have standard unit measurements so most consumers don’t know how much alcohol they are consuming.

Therefore, the amount of alcohol consumed can also be affected by the level of stress. The tension reduction theory states that people consume alcohol for its stress reducing properties and that alcohol consumption reduces stress (Syette, 1999). Kalodner, Delucia, Urprung (1999) study on the tension reduction theory indicated that the level of alcohol consumed is correspondent to the level of stress among the participants. Furthermore, a study by Shevlin and McGuigan (2011) on the stress alcohol relationship, reported that there is a significant positive association between stressful life events and alcohol use. That is, as the number of stressful life events reported increased, so did alcohol consumption among the sample. Therefore this theory can be able to guide the research since it incorporates the two study variables of stress and alcohol use.

According to the forth version of the Diagnostic Manual for mental illness (1994), Alcohol abuse is referred to as a diagnosis of problematic alcohol consumption which has caused impairment or distress within the person and it is inclusive of symptoms like recurrent alcohol use causing problems in occupational and social and interpersonal settings and observed legal problems. Addiction is referred to as maladaptive pattern of drinking which causes impairment or distress characterized by high consumption tolerance, constant cravings, desire to cut down on alcohol, abandonment of social, occupational and recreational activities and continuously drinking even with knowledge of its harmful consequences associated with it. However, the fifth version of the Diagnostic Manual for mental illness combined alcohol abuse and addiction into one diagnosis of alcohol use disorder (Diagnostic Manual for mental illness, 2003). Therefore, the researcher
adopted the description from the DSM-IV so as to clearly distinguish between alcohol use and addiction.

Both alcohol abuse and addiction are associated with increased alcohol consumption which is might have with negative effects such as traffic accidents, marital conflicts, rapes, suicides, homicides, violent treatment of children, injuries and other long-term physical consequences such as several cancer forms, cirrhosis of the liver, pancreatitis and high blood pressure (Room, Babor& Rehm, 2005).

Statement of the Problem

There are a number of stressors among the people in Uganda and in an effort to reduce the negative effects of stress they tend to resort to alcohol use. For example, Namara and Muhwezi (2014) reported that patients at the Alcohol and Drug unit in Butabika Hospital indicated that personal stress was one of the main factors that had contributed to their alcohol consumption. Alcohol will provide temporary relief from stress but it will not remove the stressor. Therefore, a person will be forced to consume alcohol whenever they experience the effects of stress. Recent studies have indicated that prolonged use of alcohol leads to tolerance where a person will require more alcohol to get the same effects and this later leads to addiction. For example a study by Kafuko and Bukuluki (2016) indicated that participants were able to acknowledge different behavioral changes that were present between alcohol use and alcohol abuse. Addiction is the physiological change that occurs when a person is dependent on the drug. It is associated with negative consequences such as, mood disorders, suicidal tendencies and in the long term it could lead to death.

Purpose

The purpose of to the study was to examine the role of psychological stress as a moderator of the relationship between alcohol use and addiction.
Objectives

1) To examine the relationship between psychological stress and alcohol use.
2) To examine the relationship between psychological stress and addiction.
3) To examine the relationship between alcohol use and addiction.
4) To assess the extent to which the relationship between alcohol use and addiction is moderated by psychological stress.

Scope

The content of the study focused on the role of psychological stress as a moderator of the relationship between alcohol use and addiction. The researcher studied the influence of psychological stress on alcohol use, the influence of psychological stress on addiction, the influence of alcohol use and addiction and extent to which the relationship between alcohol use and addiction was moderated by psychological stress.

The context of the study had participants who used alcohol on a daily basis or at a minimum of three days in a week. This was important because the participants who use alcohol frequently were most likely to use it to cope with stress. The participants were aged between the ages of 18 and 50. This age group consisted of individuals who were directly and indirectly were affected by the LRA war in Northern Uganda that lasted up to 20 years of conflict and displacement in IDP camps for over 10 years (Human rights watch, 2005), therefore they most likely had high levels of stress.

The researcher carried out the study in Omoro district. Mugabo (2011) reported that twenty years of war and insecurity in Northern Uganda led to increased drinking as people sought respite from their fear, disempowerment, trauma and loss. Laing & Laing, (2015) reported that in the IDP camps, people lived in cramped conditions, cut off from their land and livelihoods and this context of insecurity, social breakdown, idleness and hopelessness led to more drinking. The study was
predicted to take a period of two years. This duration was considered because it was long enough for the researcher to identify and study participants who consumed alcohol at a minimum of 3 days in a week and write the related literature to the study.

According to the study stress was referred to as the process that involves perception, appraisal, and response to harmful, threatening, or challenging events or stimuli (Lazarus, 1999). Alcohol was defined as a psychoactive substance that produces dependence characteristics (World Health organization, 2010) and addiction was defined as the chronic, relapsing brain condition characterized by compulsive drug seeking and use, despite harmful consequences (Taylor, Lewis and Olive, 2013).

The stress reduction theory was adopted for the study. It stated that people drank alcohol to reduce on their level of stress (Sayette, 1999). According to Sher, Bartholow, Peuser, Erickson and Wood (2007), People drank alcohol when they are stressed although this could also depend on their genetic makeup and their usual drinking habits. People reported to drink alcohol to deal with negative emotions although the negative or positive outcomes about alcohol consumption were determined by the individual’s expectancies on alcohol (Ham & Hope, 2003).

**Significance of the Study**

The findings from the proposed study may be useful in various ways, as follows:

The findings may be used by the general public to understand how stress associated with alcohol use can lead them to become addicted to alcohol. They will be able to understand that when they use alcohol to manage the negative effects of stress, the body will continue craving for alcohol and makes them to drink in larger quantities which later leads them to become addicted. When they learn this pattern they will be able to find strategies of coping with the stress and thereby reducing alcohol addiction levels.
The findings of the study may help to provide data that can be referred to by future researchers as a useful source of literature review in the field of academics. This is because the study has limited data in Uganda. Evidence for the relationship of psychological stress as a moderator of alcohol use and addiction among people of Omoro district will be built. Since Omoro is a new district, this literature of its area can provide a good basis for future research especially for alcohol consumption and stress. Also the study may guide in areas which require further information and this will help in future research.

The findings may help service providers like rehabilitation centers to focus on dealing with stress as a way of preventing a progression to addiction and for those who are already addicted. The findings will emphasize the importance of stress reduction in the fight against alcohol use and addiction. Institutions like hospitals, rehabilitation centers and others may be encouraged to apply techniques of handling stress in their rehabilitation programs for alcohol addiction.

The study findings could be used by the Ministry of Health to design policies aimed at eliminating alcoholism in the population. This is because the study will reveal some ways how addiction can be predicted. Therefore, measures can be taken to combat stress when it is not yet chronic. For example, it could introduce counseling and psychotherapy that are government funded to help those that can’t afford these services and also in emergency situations like war.

Figure 1:

*Conceptual Framework*
Alcohol use could lead to addiction depending on the amount of alcohol taken, how often one uses alcohol and the intensity of the alcohol use. In case a person becomes addicted, they may increase the number of times the drug is used because their body would be dependent on the alcohol (Neighbors and Prokhorov, 2014). The amount of alcohol taken may be influenced by the level of stress a person was experiencing. Often time’s people who are experience high levels of stress increase their alcohol intake to help them minimize on the negative stressful symptoms. Therefore, individuals who experience stress use may alcohol as a coping mechanism (Sayette, 1999).

