

Correlates of substance use disorder among patients in treatment at substance use disorder
rehabilitation facilities in the Western Cape

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Research Project

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ABSTRACT

Western Cape has the highest prevalence rates of Substance Use Disorder (SUD) with prevalence rates of 18.5%, versus the national average of 13.3%. Existing studies have emphasised that SUD is associated with exposure to trauma and Post-traumatic Stress Disorder (PTSD). In addition, demographic factors such as gender, race and socio-economic status have been correlated with SUD. However, limited research exists on the correlates of SUD among inpatients at substance abuse rehabilitation facilities in the Western Cape Province. The study aimed to address this gap in the literature by investigating the correlates of SUD among inpatients at SUD rehabilitation treatment facilities. A stratified, non-probability sampling method was used to identify 62 inpatients diagnosed with SUD at secondary SUD treatment facilities. Three self-report questionnaires were used to extract data for analysis, the Life Events Checklist 5 (LEC-5), the Post Traumatic Stress Disorder Checklist 5(PCL-5) and a demographic questionnaire. Results of the study showed that age was negatively related to the PCL-5 total ($p < .05$) and the PCL 5 Cluster E subscale ($p < .05$). The LEC total was positively related to the PCL-5 total ($p < .01$) and all the PCL Clusters. The PCL-5 total was positively related to all the PCL Clusters ($p < .01$). All PCL-5 subscales were positively related to one another ($p < .01$). LEC was a significant predictor of PCL-5 total as well as all PCL-5 subscales. No demographic variables were significant predictors of SUD.

10 Keywords: Correlational analysis, demographic factors, inpatients, Posttraumatic Stress Disorder, regression analysis, rehabilitation facilities, Substance Use Disorder, trauma



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Plagiarism Declaration

I declare that “Correlates of substance use disorder among patients in treatment at substance use disorder rehabilitation facilities” is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the resources I have used or quoted have been indicated and acknowledged as complete references.



20 May 2021

Belinda Anne van Niekerk

Date

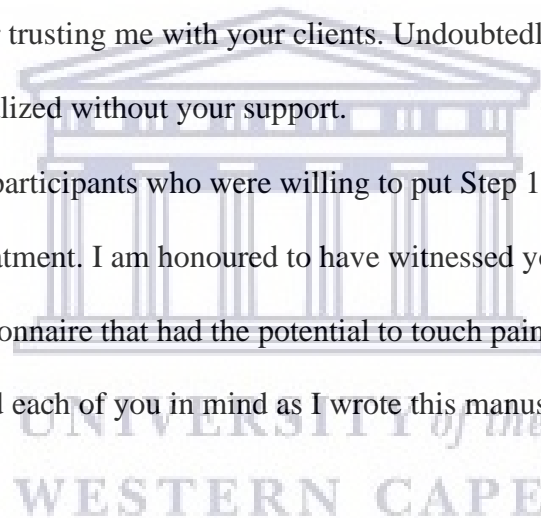
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DEDICATION

I would like to dedicate this manuscript to my “Grandpa Jack”, who passed away on 26 March 1981. Despite being tormented by chronic Alcohol Use Disorder, you always seemed to add humour to the lives of all who encountered you. During the most formative years of my development, you literally taught me to stop and smell the roses, all the splendid roses in your garden. With you, I could play, explore, sing and dance. You had every confidence in me to live my truth. I believe your love for a non-biological granddaughter played a crucial role in fostering the resilience I have needed many times in my life, in particular, for the completion of this project, to the best of my ability.

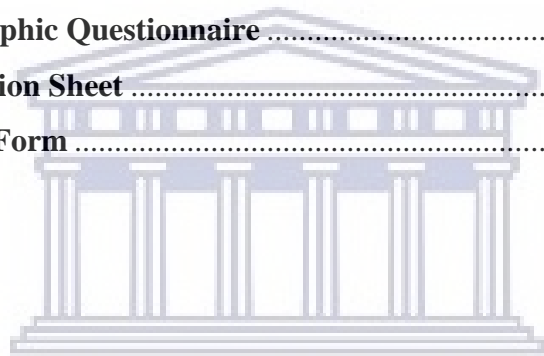


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CHAPTER ONE

INTRODUCTION

1.1

South Africa has been identified as one of the countries with the highest risk drinking patterns in the world. According to a 2014 Global status report, South Africa has the highest alcohol consumption per capita in Africa (Jacobs & Jacobs, 2016). While the amount of alcohol consumed in South Africa does not exceed those of international levels, hazardous patterns of binge drinking are among the most problematic globally (World Health Organisation (WHO), 2011, as cited in Lesch & Adams, 2016; Myers, & Pasche, 2012; Schneider et al., 2007, as cited in Govender et al., 2016). South Africa received a score of 4 out of a scale of 5, measuring risky drinking patterns (Adams et al., 2013) according to a WHO report issued in 2011.