Addiction may be influenced by the level of stress experienced by a person. In case a person uses alcohol whenever they are stressed, then the body’s reward system can become sensitive to the alcohol and it would crave for it and this encourages increase in alcohol intake there by leading to addiction (Heilig, Egli, Crabbe and Becker, 2010). When one is addicted, their levels of stress can also increase. One can experience physiological effects like heart disease and psychological effects like loss of relations. When the body is dependent on alcohol it increases a person stress because most times these changes bring discomfort. Therefore alcohol use may lead to addiction and this relationship could be modified by the level of stress experienced by a person Fox, Bergquist, Hong and Sinha (2007).
Chapter Two

Literature Review

Introduction

This chapter included different sources of literature on psychological stress, alcohol use and addiction from Uganda, Africa and the rest of the world which was beneficial in conducting my research. This chapter also helped in identifying the areas which have been studied and the areas that are still not fully researched.

Psychological Stress and Alcohol Use

Stress can be explained using various dimensions. One dimension used was of severity which has a range of mild, severe or extreme. The other dimensions that can be used are; if the stress was expected or unexpected, the age the stress occurred, the degree of the stressor i.e. if it is chronic or acute, if it’s a physical or emotional problem or if one perceives the stress to be the cause or the outcome of their problems Keyes, Grant and Hasin (2008). Keyes, Hatzenbuehler, Grant and Hasin (2010), reported that alcohol intake increased with individuals who report six or more stressful situations.

Sayette (1999) reported that various traditions showed alcohol use in coping with stress. He added that literature from different centuries had indications of using alcohol to manage stress and that alcohol’s anticipated stress-relieving effect is a primary motivation for many people to consume alcohol, despite the often harmful consequences of drinking. The concept that alcohol could calm the nerves continues to be widely held across cultures.

Stress from natural disasters like volcanoes and manmade disasters like mass shootings was associated with increased alcohol consumption (John, Levav, Garcia, Machuca and Tamashiro2005; Reijneveld, Crone, Verhulst and Verloove-Vanhorick, 2003). In addition, Boscarino, Adams and Galea (2006) observed that alcohol consumption increased greatly two
years after the world trade bombing in New York and New Jersey. Also Schumm and Chard (2012) observed that 14 to 22% of the veterans that been in active combat in Iraq or Afghanistan increased their alcohol intake to help them cope with negative war symptoms.

In addition victims of the war in Northern Uganda living in internally displaced people camps (IDPs) in Gulu, Kitgum and Pader Districts were found to have high alcohol use (Ministry of Health report, 2007). This situation was attributed to the 20-year insurgency in Acholi land, the lack of security, social displacement, and confinement in cramped, crowded and unsanitary camps and lack of employment. Such conflict-related factors as well as associated problems like HIV/AIDS and other Sexually Transmitted Infections (STIs) greatly increased the possibility of substance misuse (Ministry of Health report, 2007). Although North, Ringwalt Downs, Derzon and Galvin (2010) argued that individuals who were already diagnosed with alcohol disorders were the ones who were are higher risks consuming high amounts of alcohol when they experienced natural or manmade disasters. They added that those who had not had a diagnosis of addiction before only had brief increase in alcohol consumption.

According to Barrett and Turner (2006) victims of childhood physical and sexual use were at an increased risk of abusing alcohol. In addition (Enoch, 2010) revealed that child maltreatment was associated with early alcohol use and alcohol disorders. He added that family history of alcoholism could contribute to child abuse and then alcohol use among the children. For example a report by the Ministry of Finance, Planning and Economic Development in Uganda (2002) indicated that households faced problems of compromised health and nutrition care because husbands were spending the meager household income on alcohol, leading to the collapse of household’s economic security. The report also showed that men started drinking alcohol in bars as early as 8:00am and rarely contributed to the family economy and this later affected how the children are raised and nurtured.
In situations where both parents did not use alcohol, drastic life events like death of a parent and divorce, growing up in foster homes also contributed to alcohol use in children (Pilowsky, Keyes, and Hasin, 2009).

In an animal experiment, alcohol consumption behavior in rhesus monkeys who were raised by their mothers and those raised by peers was studied. It was observed that peer-raised monkeys consumed more alcohol during the first 6 months of their life than the mother-raised monkeys. When social separation was introduced, the monkeys raised by their mothers consumed more alcohol than the monkeys which were raised by their peers. The peer-raised monkeys maintained the same level of alcohol consumed when there was social separation. These results indicated that stress in both childhood and adulthood was correlated with increase in alcohol consumption (Sinha, 2001).

During adulthood, a person can experience stress from work, legal system, finances or on an interpersonal level and these stressors have often lead to alcohol use although they can also come up as a consequence of alcohol use (Dohrenwend, 2000). Furthermore, King, Bernardy, and Hauner (2003) observed that there is an association between stressful life events and alcohol consumption and problem alcohol use but not necessarily alcohol use disorders. Although Skaff, Finney, and Moos (1999) argued that adults above the age of 61 do not show effects of above one year for the connection of alcohol use and stressful life experiences since they are more likely to be exposed to stress less often than people younger than 60. Therefore environmental factors may have to interact with genetics to cause alcohol use. For example, Covault, Tennen, Armeli, Conner, Herman et al. (2007) reported that college students with the gene 5-HTTLPR increased their alcohol intake if they experienced stressful life events.

It’s important to note the importance of how people perceive stress. A report by Unger (2001) showed that there is a strong correlation between perceived stress, stressful life events and alcohol use. He reported that students were more affected by stressors related directly to their
studies such as academic pressure, the amount of material to learn, studying for examinations, examinations and examination results. Additionally, social-related factors such as financial problems, lack of time for family and friends were also identified as stressors.

The Uganda Youth Developmental Link report (2008) indicated that alcohol is easily accessible at the University. For example canteens located in the halls of residences provided both bottled alcohol and spirits in sachets. Hostel canteens also sold alcohol all the time. Because of the easy availability and accessibility of alcohol in canteens, students started drinking alcohol as early as 10:00 am. Student guild canteens also occasionally provided discounted beer during cultural and entertainment festivals and this put the youth at the university at a higher view for alcohol use and subsequent consequences. The ease of accessing alcohol among people who experience numerous stressors makes them adapt to use alcohol as a stress reliever.

Covault et.al (2007) reported that gender differences were responsible for the exposure and response to various stressors. In a study by Dawson, Grant and Ruan (2005) it was found that men are more likely to use alcohol in coping with stress. Although stress was associated with alcohol consumption and binge drinking in both women and men it was stronger in men at a ratio of 1:24 in men and 1:13 in women. For example a study by Mbulaiteye, Ruberantwari, Nakiyingi, Carpenter, Kamali and Whitworth (2002) revealed that males were more likely (40.1%) to be long-time drinkers than females (23.5%) and males were also less likely (28.6%) to be abstainers compared to women (36.4%). Males were over three times (24.4%) more likely to be daily drinkers than the females (7.0%) and males were more likely (22.9%) to be frequent heavy drinkers than females (6.5%). The study also showed that whereas daily and heavy drinking increased with age among males, abstinence from alcohol reduced with age among males and increased with age among females.
In situations where a person belonged to a minority status in society for example in terms of their religion, sex or their race they may be subjected to injustices which could be mild like discrimination or extreme like being victims of violence and these events cause stress (John, Meyer, Rumpf & Hapke, 2003).

According to Williams, Neighbors and Jackson (2003) stress from being a minority could occur in specific events but it was mostly viewed as a chronic exposure that will occur in an entire life course. Mendoza-Denton, Downey, Purdie, Davis and Pietrzak (2002) added that individuals who repeatedly experienced discrimination began to expect rejection from their stigmatized identity. For example McCabe, Bostwick, Hughes, West and Boyd, (2010) observed that lesbian, gay and transgender (LGT) persons who perceived higher rates of discrimination had higher alcohol consumption compared to those that had low perception of discrimination. Also a study by Hatzenbuehler, McLaughlin, Keyes and Hasin (2010) reported that in LGBs states that had banned gay marriage had an increase in alcohol use compared to LGBs in states that allowed gay marriages. McCabe et.al (2010) argued that the amount of alcohol used was determined by the number of domains individuals report to be discriminated against. For example individuals with racial, sexual and gender discrimination reported more alcohol use than those discriminated only against sexual orientation.

Yeh and Inose (2003) observed that international students in America, particularly those from non-European countries, often perceived prejudice and discrimination due to dissimilarities from the dominant American culture and since these students were living away from family and friends, these students felt lonely, as well as frustrated by their insufficient English language skills. Limited access to accustomed social and academic practice made them to feel helpless and as a result, the cross-cultural college experience was perceived as threatening and led them to the use of emotion-focused coping strategies which included alcohol use.
Psychological Stress and Addiction

Taylor, Lewis and Olive (2013) defined addiction as the chronic, relapsing brain disease characterized by compulsive drug seeking and use despite its harmful consequences. They added that it has two properties that are; it is reinforcing which would mean that a person would increase the likelihood of using the desired substance again. The second property is that it is rewarding and this would create a perception that the alcohol used is desirable. According to Measelle, Stice and Springer (2006), negative life events when combined with chronic distress could be predictive of addiction vulnerability. However Goldman, Oroszi and Ducci (2005) argued that environmental factors were not solely responsible for addiction but also genetics played a role. He added that genetic variants that altered alcohol reward- or stress-related emotional processing were therefore a determinant if one was to get addicted. A combination of genetic and environmental factors would result into increased reward from alcohol to enhanced stress responses and anxious personality traits.

The self-medication hypothesis of substance use suggested that people develop substance use problems in an attempt to manage distress associated with the effects of trauma exposure and traumatic stress symptoms. This theory implied that youth turned to alcohol and other drugs to manage the intense flood of emotions and traumatic reminders associated with traumatic stress or PTSD, or to numb themselves from the experience of any intense emotion, whether positive or negative (the National Child Traumatic Stress Network, 2008). In addition, Perkonigg, Kessler, Storz, and Wittchen (2000) showed that substance use develops following trauma exposure (25%–76%) or the onset of PTSD (14%–59%) in a high proportion of teens with substance use disorders.

Stress was associated with psychiatric mood and anxiety disorders like PTSD, conduct disorders and anxiety disorders. This comorbidity often led to a perception of chronic distress which made one engage in an increase of substance use and this led to addiction (Reed, Anthony & Breslau, 2007).
In a study by Pacak (2002), it was observed that during exposure to stress, the glucocorticoids increased leading to the release of dopamine from the nucleus accumbens (NAc). Suppression of the glucocorticoids adrenalectomy led to reduction of the levels of dopamine within normal conditions or with the effect of stress. However excessive glucocorticoids would prevent dopamine synthesis and turn over. This implied that changes in the Hypothalamic-Pituitary-Adrenal axis (HPA) and glucocorticoids affected the transmission of dopamine. In addition it was also observed that alcohol, stress and other related factors increased in corticotropin releasing factor (CRF) and glucocorticoids, enhanced glutamate activity in the Ventral Tegmental Area (VTA) and in the end it caused increased activity of dopaminergic neurons.

According to Heilig et.al, (2010), it was noted that when a person used alcohol to cope with negative feelings like anxiety, it created a negatively reinforcement for alcohol use, an incentive that was clearly distinct from that which was driven by activation of brain reward circuitry which in turn created a viscous cycle in which negative reinforcement led to progressive increase of alcohol consumption over time. In this process, withdrawal from an episode of heavy intoxication led to symptoms of anxiety and with repeated cycles of heavy intoxication and withdrawal, the negative emotional state sensitized or increased in strength and in the end resulted in negative emotionality that persisted and provided a powerful incentive for resumption of alcohol intake or addiction.

When a person had high emotional stress they usually had low control over their impulses, lower ability to stop inappropriate behaviors and difficulty in delaying gratification (Tice, Bratslavsky & Baumeister, 2001). According to Arnsten (2005), stress weakened the prefrontal circuits, which in turn impaired executive functions like working memory and self-control. For example, Wills (2006) observed that adolescents who experienced various stressors were more likely to show decrease in emotional control and low self-control which leads them to addiction.
In addition, Everitt and Robbins (2005) examined that chronic life experiences greatly affected corticostriatal-limbic dopamine pathways like the VTA, NAc, hippocampo-prefrontal pathway (H-PFC) and the amygdala which have been associated with impulsivity, decision making, and addiction.

The change in the stress and dopamine response could come as a result of craving for alcohol after abstinence. Other clinical symptoms from abstinence from alcohol include irritability, anxiety, emotional distress, sleep problems and aggressive behaviors (Sinha, 2001). In a study by Sayette (2000), it was reported that craving was an overwhelming need for a stimulus. In terms of over consumption of alcohol, this is usually associated with physiological need, and a strong intention to acquire the desired object, thereby addicted patients display more compulsive nature of the craving by seeking out the drug of choice. According to Stewart (2003), stress exposure was associated with compulsive seeking and craving. Therefore changes in molecular and cellular systems causes behavioral manifestations in craving.

According to Sinha (2000), models that explain the relationship of stress and alcohol consumption assume that the purpose of consuming alcohol id to improve mood and remove emotional distress. At first the alcohol can be used to remove the emotional distress and when the person receives positive outcomes, they adopt the same methods to improve mood. Therefore stress relies and the need for improved mood could both make a person vulnerable to dependence. In a study about trauma and stress symptoms among 459 participants (59.7% males) with alcohol, drug or dual dependence it was reported that stress symptoms was approximately two times greater among those reporting dual dependency (alcohol and drugs) rather than alcohol dependence (Driessen, Schulte, Luedcke, Schaefer, Sutmann, et. al, 2008). This study also reported a significantly lower mean age of onset of alcohol related problems among those with trauma and stress. In addition Back, Brady, Sonne and Verduin (2006) assessed improvements in trauma and stress symptoms and alcohol dependence after a 12-week treatment program.
They found that lower levels of trauma and stress systems were associated with lower alcohol dependence symptoms.

**Alcohol use and Addiction**

Alcohol has been present in many cultures for generations and is used for various situations like rituals of social and religious significance (Craig, 2004). Peltzer and Malaka (2001) argued that alcohol use was associated with attaining a certain age, being at a social event, celebration or a ceremony but the culture changed greatly and so it became easy for people to obtain alcohol at any time they wish. Alcohol use was not only present at religious, familial and social circumstances but also in schools, workplace settings and this increased the chances of alcohol misuse and addiction. They added that less attention paid to culture and a tradition contributed to increased alcohol use which later led to addiction.