The country has a high prevalence of substance use disorders with approximately 6% of the population meeting the DSM 5 criteria for Substance Use Disorder (SUD) during the past year (Herman et al., 2009, as cited in Myers et al., 2014). The increase in substance abuse rates in South Africa have been attributed to wider opening of the country's borders, subsequent to the establishment of a democratic government post 1994 elections. As a result of loose border control, modern telecommunications, banking systems, a weak criminal justice system and trade links with countries associated with drug trading, trafficking of drugs into the country has become easier, resulting in easier access to substances other than alcohol and cannabis (Plüddemann et al., 2008, as cited in Nyabadza & Coetzee, 2017).

While prior to the 1994 elections, cannabis, alcohol and methaqualone were the substances most often abused, current substance abuse trends have identified opiates, inhalants, hallucinogens, amphetamines (including cocaine) and sedatives as additional drugs

abused in South Africa (Pasche & Meyers, 2012). In the Western Cape, methamphetamine (locally also known as “tik”) is the substance most abused among patients being treated in substance use treatment programmes (Dada et al., 2013, as cited in Dannatt et al., 2014; Plüddemann et al., 2010, as cited in Van der Westhuizen, 2016).

The burden on health care and welfare systems as a result of the high prevalence rates of SUD is further compounded by the limited number of treatment facilities, whether inpatient or outpatient, within disadvantaged communities (Myers et al., 2010, as cited in Burnhams et al., 2013; Myers, & Pasche, 2012). To a large extent, South Africa’s Apartheid legacy has contributed to an inequitable distribution of SUD services due to resources being concentrated in areas closest to white South Africans (Marks & Andersson, 1997, as cited in Burnhams et al., 2013; World Health Organisation, 1983). Even when individuals from disadvantaged communities do have access to treatment, the cost of transport to and from facilities and the lengthy distances entailed in the travel to access treatment becomes prohibitive (Myers et al., 2010).

In addition to having one of the highest substance abuse rates in the world, South Africa is also one of the most violent countries in the world (Norman et al., 2007, as cited in Topper et al., 2015; Van der Merwe & Swartz, 2014). We have among the highest incidence of murder, robbery and assault (Crime Stats SA, 2014, as cited in, Topper et al, 2015) and rape and intimate partner violence (Joyner & Mash, 2012; Rape Crisis, Cape Town Trust, 2014, as cited in, Topper et al, 2015; Van der Merwe & Swartz, 2014). South Africa’s homicide rate is five times the global average. In addition to the homicide rates, some studies have proposed that we have one of the highest sexual assault rates globally (Dawes & Ward, 2008, as cited in Padmanabhanuni et al., 2017; Seedat et al., 2009)

During the Apartheid era, a large number of the population were exposed to primary and secondary trauma associated with political violence (Coovadia et al., 2009, as cited in Atwoli et al., 2015). Post-Apartheid, violence has persisted in the country due to social and economic inequality rooted in poor education and skills training in disadvantaged groups (Terreblanche, 2002, as cited in Atwoli et al., 2015).

The Western Cape has been identified as particularly problematic with higher lifetime and past year prevalence rates for substance abuse at 18.5%, versus the national average of 13.3% (Myers et al., 2014; Stein et al., 2008, as cited in, Burnhams et al., 2009). The Western Cape is well known for its wine farming. In order to control farm labourers and save on labour costs, the “dop” system was used. The “dop” or tot system dates back to the colonial and Apartheid eras, when farm workers were paid in a noxious form of cheap wine, in lieu of cash. Although the “dop” system is largely no longer in practice, it has been suggested that the associated drinking patterns still remain and may account for the higher prevalence rates of alcohol abuse in the Western Cape (Jacobs & Jacobs, 2016; Lesch & Adams, 2016; Russell et al., 2013, as cited in Petersen-Williams et al., 2018). The existence of over 25 000 unlicensed shebeens (informal pubs) providing cheap alcohol may exacerbate problematic alcohol consumption in the province (Jacobs & Jacobs, 2016; Petersen-Williams, et al., 2018).

Aligned to the history of the “dop” system is the disturbingly high percentage of pregnant women drinking alcohol. Estimates range between 20% and 60% of expectant mothers consuming large amounts of alcohol throughout their pregnancies (Croxford & Viljoen, 1999; Eaton et al., 2012; Everett-Murphy et al., 2010; Petersen-Williams et al., 2014; Vythilingum et al., 2012, as cited in Petersen-Williams et al., 2018). Consequently, rural communities in the Western Cape carry the highest reported rates of Foetal Alcohol Spectrum Disorders (FASD) in the world (Parry et al., 2012, cited in Jacobs & Jacobs, 2016).

Escalating methamphetamine use in the province has been pinpointed, with an alarming estimated 150-fold increase in use since 2002. The region has been identified as having among the highest methamphetamine addiction rates in the world (Dada et al., 2012, as cited in Hetta et al., 2016).

A recent study found that homicide rates in the Western Cape over the 2014/2015 period were higher than other provinces in the country (Prinsloo et al., 2016). Furthermore, The Western Cape Province has the highest rates of violent crime against women in the country (South African Police Services, 2006, Safety and Security, as cited in Zembe et al., 2016) as well as some of the highest rates of community violence in the world (Shields et al., 2008, as cited in Zembe et al., 2016).