Myadze and Rwomire (2014) noted that different cultures had distinct understandings of alcohol consumption and dependence. Society was responsible for coming up with the expected reactions and definitions of alcohol consumption. The alcohol consumption within African settings was mostly communal and backed up by traditional norms. With time the cultural norms were not respected as people would find excuses to over indulge in alcohol during these traditional customs and this process contributed greatly to dependence. According to Foster (2014), there are mainly four main reasons why people used alcohol were; to be social, to create a positive mood, to cope, or to conform. Coping and conforming were considered negative motives, with drinking to cope more likely to be associated with alcohol use disorders like addiction. Also Foster, Neighbors and Prokhorov (2014) added that the way alcohol was linked to a person’s identity and self-image played a role in the impact that motives had on drinking patterns. Heavy drinking among young adults was often the result of intending to drink heavily. Many factors influence this decision-making process, including social norms and future plans.
The factors that occur during a drinking episode can also change how much is consumed, including available funds, behavior of friends, mood and transportation options.

Some jobs that are linked to alcohol can also lead to addiction. For example some musicians used alcohol to cope with their job insecurity, stress from work and the need for constant socialization (Gronnerod, 2002). Howell, Riplinger and Piazza-Gardner, (2015) reported that alcohol was also a part of sports culture. Student athletes were more likely to drink than student non-athletes, although this depended on time of year that is on and off season, the sex of players, level of competition and type of sport in some situations. In addition, Nelson and Wechsler (2003) observed that students who were fans of sports at college were also more likely to drink and drink heavily. They added that teenagers’ involvement in sports may lead to heavier drinking later on.

A study by Crum, Muntaner, Eaton and Anthony (1995) found that men employed in high-strain jobs (i.e., jobs with high demands and low control) generally had more alcohol use disorders when compared with men in low-strain occupations (i.e., jobs with low demands and high control). However, this increase was greater for men in positions with high physical demands than for men in positions with high psychological demands. Alcohol used in different locations can determine the risk of addiction. Certain locations were associated with drinking and most likely increased the chance of heavy drinking (Clapp, Reed, Holmes, Lange & Voas, 2006).

According to Kypri, PAschall, Langley, Baxter and Bourdeau (2010) drinking from places like bars and off campus housing increased the amount of alcohol consumed. Also, Paradis (2011) observed that drinking at a friend’s house or in a restaurant was associated with lower levels of drinking among adults. He added that becoming a parent was related to decrease in alcohol consumption, which is likely at least partially due to less time spent at locations where heavy drinking is more prevalent. Individuals who drank alcohol with their friends were more likely to have heavy drinking and therefore could become addicted.
Drinking alcohol was strongly linked to being social. In fact, young people would emphasize positive social experiences associated with drinking to compensate for the negative impacts (Niland, Lyons, Goodwin & Hutton, 2013). Drinking patterns within a social network had an important impact on use (McCutcheon, Lessov-Schalgger, Steinley & Bucolz, 2014). Although Kypri et al. (2010) argued that loneliness is also linked to heavy use. Also Kairouz and Greenfield (2007) argued that social support can sometimes decrease how much alcohol is consumed.

Myadze and Rwomire (2014) reported that when the distribution of modern and crude alcoholic beverages started to emerge in Africa their demand also increased. Most of the locally produced brews were cheap and are easily affordable so it led to addiction. Also since alcohol was always given as a sign of hospitality, people would over indulge in it because it was free and this led to addiction. In the traditional settings, alcohol was used as a way of relieving the body from physical tension associated with hard work. The association of alcohol and relief from stress was made from earlier times and therefore when modern beverages were introduced it was easier for people to use the same methodology of stress relief.

**Alcohol Use and Addiction is Moderated by Psychological Stress**

In a study by Carrasco and Van de Kar (2003) it was reported that activation of the same biological systems during stress and alcohol consumption takes place. Therefore to distinguish the association of stress and alcohol consumption and alcohol dependence is difficult. They added that one of the neurotransmitter norepinephrine responds to stress symptoms and alcohol consumption. Activation of the norepinephrine neurons takes place when a person is stressed and continued activation of these neurons causes increased sensitivity of the stress-induced norepinephrine responses. Goodman (2008) added that the norepinephrine neuron played roles in the consumption of alcohol and the stress-induced reinstatement of alcohol seeking.
A report by Erickson, Gabry, Lindell, Champoux, Schulkin, et al. (2005) showed that the \( \alpha_2A \)-adrenoceptor was an important controlling of norepinephrine signaling and a putative pharmacological target. In addition Marinelli, Funk, Juzytsch, Harding, Rice, Shaham and Le (2007) added that changes of the \( \alpha_2A \)-adrenoceptor effected the consumption of alcohol. When the \( \alpha_2A \)-adrenoceptor antagonist was manipulated, it would cause increase in the norepinephrine, inducing stress- and anxiety-like responses and causing someone to seek alcohol when the alcohol effects are no longer being experienced by the body. On the other hand, manipulation of \( \alpha\alpha_2A \)-adrenoceptor agonists led to lower levels of the norepinephrine in the synaptic cleft and reduces craving of alcohol and alcohol consumption. In conclusion Clarke, Dempster, Docherty, Desrivieres, Lourdsamy, Wodarz, Ridinger, Maier, Rietschel & Schumann (2010) noted that the combination of the Adra2a gene and a diagnosis of genetics with addiction indicated that there is link between the \( \alpha_2A \)-adrenoceptor, stress and alcohol consumption and dependence.

The systematic model of stress showed how stress affects alcohol use and addiction by emphasizing on the specific behavioral and neurochemical responses of stress and drug use and indicating the neurobiological pathways where both stress and drugs of use respond (Caspi, 2002). It had three vulnerability factors which include the developmental/individual-level, stress-related vulnerability factors and the family history of mental illness and dependence. Kauer and Malenka (2007) added that changes of cognitive and behavioral controls were caused by influence of stress and alcohol consumption in the neurobiological pathways. According to Nestler (2005) molecular and cellular changes were responsible for the process to which stress and genetic factors interacted to cause involvement of maladaptive behaviors. He added these vulnerabilities combined with stress increased the likelihood of a person having in maladaptive stress and problem with self-control which could lead to addiction.
The stress response was described to start from when an individual experiences a stressful situation the hypothalamus would then release the corticotrophin releasing hormone (CRH) where it would interact with the CRH receptors. The interaction would stimulates the anterior pituitary to produce a molecule called proopiomelanocortin (POMC), which then was processed further into smaller, biologically active peptides, including β-endorphin and the adrenocorticotropic hormone (ACTH). The ACTH subsequently was carried through the blood to the adrenal glands, where it induced secretion of glucocorticoids. The glucocorticoids have cortisol which was transported to the various body parts and the alcohol and other drug reward system/ dopamine system which includes structures like the nucleus accumbens (NAc) and the ventral tegmental area (VTA).

When the cortisol was in these areas it induced the stress physiological responses like increase in blood pressure and increase in glucose levels. The cortisol secreted by the adrenal glands was then transported through the bloodstream back to the pituitary gland, hypothalamus, and hippocampus, where they interacted with specific receptors to shut off the Hypothalamic-Pituitary-Adrenal axis (HPA) and thereby limiting the stress response (Adinoff, Junghanns, Kiefer & Krishnan-Sarin, 2005). Alcohol use was associated with increased sensitivity of the dopamine reward system and this encourages the person to use more alcohol because they want to benefit from more positive effects of the alcohol (Vanderschuren & Everitt, 2005).

During stress exposure one could get the craving for alcohol and this led to addiction. Molecular and cellular changes in the dopamine pathway caused behaviors of craving and seeking out of a drug (Sinha, 2011). In addition in an experiment by Sinha (2008) where participants with dependence systems were studied after exposure to stressful and non-stressful drug-cue situations and neutral relaxing situations using imagery revealed that participants with addiction displayed symptoms of fear, sadness, and anger. This in comparison to participants who were stressed with public speaking, they only displayed symptoms of fear, but no anger.
In addition, Sinha and O’Malley (1999) reported that people exposed to images of their stressors were at an increased risk of having negative emotions, bodily responses which resemble withdrawal symptoms and craving and these factors would encourage alcohol consumption and later dependence. Also Al’absi, Hatsukami and Davis (2005) reported that people abstaining from alcohol and smoking showed changes in the basal HPA responses.

**Hypotheses**

1. Psychological stress is a significant predictor of alcohol use.
2. Psychological stress is a significant predictor of addiction.
3. Alcohol use is a significant predictor of addiction.
4. The relationship between alcohol use and addiction is dependent on the level of psychological stress.
Chapter Three
Methodology

Introduction

This chapter includes the study design, study population and instruments of measure, study limitations and anticipated results. This chapter indicated how the study design was conducted and how data was analyzed.

Study Design

The study used quantitative correlational study design. This design is used to measure the extent to which a relationship between two quantifiable variables exists (Kowalczyk, 2003). Therefore, it was employed for this study because the study sought to determine the extent to which psychological stress moderated the relationship between alcohol use and addiction.

Study Population

The study included adult men and women using alcohol and currently residing in Omoro district.

Sample Size

G power software version 3.1 was used to determine the sample size. The tool is used to identify statistical power analysis for different t tests, f tests and z tests and also compute effect sizes (Faul, Erdfelder, Buchner & Lang, 2009). It used a moderate sample size effect of (0.15), level of significance of (0.05) and power of (0.95). The minimum number of respondents generated by G power for the study was 89. In order to increase statistical power, the minimum number was doubled to 178. Therefore, a sample size of 178 was used for the study.
Sampling Technique

The study used the purposive method of data collection because it helped the researcher to identify adults who used alcohol at least three days a week. Participants who used alcohol less than three days in a week were not included in the study.

Inclusion and Exclusion Criteria

The participants in the study were between the ages of 18 to 50 years of age of both female and male gender. This age requirement was chosen because the legal age of drinking starts from 18 and although younger people may also consume alcohol they may not be truthful while answering the questionnaire and also this population is most likely to have been victims of stressors from the LRA war and may use alcohol as a coping mechanism (Kasirye & Tumwesigye, 2005). Both genders were considered because various literatures indicated that there is a small percentage difference between men and women abusing alcohol and both genders are equally exposed to stress (American Psychological Association, 2011).

In terms of religion the study excluded the individuals with Islamic faith since alcohol is not accepted in their faith. Although some Muslims may use alcohol they may provide biased information in order to protect their image. Since all categories of people use alcohol, all relationship statuses were included in the study. The study considered only spirits which is distilled alcohol with an ethanol content of between 20 and 40% which includes drinks like Uganda waragi and local distilled alcohol and ignored other types of alcohol plus other drugs. This helped the study to have homogenous results since the type of alcohol was of the similar type. Also the kinds of alcohol which lie in this ethanol percentage are cheap and easily accessible. Therefore, they are easily used. Alcoholic drinks with a lesser ethanol percentage that is below 20% like beers and wines are often expensive and therefore will be rarely chosen as an addiction substance.
For instance, Mapenduzi (2016) reported that Northern Uganda was leading in the country in the sale, production and consumption of alcoholic products, especially *waragi* packed in sachets which are causing a lot of problems to the community.

**Instrumentation**

The study designed an assessment tool which helped to generate bio data information from the respondents. This was beneficial in classifying the different respondents according to their demographics during the analysis.

The study used the perceived stress scale to assess level of stress. The Perceived Stress Scale (PSS) is one of the most sought out tools for measuring the perception of stress. It measures the extent to which a person’s situation is appraised as stressful. The questions on the scales measure for predictability, ability to control and manage the situation. The total score is got by reverse coding the scores for items 4, 5, 7, & 8 (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) and then summing across all scale items. In Uganda the PSS was used to predict maternal depression and quality of life. It indicated a reliability of 0.79 (Cronbach’s alpha scale) validity of 0.63 (Wadephul, Jones & Jomeen, 2016).

The study used the AUDIT sub scores to assess for addiction and alcohol use. The AUDIT has three subscales; the total score of questions 1, 2 and 3 measured alcohol use, total score of questions 4, 5 and 6 measured dependence symptoms or addiction, the third subscale which is alcohol problems was measured by summing up questions 7, 8, 9 and 10(The National Institute on Alcohol Use and Alcoholism, 2005). The AUDIT was reported to have a high reliability (r = .86). The AUDIT was used successfully in South Africa where it indicated a Cronbach alpha scale of 0.88 showing excellent reliability (Peltzer, Naidoo, Matseke & Zuma, 2006). Both these tools were not pilot tested but the researcher although the Cronbach alpha scale for previous studies that had used the tools was included by the researcher.
**Procedure**

The researcher obtained a letter of introduction from Makerere University, school of Psychology, department of Mental Health and Community Psychology which helped to identify the researcher during the data collection.

Respondents were identified from drinking places during the day time. The researcher introduced herself to the participants and explained the purpose of the research. Participants were asked for their consent to take part in the study. Confidentiality issues were explained beforehand and were maintained by the researcher. Participants were told they don’t have to include their name on the questionnaire. Questionnaires were given to participants who were willing to participate in the study and the researcher emphasized that no compensation would be given for the participants. Questionnaires were self-administered but the researcher gave assistance in situations where a participant was willing to participate but they are not able to read or write. When the participant was unable to understand English the researcher used an interpreter to translate in the local language. The questionnaires were translated in Acholi language which is the most commonly used local language in the study area.

**Ethical Concerns**

Participants who were identified with extreme levels of stress or alcohol use were educated about their condition and then referred to a specialist like counselors who worked in the area for counseling.

In order to reduce the number of inaccurate information generated in the study, Participants were encouraged to be truthful since the information generated was to be used for study purposes. Confidentiality issues were also emphasized through informing the participants that the questionnaires will be kept confidential.
Participants were found in the drinking places around the trading centers, in their home areas. They were also identified through the Village Health Teams (VHTs) who work in the area. Participation was voluntary so no compensation like transport refund was given.