1.2 Research Problem Statement

International and local research over several years has established an association between SUD, PTSD and exposure to trauma. In South Africa, studies have shown that the Western Cape Province has a higher prevalence of SUD and problems associated with SUD, when compared with other provinces in the country. The province has also been reported to have the highest prevalence rates of homicide and intimate partner violence. While the problematic SUD and violent crime rates have not escaped the attention of researchers, there appears to have been no studies specifically focused on inpatient population receiving treatment at SUD rehabilitation treatment facilities in the Western Cape.

With the demand for SUD treatment far exceeding the number of private and public treatment facilities, preventative strategies as well as treatment efficacy is important. Preventative strategies as well as treatment efficacy may be aided by understanding the correlates of SUD among inpatients in the Western Cape. Furthermore, the findings of this study may be helpful to a similar sample in other provinces.

1.3 Rationale for the study

Atwoli et al., (2013), propose that rapid urbanisation and social inequality resulted in high levels of trauma exposure, with possibly as many as 80% of South Africans experiencing exposure to trauma (Carey et al., 2003; Jewkes & Abrahams, 2002; Kaminer et al., 2001; Matzopoulos et al., 2007; Seedat et al., 2001, as cited in Atwoli et al., 2013). A study conducted by the South African Stress (SASH) and Health Study found that 73.8% of respondents had experienced at least one lifetime potentially traumatic event, with the average person experiencing 4.3 traumatic exposures (Atwoli et al., 2013). Given these alarmingly high statistics it is unsurprising therefore, that many patients presenting for treatment of SUD often have a history of trauma or a co-occurring Post-traumatic Stress Disorder (PTSD) diagnosis (Dore et al., 2012; Gielen et al., 2012; Saban et al., 2013).

Links between PTSD and SUD are well established in research literature. With SUD being a global problem, researchers have disseminated literature on several variables associated with the disorder: for example, specific substances, other co-morbid psychiatric disorders as well as demographic factors. In the Western Cape, the South African Community Epidemiology Network on Drug Use (SACENDU) focus their research on monitoring drug abuse trends in South Africa. Further studies in the Western Cape have isolated a single variable to focus their attention on, such as gender and substance use, gender and trauma as well as barriers to accessing treatment. However, there appears to be a gap in existing literature that has based its studies specifically in the Western Cape, among inpatient rehabilitation treatment facilities and focusing on multiple variables simultaneously. While SUD and events precipitating trauma and PTSD is a nationwide problem, the Western Cape's higher SUD and homicide rates warrant further investigation. Furthermore, an understanding of the relationship between specific types of trauma and SUD may assist in tailoring

treatment interventions and enhancing gains of treatment for SUD. Potentially, the study findings could also benefit preventative interventions in relevant community outreach projects.

1.4 Aims and Objectives of the Study

In the literature reviewed, studies tended to focus on a specific demographic variable such as “gender” and SUD and trauma type, while the intention of this study was to examine links between several demographic variables simultaneously, in relation to SUD correlates. The aim of the study was to investigate the correlates of substance abuse among patients diagnosed with SUD at local rehabilitation centres, particularly as it related to demographic variables, history of trauma, and PTSD status. The objectives of the study were to 1) determine the correlates of SUD as it relates to demographics, history of trauma and PTSD status, 2) determine the predictors of SUD as it relates to demographics, history of trauma and PTSD status.

1.5 Delineation of Chapters

Chapter one provides a brief overview of South Africa’s escalating prevalence rates of substance abuse and SUD, particularly the Western Cape Province. The chapter further offers a short description of the trajectory of South Africa’s violent, political history to the current status quo of disturbingly high levels of violent crime, particularly in the Western Cape. Chapter two is a comprehensive review of literature pertinent to the aims, objectives and rationale for the study. Sub-sections of the study include SUD in the Western Cape, Clinical Implications of Methamphetamine Abuse, Trauma, History of Trauma, and substance use disorder, Posttraumatic Stress Disorder and Substance Use Disorder Co-morbidity, Socio-economic status, Gender and Posttraumatic Stress Disorder, Gender, Type of Trauma and Substance Use Disorder, Gender and Substance Use and Adolescents as a Vulnerable Age

Group. Chapter three focuses on Methodology, including research design, setting for the study, participants and sampling, the psychometric properties of the measuring instruments, the Life Events Checklist for the DSM5 and The Posttraumatic Stress Checklist for the DSM5 and data analysis. The procedure for conducting the study is also outlined as well as ethical procedures and considerations. Chapter four covers the results of the data analysis as well as descriptive statistics of the sample. Finally, chapter five is a discussion of the results as set out in chapter four. The chapter includes a discussion of the findings of the data analysis, identifying significant findings in support of the study, limitations of the study and finally, recommendations for future research in terms of gaps identified and further research that may expand on the findings of this study.