**Data Analysis**

The data was to be entered into software and analyzed using software that would code the responses. The data was entered into SPSS version 22, IBM Corp. IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp (2015). The analysis generated frequencies, percentages, means and standard deviation which were all be considered in analysis. Hypothesis 1, 2 and 3 was tested using linear regression because it was testing the relationship between the variables and it would help generate their contribution to the overall variance while hypothesis 4 was tested using PROCESS macro for SPSS by Hayes A.F. (2012). This tested if the relationship between the two variables was dependent on the third variable. It helped to determine the value of a variable based on the value of two or more variables (Cohen, Cohen, West, Aiken, 2003). Therefore, it tested if alcohol use and addiction are dependent on the level of stress.
Chapter Four

Results

Introduction

The purpose of this study was to find out the extent of the relationship between psychological stress and alcohol use is moderated by psychological stress in Omoro district. The study was guided by four hypotheses; psychological stress is a significant predictor of alcohol use, psychological stress is a significant predictor of addiction, alcohol use is a significant predictor of addiction and the relationship between alcohol use and addiction is significantly dependent on the level of psychological stress.

The findings in this chapter are therefore presented according to each hypothesis in a table form. The social demographics variables of the study participants were analyzed and the distribution of the participants is indicated in tables 1, 2, 3 and 4.

Table 1

*Age Demographic Characteristics of Respondents*

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>10</td>
<td>5.6</td>
</tr>
<tr>
<td>26-33</td>
<td>51</td>
<td>28.6</td>
</tr>
<tr>
<td>34-41</td>
<td>51</td>
<td>28.7</td>
</tr>
<tr>
<td>42-50</td>
<td>66</td>
<td>37.1</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The age range for the participants was between 18 and 50 years. Majority of the participants were aged 42-50 years with a percentage of 37.1.

The participants between the ages of 34-41 had a percentage of 28.7, respondents who were between the ages of 26-33 consisted of 28.6 percent of the sample and the respondents between the ages of 18-25 had the least percentage of 5.6. The study results demonstrated that majority participants in the study were above 25 years.

Table 2

*Sex Demographic Characteristics of Respondents*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>36</td>
<td>20.2</td>
</tr>
<tr>
<td>Male</td>
<td>142</td>
<td>79.8</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The results of the study revealed that 79.8 percent of participants were male and 20.2 percent of the participants were female. The study focused on assessing those who consumed alcohol more than three days a week, so the results indicate that males consumed alcohol more frequently than females.
Table 3

*Marital Status of Respondents*

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divorced</td>
<td>3</td>
<td>1.7</td>
<td>3</td>
</tr>
<tr>
<td>Married</td>
<td>137</td>
<td>77.0</td>
<td>137</td>
</tr>
<tr>
<td>Single</td>
<td>36</td>
<td>20.2</td>
<td>36</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>1.1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>100.0</td>
<td>178</td>
</tr>
</tbody>
</table>

According to the study sample population, 77 percent of participants were married and these had the highest percentage. 20.2 percent of the respondents were single, 1.7 percent of the sample selected was divorced and the least percentage of 1.1 had respondents who were widowed. Therefore the results indicated that majority of the respondents in the study are married.
Table 4

Education Level of Respondents

<table>
<thead>
<tr>
<th>Education level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>19</td>
<td>10.7</td>
</tr>
<tr>
<td>Primary</td>
<td>128</td>
<td>71.9</td>
</tr>
<tr>
<td>Secondary</td>
<td>29</td>
<td>16.3</td>
</tr>
<tr>
<td>University</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>178</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The sample population indicated that 71.9 percent of participants had only acquired a primary education. 16.3 percent of the sample had acquired secondary level education, those without any form of education constituted of 10.7 percent and those who had university level of education had a percentage of 1.1. These results showed that the area where the research was carried out has majority of respondents with no education background and only primary education were the majority in the sample. The reason for the results could be that individuals with a post primary education may leave the village for town settings as they have possibilities of getting jobs.

Testing Hypothesis One

Hypothesis one stated that Psychological stress is a significant predictor of alcohol use. The hypothesis was analyzed using linear regression. The results were presented in table 5
Table 5

*Psychological Stress and Alcohol Use*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.893</td>
<td>.962</td>
<td>3.009</td>
<td>.003</td>
</tr>
<tr>
<td>Stress</td>
<td>.150</td>
<td>.041</td>
<td>.264</td>
<td>3.631</td>
</tr>
</tbody>
</table>

Dependent variable: Alcohol consumption

The results indicated that for every unit change in stress it was associated with a .150 increase in alcohol consumption. The results of the analysis showed that $t=3.631$, $F=13.185$, $r^2=0.070$, $p<0.001$. This means that stress contributed 7 percent variance in alcohol consumption. Therefore the results support the hypothesis that stated that psychological stress is a significant predictor of alcohol use in Omoro district.

**Testing Hypothesis Two**

Hypothesis two stated that Psychological stress is a significant predictor of addiction. The hypothesis was analyzed using linear regression. The results were presented in table 6.
Table 6

*Psychological Stress and Addiction*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-1.342</td>
<td>1.034</td>
<td>-1.297</td>
<td>.196</td>
</tr>
<tr>
<td>Stress</td>
<td>.249</td>
<td>.044</td>
<td>.389</td>
<td>5.607</td>
</tr>
</tbody>
</table>

Dependent Variable: Addiction

The results indicated that for every unit change of stress score, it was associated with a .249 increase in addiction. The study results showed that $t=5.607$, $F=31.433$, $r^2=.152$, $p<.001$. This showed that stress contributed to 15.2 percent variance of addiction (.389). Thus the study supported the hypothesis that psychological stress is a significant predictor of addiction.

**Testing Hypothesis Three**

Hypothesis three stated that alcohol use is a significant predictor of addiction. The hypothesis was tested using linear analysis. The results were presented in Table 7.
Table 7

_Alcohol use and Addiction_

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-.763</td>
<td>.399</td>
<td>1.909</td>
<td>.058</td>
</tr>
<tr>
<td>Alcohol Consumption</td>
<td>.810</td>
<td>.059</td>
<td>.719</td>
<td>13.722</td>
</tr>
</tbody>
</table>

Dependent Variable: Alcohol Dependence

The results indicated that a unit change in the alcohol consumption score increased the addiction score by .810. The study results showed that \( t = 13.722, F=188.304, r^2 = 0.517, p<.001 \). This indicated that alcohol consumption contributed to 51.7 percent variance of alcohol dependence. Therefore alcohol use (.719) had a positive impact on alcohol dependence. Thus the study supported the hypothesis that alcohol use is a significant predictor of addiction.

_Techning Hypothesis Four_

Hypothesis four stated that the relationship between alcohol use and addiction is significantly dependent on the level of psychological stress. The hypothesis was tested using the PROCESS method by Andrew F. Hayes. The independent variable was alcohol consumption, the dependent variable was addiction and stress was the modulator. The results were presented in Table 8.
Alcohol use and stress both had a positive significant relationship to dependence. However when stress was used as a modulator, the interaction level showed $t=29.8014$, $p=.8088$. This means that $p>0.5$. Therefore stress did not act as a modulator to the relationship between alcohol use and addiction. The possible explanation for these results is that there was limited variability in the sample population selected. The results showed that irrespective of the level of stress the sample population selected was still consuming alcohol and they were already addicted.
Chapter Five

Discussions, Recommendations and Conclusions

Discussion

The discussion is presented according to both the hypotheses of study and it also based on the results in relation to the reviewed literature

Psychological Stress and Alcohol Use.