CHAPTER TWO LITERATURE REVIEW

2.1 Prevalence of Substance Use Disorder in the Western Cape

In recent years substance related problems have increased in South Africa (Herman et al., as cited Pasche et al., 2015; Parry et al., 2002, as cited in Myers et al., 2010; Parry & Pithey, 2006, as cited in Dada et al., 2018;). Substance abuse is widely regarded as a major health and social problem in South Africa, particularly in the Western Cape (Corrigall et al., 2007; Myers et al., 2009, as cited in Strebel, et al., 2013, Isobell et al., 2015). A recent study reported a 13.3% prevalence rate of alcohol and other drug use nationally, while the Western Cape prevalence rates are significantly higher at 18,5% (Dada et al., 2018; Herman et al., 2009, as cited in Myers et al., 2010; Herman et al., 2009, as cited in Myers et al, 2014; Shisana et al., cited in Adams et al., 2013).

Additional studies indicated that risky alcohol abuse in the Western Cape ranges between 9% to 34% (Stein et al., 2008, as cited in Burnhams, Dada & Myers, 2013). Furthermore, statistics seem to highlight the fact that substance use is concentrated in the Western Cape (Department of Community Safety 2013/2014 report); Crime Stats SA; South African Police Service (SAPS), “South African Police Service/Western Cape, Annual Report, vol.2012/13,2012, as cited in Nyabadza & Coetzee, 2017).

Western Cape has significantly higher substance related problems when compared to other provinces (Herman et al., as cited in Myers, Louw & Pasche, 2010). According to the Department of Community Safety, more than a third (35%) of the crimes in the Western Cape are due to substance abuse, while the SAPS 2012/2013 annual report indicated that 22% of crimes committed were motivated by substance abuse (as cited in, Nyabadza & Coetzee, 2017). Cape Town in particular has a higher proportion of drug related arrestees (Parry, et al.,

as cited in Myers et al., 2010). Finally, the province also has a higher number of trauma patients testing positive for alcohol and other drugs, compared to any of the other major cities in the country (Plüddemann et al., 2004, as cited in Myers et al., 2010).

2.2 Methamphetamine Use and Clinical Implications

Currently, methamphetamine (MA) is the most commonly used drug among patients presenting for treatment in substance abuse rehabilitation facilities (Dada et al., 2012, as cited in Strebel et al., 2013). This is a clear indication of the immense burden placed on substance abuse treatment and mental health care facilities. MA, a highly addictive psychostimulant is being used in increasingly alarming rates in South Africa. The Western Cape has been identified as the region that carries the highest use and addiction rates globally (Hetta et al., 2016). Locally known as “tik” due to the sound made when it is smoked, MA is inexpensive and readily available, which may account for the 150-fold increase noted since 2002 (Berg et al., 2017; Myers, & Pasche, 2012; Watt et al., 2015; Weybright et al., 2016;).

Studies consistently highlight the increased risk of mental health problems and aggressive behaviour associated with methamphetamine abuse (Watt et al., 2015). The harm caused by MA is both physical and psychological (Darke et al., 2008, as cited in Berg et al., 2017; Pasche & Myers, 2012). Following is a short discussion which first addresses the physical harm caused by long term use of MA and secondly, discusses some of the idiosyncratic psychological challenges that have begun to emerge in scientific studies.

2.2.1 Physical Harm

While the short-term implications of continued MA use are aggression and psychosis, it is how the combination of aggression and psychosis present that poses a long-term threat to communities, the individual MA user, and the people closest to them. Neuroscientists have

yet to understand reasons for the aggressive and violent behaviour identified in MA users, either while intoxicated by the substance or during withdrawal from the substance (Gawin & Ellinwood, 1998; Meredith et al., 2005; Newton et al., as cited in Schep, Slaughter & Beasley, 2010). Medical reports dating as far back as 1938 when MA was used for medical purposes, noted that the majority of patients for whom MA was prescribed presented with paranoid psychosis (Young & Scoville, 1938, as cited in McKetin, 2018). Several subsequent studies and more current studies have confirmed similar findings, citing paranoia and paranoid delusions being the most common type of psychosis among MA users (Bell, 1973; Connell, 1958; Griffith 1968; as cited in McKetin, 2018; McKetin et al., 2006; Zweben et al., 2004, as cited in Lecomte et al., 2013). The paranoid nature of MA induced psychosis combined with subjective feelings of aggression reported by MA users has been suggested as a possible explanation for the prevalence of bizarre, destructive and violent behaviour that has become associated with frequent MA use (Iwanami et al., 1994; Jackson, 1989, Zweben et al., 2004, as cited in Schep, Slaughter & Beasley, 2010; McKetin et al., 2014; Tomlinson et al., 2016, as cited in Leslie et al., 2017).

MA use is strongly associated with domestic violence, exacerbating the existing high rates of Intimate Partner Violence (IPV) and Gender Based Violence (GBV) that plague the Western Cape (Joyner & Mash, 2012). The physical aggression while under the influence of MA extends beyond the personal environment of the individual user, into the surrounding communities. MA users seem to be more vulnerable to acquiring the Human Immuno-deficiency Virus (HIV) due to the association of MA use and sexual risk behaviours (Watt et al., 2014, as cited in Weybright et al., 2016). Studies showing an association between MA use and the contraction and spread of communicable diseases such Tuberculosis add to the negative social sequelae (Plüddemann & Parry, 2012; Marshall & Werb, 2010, as cited in, Weybright et al., 2016; Watt et al., 2014).

An even more complex social problem within disadvantaged communities that form the Cape Flats, is the gang culture and its role in the distribution of illicit substances, MA in particular. In communities plagued by a plethora of socio-economic problems, gang affiliation and thereby, distribution of MA, becomes a source of income generation for many youngsters. Although in the short term, the distribution of MA solves an immediate economic need, the harm associated with the use and distribution of the drug have far reaching negative consequences for the communities involved (Marshall & Werb, 2010, as cited in, Weybright et al., 2016; Pasche & Myers, 2012; Plüddemann & Parry, 2012; Watt et al., 2014; Watt et al., 2015).

2.2.2 Psychological Harm

Recent studies propose that frequent MA use is associated with a number of co-morbid psychiatric diagnoses. One of the distinguishing features of MA abuse is the onset of psychosis. Studies on prevalence rates indicate that approximately 26% of MA users develop psychosis at some stage (McKetin et al., 2006; Zweben et al., 2004, as cited in Lecomte et al., 2013). Although co-morbid depressive and psychotic disorders are most common, chronic MA users present with psychiatric disorders more frequently than other substances (Glasner-Edwards et al., 2010, as cited in Lecomte et al., 2013). While a strong correlation between MA use and co-morbid depression and psychosis has been established, researchers have been unable to establish whether MA use precedes depressive and psychotic disorders or vice-versa. Difficulties in assessing which disorder precedes the other adds to the challenges in treatment, possibly leading to a poorer clinical outcome (Lecomte et al., 2013; Watt et al., 2015).

Researchers have identified premorbid susceptibilities to psychosis, such as a family genetic loading of schizophrenia or individual personality traits (Chen et al., 2005, as cited in McKetin, 2018). These pre-existing vulnerabilities to psychosis serve as risk factors in the precipitation and perpetuation of psychotic symptoms among MA users (Chen et al., 2005; Chen et al., 2003, as cited in Lecomte et al., 2013). Furthermore, there is some suggestion that MA induced psychosis could be a separate and independent disorder from schizophrenia (Yeh et al., 2000, as cited in Lecomte et al., 2013; McKetin et al., 2017, as cited in McKetin, 2018).

SUD and psychosis are common in clinical presentations, in most classes of illicit substance use (APA, DSM 5, p113; Barnes et al., 2006, as cited in, Singal et al., 2015), however, medical studies have identified features that seem to be unique to MA associated psychosis. Substance induced psychosis resulting from ingestion of opioids, alcohol, cannabis, hallucinogens, inhalants, sedatives and stimulants (other than MA) resolves fairly quickly, which, in most instances is as soon as the body is clear of whichever substance precipitated the psychotic episode. Provided the individual abstains from further use of the substance, psychosis does not recur.

MA induced psychosis, however, differs vastly in its clinical presentation from other substances. Compelling evidence proposes that individuals in whom MA induced psychosis develops may be less resilient to stress and are likely to suffer relapses of psychotic episodes when under duress, even after cessation of MA use (Numachi., Hamamura,1992; Sato, 1992; Yui et al., 2002, as cited in McKetin, 2018). Persistent vulnerability to stress is exacerbated for individuals who have a history of childhood trauma or adversity, and vulnerability to stress persists despite abstaining from MA use (Sato, 1992; Yui et al., 2002, as cited in Lecomte et al., 2013).

Neuroscience studies have pointed to neuronal damage and changes in brain functioning as a result of habitual MA use or abuse. It is thought that the structural and functional changes to the brain as a result of chronic MA use may explain the high incidence of psychiatric disturbances in this population of substance abusers (Baicy & London, 2007; Chang et al., 2007; Ersche et al., 2012; Kim et al., 2006; Schwartz et al., 2010; Thompson et al., 2004, as cited in, Lyoo et al., 2015; Rusyniak, 2013, as cited in, Watt et al., 2015).

Neuroimaging studies of adult MA users observed changes to the prefrontotemporal areas and frontostriatal pathways (Casey & Jones, 2010; Ersche et al., 2012; Kim et al., 2006; Schwartz et al., 2010; Thompson et al., 2004, as cited in Lyoo et al., 2015). Impairment in the frontostriatal pathways compromises the inhibitory control and the reward system in the brain, which is said to result in impulsive behaviour (Dalley, Everitt & Robbins, 2014; Noel, Brevers & Bechara, 2013; Dalley et al., 2013; Schneider et al., 2010; Kalivas, Volkow & Seamans, 2005; Van den Dever et al., 2010, as cited in Kim et al., 2019; Goldstein & Volkow, 2014; Akine et al., 2007, Goldstein et al., 2004, Goldstein & Volkow, 2002, Li et al., 2009; Forbes et al., 2014; Goldstein & Volkow, 2011, as cited in Gerchen et al., 2018). Dalley, Everitt & Robbins (2014, as cited in Kim et al., 2019) elaborate further by describing this type of impulsivity as acting out behaviour without foresight of possible consequences.