The current study findings indicate that there is a significant relationship between psychological stress and alcohol use. These findings agree with MacDonald (2007) who reported that victims of the war in Northern Uganda living in internally displaced people camps (IDPs) in Gulu, Kitgum and Pader Districts were found to have high alcohol use. The possible explanation for the similarities in results is that both studies had participants from Acholi region and they were exposed to similar stressors. Despite the similarities in results, the current study however focuses on stress from the past four weeks and does not look at long time stress which is the case with MacDonald’s study.

The current study revealed a significant relationship with psychological stress and alcohol use, consistent with a study by Keyes et.al. (2010) which reported that alcohol intake increased with individuals who reported six or more stressful situations. The possible explanation for the similarities in results for both studies is that both studies had participants consuming alcohol heavily and frequently so they were high possibilities that they would use alcohol to reduce the effects of stress. However the current study does not put attention to the number of stressful situations that were experienced by the respondents in Omoro.

The current study findings are in agreement with Kohn et.al, (2005), Reijneveldet.al.(2003) who suggested that stress had an association with increase in alcohol consumption.
The possible explanation for the similarities in results for both studies is that in both studies that in both studies had participants who used alcohol for the benefits of reducing stress. Therefore many people have learnt to use alcohol as a coping mechanism for stress. The current study however differed from Reijneveld et.al (2003) study because it did not focus on the neurological systems for stress.

The current study findings collaborate with Barrett and Turner (2006) who reported that early childhood stressors contributed to an increased risk of abusing alcohol. In addition, Enoch, (2010) revealed that child maltreatment was associated with early alcohol use and alcohol disorders. This is in agreement with this study which indeed found that psychological stress is a significant predictor of alcohol use in Omoro district. The possible explanation for the similarities in both studies and the current study is that the participants in both studies were exposed to various stressors. This is in agreement with this study which indeed found that there was a significant relationship between psychological stress and alcohol use in Omoro district. However, the current study has only adult respondents and does not put any emphasis on the impact of stress experienced by children which is the case for Enoch (2010) and Barret and Turners’s (2001) studies.

The current study results correspond to King, et.al (2003) who reported that stressful life events are associated with alcohol consumption and problem alcohol use. Also Covault et.al (2007) reported that students increased their alcohol intake when they experience stressful life events. The possible explanation for the similarities in both studies is that the participants were consuming alcohol majorly for its stress reducing properties. However these studies have respondents who were in the university and the current study mostly has respondents who mostly have primary and no level of education.
Psychological Stress and Addiction.

Findings for the current study analysis of psychological stress and addiction reveal that psychological stress was a significant predictor of addiction. These findings agree with the National Child Traumatic Stress Network (2008) which explained that people develop substance use problems in an attempt to manage distress associated with the effects of stress symptoms. The possible explanation for the similarities in both studies is that the participants in both studies were using alcohol when they felt distressed but the effects would be short lived therefore more alcohol would be consumed whenever they would feel stressed. However the current study focuses on short time stress which had lasted for four weeks and not on stress emanating from trauma which often occurs after a prolonged period of time which is the case for study by the National Child Traumatic Stress Network (2008).

The results of the current study which show that psychological stress was a significant predictor of addiction are in collaboration with a findings made by Back et.al (2006) who observed that decrease in stress levels lead to a decrease in the levels of alcohol dependence among the sample. The possible explanation for the similarities in both studies is that the results in both studies indicated participants with lower stress levels had slightly lower differences in the amount of alcohol consumed than those with high stress levels. In that case high stress levels will lead to addiction and vice versa.

The current study results which show that psychological stress was a significant predictor of addiction agree with Reed et.al. (2007) who reported that psychological stress can lead to addiction. This is because stress has comorbidity with PTSD, conduct disorders and anxiety disorders. The possible explanation for the similarities in both studies is that in both studies participants had been exposed to situations which could have made them susceptible to
psychological disorders and they coped with these disorders by consuming alcohol frequently to reduce the negative effects of stress associated with the psychological disorders.

These disorders make one engage in an increase of substance use because of their risk taking and inability to relax characteristics. The end result is that it leads to addiction. The current study however only looks at the effects of stress on alcohol disorders and not any other disorders which is the case with Reed et.al study.

The current study reveals that psychological stress was a significant predictor of addiction. This is consistent with a study by Wills (2006) who observed that adolescents who experience various stressors were more likely to show decrease in emotional control and low self-control which leads them to become addicted. The possible explanation for the similarities in both studies is that the participants included in both studies were consuming high amounts of alcohol. This indicated low self-control measures. Although the results of the current study and Wills (2006) correspond, the difference is that the current study has all its respondents having an age of above 18 years unlike Wills (2006) whose study has a sample size of adolescents below 18 years.

**Alcohol Use and Addiction.**

The results of the study indicated that alcohol use was a significant predictor of addiction. The results agree with the study by Wechsler (2003) observed that drinking alcohol could lead to heavier drinking later on. Therefore, when people consume alcohol they are encouraged to drink more which later leads to addiction. The possible explanation for the similarities in results is that both studies are that both studies had participants engaging in heavy drinking. Despite the similarities in findings, Wechsler’s study had university students as a study sample while the current study had majorly participants with a low level of education.

The current study results are in agreement with (Gronnerod, 2002) who reported that alcohol use can lead to addiction. He explained that when a person uses alcohol the brain learns to
associate alcohol with pleasure feelings. When these feelings wear off, the person becomes uncomfortable, unable to relax and they start to crave for more alcohol to cope with negative feelings. The possible explanation for the similarities in results is that both studies had participants using alcohol for its stress relieving properties. Thus alcohol use can lead to addiction.

The study findings are in agreement with Niland, Lyons, Goodwin & Hutton, (2013) who reported that individuals that drink alcohol can become addicted. This is because alcohol is a social activity and it is consumed on almost every gathering. The possible explanation for the similarities in results is that both studies had participants who used alcohol as a routine and frequent activity. The frequent alcohol use in both studies created a dependency syndrome which led to addiction. This implies that frequent alcohol use can cause addiction. Despite the similarities in the findings, the current study focused on how alcohol is used to reduce the negative effects of stress and Niland et.al study focused on alcohol in social settings.

The current study results that show that alcohol use was a significant predictor of addiction correspond with the study by Myadze and Rwomire (2014) who reported that alcohol use can lead to addiction. The possible explanation for the similarities in results is that both studies took place in traditional African settings and focusing on locally produced brews which are cheap and are easily affordable. Although the two studies have similar findings, they differentiate in a way that the current study only centers on stress as a factor for alcohol use while Myadze and Rwomire studied many factors that could lead to alcohol use.

**Alcohol Use and Addiction is Moderated by Psychological Stress.**

The current study results that show that Alcohol use and the addiction are not moderated by psychological stress. These disagree with Clarke, Dempster, Docherty, Desrivieres, Lourdsamy, Wodarz, Ridinger, Maier, Rietschel and Schumann (2010) who noted that the association between polymorphisms in the Adra2a gene and positive family history of AUD indicate that there is link between stress and alcohol drinking and addiction. Also, Marinelli, Funk,
Juzytsch, Harding, Rice, Shaham and Le (2007) study reported that manipulations of the α2A-adrenoceptor showed an effect in alcohol intake.