The aforementioned compromise to neurocognitive functioning poses a significant challenge for clinicians since MA users are likely to invest in immediate gratification at the expense of long-term goals (Casey & Jones, 2010, as cited in Lyoo et al., 2015; Hoffman et al., 2006, as cited in Berg et al., 2017).

Finally, because MA abuse is associated with numerous co-morbid psychiatric disorders, individuals struggling with MA dependence experience debilitating psychological distress. The SUD cycle of ingesting, intoxication and withdrawal from MA often leads to

lowered mood and anhedonia, significantly lowering motivation to seek treatment (Watt et al., 2015).

For theoretical purposes, physical and psychological harm associated with continued MA use have been discussed as discrete categories of harm. In practice though, the literature reviewed demonstrates an inextricable link between psychological and physical harm. For example, neuronal damage to several regions in the brain may be regarded as physical harm, however, the changes in brain functioning result in neuro-cognitive impairment.

Given the scale of social and personal challenges associated with MA use and distribution, the current trajectory does not bode well for the Western Cape. While all substance abuse poses a serious threat to the wellbeing of communities and individuals, the persistence of neuro-cognitive fall out and psychosis despite cessation of MA use seems to warrant a sense of urgency in finding ways to stem the tide of escalating MA use in the province.

2.3 Correlates of substance use disorder

Existing studies have identified a number of variables that correlate with substance abuse. These include history of trauma, PTSD diagnosis and demographic factors. However, limited research exists on this topic in the South African context.

2.3.1 Trauma, History of Trauma, and substance use disorder

The experience and understanding of trauma may be highly subjective, therefore, two sources have been used to provide a more general definition of trauma. Briere and Scott (2013) define trauma as events that may be temporal and overwhelming, exceptionally distressing and create enduring psychological distress for the individual. Ray (2008); Krug et

al., (2002, as cited in Benjamin, 2014, p26) describe trauma as an "emotional wound or shock" which has a significant and lasting effect on an individual's development.

Several studies indicate a strong link between early experiences of trauma and the development of psychiatric disorders in adulthood, of which SUD is most common. Giordano et al. (2016) reported that 85.12% of inpatients in their study had experienced at least one traumatic event in their lives. Among the patient population in the study, it was noted that approximately 80% of the inpatients had not been diagnosed with PTSD, thus highlighting that a PTSD diagnosis was not a reliable indicator of a history of trauma. Convincing evidence has shown that experiences of childhood trauma impair neural structure and function in the brain, leading to greater susceptibility later on to cognitive deficits and psychiatric disorders such as schizophrenia, bipolar mood disorder, major depression, PTSD and substance abuse (Arnow, 2004; Dube et al., 2002; Gillespie & Nemeroff, 2005; Kingston & Raghavan, 2009; Mills et al., 2006; Schneider, Baumrind, Kimerling, 2007, as cited in Khoury et al., 2010).

A history of trauma, particularly in early childhood, is of profound clinical significance, since evidence has shown that unresolved trauma tends to result in poor SUD treatment outcome (Norman et al., 2007, as cited in Watt et al., 2015). Some studies found that a history of sexual abuse has been linked to early initiation of substance use (Hawke, Jainchill, & Leon, 2000; Kilpatrick et al., 2000; Raghavan & Kingston, 2006, as cited in Kingston & Raghavan, 2009), however the limited number of studies that have successfully tracked the sequential timing of child sexual abuse, initiation of substance use and development of PTSD are not accepted as empirically convincing (Jarvis, Copeland, & Walton, 1998, as cited in Kingston & Raghavan, 2009). In response to this dilemma, Kingston and Raghavan (2009) conducted a study among a sample of 863 adolescents between the ages of 12 to 17 years. The results of their study showed no conclusive link

between childhood sexual abuse and early initiation of substance use. What the study did reveal though, was that early initiation of substance use elevated the risk of further sexual assault due to impaired judgement and an increase in risk taking behaviour while under the influence of substances. While the link between a history of trauma and SUD is supported by research, a study conducted in South Africa found that there was a poor relationship between witnessing trauma and SUD (Atwoli et al., 2015).

Studies have also shown that interpersonal trauma is more harmful than other types of trauma, such as vehicle accidents and natural disasters (Forbes et al, 2014; Fowler et al., 2013; Kessler et al., 1995, as cited in Kucharska, 2017). Furthermore, interpersonal trauma perpetrated by someone known to the victim has a more detrimental effect than trauma perpetrated by a stranger (Freyd, Klest & Allard, 2005; Yalch & Levendosky, 2014, as cited in Kucharska, 2017).

Increasingly, research has begun to highlight that experiences of multiple traumas by individuals is becoming more common. Multiple traumatic experiences have a detrimental impact on mental health, as described by the term “cumulative trauma”. Kira, Omidy and Ashby (2014), as cited in Kucharska (2017), define “cumulative trauma” as the “sum of all traumatic experiences in a lifetime”, or the sum total of different types of trauma an individual has experienced (Hodges et al., 2013, as cited in Kucharska, 2017). The significance of cumulative trauma lies not only in its reliability as a predictor of psychiatric disorders, but in the snowball effect of single traumas and the progression of symptoms (Cloitre et al., 2009, as cited in Kucharska, 2017). Cumulative trauma has been helpful in formulating the complexity of symptoms among individuals who have endured several different types of trauma (Cloitre et al., 2009; Hodges et al., 2013, as cited in Kucharska, 2017). Studies have also demonstrated a linear relationship between the sum of different types of trauma experienced during childhood and the complex presentation of symptoms.

Evidence has further shown that cumulative trauma is associated with higher risk of PTSD, mood disorders as well as compromised physical health (Briere, Kaltman & Green, 2008; Hendrickson et al., 2013; Martin et al., 2013, as cited in Kucharska, 2017).

2.3.2 Posttraumatic Stress Disorder and Substance Use Disorder Co-morbidity

Epidemiological studies worldwide document PTSD as one of the most prevalent anxiety disorders in terms of lifetime and 12-month prevalence rates. The National Comorbidity Survey Replication (NCS-R) study in the USA reported a lifetime prevalence rate of 6.8% and 12-month prevalence rate of 3.5% in the country (Kessler et al., 2005; Kessler et al., 2005, as cited in Seedat, 2013). The SASH study cited far lower rates in South Africa; lifetime prevalence rates were documented at 2.3% and 12-month prevalence rates at 0.6%. In primary health care contexts, the percentage was higher at 19.9% (Herman et al., 2009, as cited in Seedat, 2013). Given South Africa's history of political violence and its current rates of violent crime, the lower prevalence rates cited may not be an accurate reflection of actual PTSD rates in the country. A possible explanation for the reported lower rates may have to do with the diagnostic criteria of "avoidance" as an indication of PTSD. Due to the very public nature of South Africa's political violence, it would have been extremely difficult for citizens oppressed by Apartheid to avoid places in which violence had been perpetrated. It is therefore likely that individuals participating in PTSD research would have not related to the criteria of "avoidance", thus showing sub-threshold scores for PTSD. Sub-threshold scores have the same impact on mental health as scores that meet the threshold for PTSD (Zlotnick, Franklin & Zimmerman, 2002, as cited in Atwoli et al., 2013). Although the prevalence rates in South Africa were considerably lower than those reported in the USA, PTSD carried the highest proportion of severe cases compared to all other anxiety disorders.

Of the patient population diagnosed with PTSD, 36% were found to be severely ill (Carey et al., 2013).

A history of trauma and PTSD tends to be fairly common among patients being treated for SUD (Dore et al., 2012; Giordano et al., 2016). Internationally, the prevalence rates of SUD patients diagnosed with current PTSD was found to be three times higher than in the general population. It was estimated that these rates were between 25% - 49% (Bonin et al., 2000; Driessen et al., 2008; Kessler et al., 2005; Ouimette et al., 2007; Read, Brown, & Kahler, 2004; Reynolds et al., 2005, as cited in Gielen et al., 2012) while Anestis et al. (2012) found that between 25 – 55% of individuals diagnosed with SUD meet the criteria for PTSD. In their study, Gielen et al. (2012) reported that patients with SUD were 5.27 times more likely to score positively for PTSD than patients who did not have SUD. Patients presenting with PTSD usually have at least three other disorders, of which SUD is most common (Brady et al., 2000; Varese et al., 2012, as cited in Joyner & Mash, 2012). It seems apparent that the relationship between PTSD and SUD is a complex, multi-layered one where each disorder appears to maintain and exacerbate the other (Dore et al., 2012; Lecomte et al., 2013).

There appears to be consensus among the literature consulted, that a co-morbid SUD and PTSD presentation results in more severe psychological outcomes than either diagnosis alone. The difficulties associated with a co-morbid diagnosis are: higher rates of suicidality and self-harm, poorer treatment outcomes, greater symptom severity, higher attrition rates in SUD treatment programmes particularly in cases of severe PTSD symptoms, risk of relapse and greater intensity of substance abuse after relapse, Axis I and II disorders, more frequent encounters with the law and medical problems (Dore et al., 2012; Gielen et al., 2012; Khan et al., 2016; Kilian, Back & Brady, 2015; Najavits & Johnson, 2014; Rosalind, Catchpole & Brownlie, 2016; Saban et al., 2013; Tull et al., 2013). It has also been noted that experiences of trauma and adverse events may influence engagement in rehabilitation programmes and

thereby reduce the efficacy of treatment (Tull et al., 2013). High levels of distress tolerance (DT) and simultaneous, persistent, and severe PTSD symptoms pose greater risk to completed suicides among patients with a co-morbid diagnosis (Anestis et al., 2012). Researchers have suggested that high DT may have been useful in traumatic exposures that were life threatening or involved extreme physical torture in order to survive such experiences. High DT, severe PTSD and a co-morbid SUD diagnosis, has been associated with a capability for suicide as a result of being able to endure distress through repeated exposure to traumatic events. It has been suggested that high DT may diminish fear of death and subsequently, less fear of executing more lethal means of self-injury necessary to complete a suicide (Simons & Gaher, 2004, as cited in Anestis et al., 2012; Anestis et al., 2011; Anestis et al., 2012).