They reported that manipulation of a α2A-adrenoceptor antagonist, increases norepinephrine release, induces stress- and anxiety-like responses, and reinstated alcohol seeking after extinction and this would lead to addiction. The difference in results may be because the studies focus is on physiological stress while the current study focus is on psychological stress.

The current study results disagree with Sinha (2011) whose study showed that when one is exposed to stress one can get the craving for alcohol and this may lead to addiction. This means that in the absence of stress there will be no desire to consume alcohol and one might not get addicted. However, the study results indicate that that the relationship between alcohol use and addiction is not moderated by psychological stress. A possible explanation for this is that the participants chosen for the study were already consuming alcohol at least three days in a week. Therefore, they were already addiction and many factors were responsible for the alcohol consumption with stress playing a small part.

The current study results are not in collaboration with Fox, et.al, (2007) who reported that stress can moderate the relationship between alcohol use and addiction. They explained that people consume alcohol to cope with stress and also stress increases craving, anxiety, negative emotions, and physiological responses so these factors can encourage alcohol use and addiction. However, the study findings showed that the relationship between alcohol use and addiction is not moderated by psychological stress. The possible explanation for the current study results is that it does not look at long time stress. The study focuses on stressors that had occurred in the past month only.
Limitations of the Study

The study did not go into detail about the causes of the stress from the participants. Therefore, they were not directly helped by the researcher to deal with their stress. However the results would be shared with different stakeholders who may find solutions and educating people on the dangers of stress. Also participants who recorded high levels of stress from the questionnaire were referred to a psychiatrist or psychologist for further management.

The study focused on the use of one type of alcohol used and it ignored other types of alcohol and other recreational drugs. Although the results would easily be used to fit other drugs since they all use the same process of addiction.

The researcher was not fluent in the local languages spoken by the residents of Omoro and had to rely on interpreters and the translated documents. The nature of the questionnaires is that they are to be self-scored but the majority of the respondent had attained a low education level and could not read or write and so the researcher had to majorly rely on translation provided is prone to have various errors.

The research did not focus on long time stress. The perceived stress score assessing stress experienced during the past four weeks. Since majority the study population were direct and indirect victims of war, they are prone to have stress associated with the outcomes of war. Therefore, the study ignored other stressors that could also contribute to alcohol use and addiction but could have been suppressed during the time of the interview.

The research was specific to individuals who were consuming alcohol three or more days in a week. Therefore, majority of the participants were already in the range of addiction and they were heavy drinkers that means that regardless of the level of stress the participants were already addicted so the study did not effectively measure the moderating role of psychological stress because of the sample selected.
Recommendations

There is need stress management interventions among people living in Omoro. These interventions can be initiated by NGOs and other community support structures like church leaders, clan leaders and others. These skills will reduce alcohol use and addiction since the stress will be managed in other favorable ways.

Since the sample size selected did not have large distinctions in the amount of alcohol consumed, the results indicated that stress did not contribute to the relationship between alcohol use and addiction. In case there are future related studies, a sample size which includes individuals consuming alcohol at different frequencies and intensities should be selected. This may help to generate the extent to which the psychological stress moderates the alcohol-addiction relationship.

There is need for rehabilitation services to people in Omoro who report to have high alcohol intake. Currently there is no known alcohol addiction center in Omoro district. These services are needed so that free counseling services can be availed to the people and treatment for their addiction and alcohol use is provided.

On September 23rd 2016, Gulu district was permitted to place restrictions on the sale, consumption and the time of opening bars (Manishimwe & Musisi, 2017). These restrictions came two months after Omoro district had been cut off from Gulu district. This means that the alcohol restrictions do not affect Omoro which also has a high consumption rate. Therefore, Omoro district leaders should also create restrictions that will control the sale of alcohol. This may later on reduce the amount of alcohol consumed in Omoro district.

Conclusion

Basing on the findings, the following conclusions were made:
It was concluded that stress was a significant predictor of alcohol use. This implies that an increase in the level of stress leads to an increase in the amount of alcohol used and a decrease in the stress levels lead to a decrease in the amount of alcohol consumed.

Stress was a significant predictor of addiction. These findings mean that the higher the level of stress, the higher the tolerance level which leads to addiction. People will consume large amounts of alcohol as a method of reducing the negative effects of stress and the end their bodies become dependent on alcohol.

The results showed that alcohol use was a significant predictor of addiction. When people use alcohol frequently their tolerance level increases and therefore they will require more amounts to get the same effect they were previously getting with a lesser amount of alcohol. Therefore, gradual increase in the amount of alcohol consumed later results into addiction.

The results revealed that the relationship between alcohol use and addiction was not significantly dependent on the level of psychological stress. This is because the sample of respondents who were selected was already consuming alcohol three or more than three days in a week. Therefore, the respondents were already having a possibility of becoming addicted they were many factors involved in this and not necessarily only stress.
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Appendix A

Questionnaire

Code Number__________________________  Date ____________________
Sex/Gender ______________  Age __________  Marital Status ________________
Location _____________________________  Education level __________________

Dear Respondent,

I am undertaking a Master of Science in Clinical Psychology Program at Makerere University. As part of my course requirements I’m undertaking a research study. Prior to undertaking the study, I need your consent, and if you agree to participate in the study please respond to the items/questions. The information you give is to remain confidential and your names are not required.

Section A: PSS

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you are required to indicate by circling how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
   0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?
   0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

3. In the last month, how often have you felt nervous and “stressed”?
   0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?
   0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

5. In the last month, how often have you felt that things were going your way?
   0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often
6. In the last month, how often have you found that you could not cope with all the things that you had to do?

0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

7. In the last month, how often have you been able to control irritations in your life (things that annoy you)?

0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

8. In the last month, how often have you felt that you were on top of things or in control of situations?

0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

9. In the last month, how often have you been angered because of things that were outside of your control?

0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

0) Never  1) Almost never  2) Sometimes  3) Fairly often  4) Very often
SECTION B: AUDIT

*The following questions are about your use of alcohol. Your answers will remain confidential; so please be honest. For each question indicate (circle or Tick) a response in one box that best describes your alcohol use.*

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<th>Scoring system</th>
</tr>
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<tr>
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</tr>
<tr>
<td>1.  How often do you have a drink containing alcohol</td>
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<tr>
<td>2.  How many units of alcohol do you drink on a typical day when you are drinking?</td>
<td>1 - 2</td>
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<tr>
<td>3.  How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?</td>
<td>Never</td>
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<tr>
<td>4.  How often during the last year have you found that you were not able to stop drinking once you because of your drinking?</td>
<td>Never</td>
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<td>5.  How often during the last year have you failed to</td>
<td>Never</td>
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<td>6.  How often during the last year have you needed an alcoholic drink in the morning to get yourself going after a heavy drinking session?</td>
<td>Never</td>
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<td>7.  How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>Never</td>
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<td>8.  How often during the last year have you been unable to remember what happened the night before because you had been drinking?</td>
<td>Never</td>
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<td>9.  Have you or somebody else been injured as a result of your drinking?</td>
<td>No</td>
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<td>10. Has a relative or friend, doctor or other health worker been concerned about your drinking or suggested that you cut down?</td>
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## Appendix B

### Work Plan

#### 2017

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## Appendix C

### Budget

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