Contradictions, however, appear to exist in terms of which disorder precedes the other. Breslau et al. found that PTSD symptomatology and substance use were not independent of one another following exposure to trauma (Khoury et al., 2010). While early exposure to trauma may increase the risk of substance use, adolescent initiation of substance use or abuse is thought to disrupt normal biological stress responses by elevating plasma cortisol levels, thus increasing the risk of developing PTSD (DeBellis, 2002, as cited in Khoury et al., 2010). Dore et al. (2012) refer to “The Self-Medication Hypothesis” which implies that substances are used to ameliorate distressing PTSD symptoms. Sonne et al. (2008) concur, stating that psychiatric disorders tend to precede SUD. In studies conducted among cocaine abusers it was found that when PTSD preceded the initiation of substance use, there was a history of childhood abuse. In the case where substance use preceded PTSD, the traumatic experiences were usually associated with the use and procurement of substances (Brady et al., 1998, as cited in Khoury et al., 2010).

In an Australian study, Mills et al. (2006, cited in Dore et al., 2012), reported that 57.5% of patients with co-morbid PTSD and SUD had their most traumatic experience prior to the onset of SUD. In 8.7% of the cases, the two disorders occurred in parallel after their most traumatic experience. Three other theories were proposed to explain the complex relationship between PTSD and SUD; “The High-Risk Hypothesis”, “The Susceptibility Hypothesis” and “The Common Factors Hypothesis” (Dore et al., 2012). The “High-Risk Hypothesis” seems to echo the sentiment that SUD precedes PTSD, as a result of the high-risk lifestyle associated with the use of and procurement of illicit drugs. Substance users place themselves in risky situations while using and obtaining illicit drugs. The risk of further trauma exposure is elevated should the individual be intoxicated whilst using or procuring substances. The “Susceptibility Hypothesis” proposes that substance users may be more vulnerable to PTSD following a traumatic experience, due to poorer coping strategies and neuro-biological stress response sensitivity (Jacobson, Southwick & Kosten, 2001; Ouimette, Brown & Najavits, 1998, as cited in Dore et al., 2012). The third theory cited in the study, “The Common Factors Hypothesis” suggests a shared psychological and biological trait between SUD and PTSD. The neurological mechanisms activated during substance withdrawal and the pathophysiology of PTSD may exacerbate PTSD. Repeated substance use and withdrawal may contribute to the chronology of the co-morbid illness. In the event of a pre-existing psychiatric disorder, individuals may be more susceptible to SUD and the precipitation of PTSD following exposure to a traumatic experience (Brady et al., 2000, as cited in Dore et al., 2012).

A variation of “The Self-Medication Hypothesis” among people diagnosed with SUD and PTSD and a history of childhood sexual abuse is offered by Kingston and Raghavan (2009). As with other types of trauma, a history of childhood sexual abuse is also common in a co-morbid SUD and PTSD diagnosis. Three possible explanations for this have been

proposed; substances are used as a form of self-medication to alleviate the PTSD symptoms (Epstein, Saunders, Kilpatrick, & Resnick, 1998, as cited in Kingston & Raghavan, 2009), substance use may increase the risk of further traumatic events (Howard & Qi Wang, 2003, as cited in Kingston & Raghavan, 2009) and finally, child sexual abuse and SUD tend to occur in dysfunctional family systems (Widdom, 1999, as cited in Kingston & Raghavan, 2009). Peirce et al. (2011) explain that substance use, particularly among injecting drug users, may increase the risk of re-exposure to traumatic events due to involvement in criminal activities and thereby, association with dangerous people and dangerous situations (Chilcoat & Breslau, 1998, as cited in Peirce et al., 2011; Darke et al., 2010).

An alternative theory regarding co-morbid PTSD and SUD has been suggested by some studies, namely, a shared genetic predisposition to psychopathology after experiencing trauma (Lipschitz, et al, 2003; Scherrer, et al., 2008, as cited in Khoury et al., 2010). However, Jacobson, Southwick and Kosten, (2001), as cited in Dore et al. (2012), indicate that initiation of substance use is either following or parallel to an experience of trauma. They seem to explain the pathological cycle precipitated by a form of self-medication. Initially, substances are used to ameliorate the distressing symptoms of PTSD, particularly hyperarousal. As dependence develops, withdrawal from the substance of choice begins to mirror those of hyperarousal, which in turn exacerbates the PTSD symptoms and hence a relapse occurs.

It seems apparent from the literature reviewed that a definitive conclusion regarding the chronicity of PTSD and SUD co-morbidity is yet to be determined. A more likely proposal is that the relationship between PTSD and SUD is in fact a circular one, where each disorder maintains and exacerbates the other (Dore et al., 2012).

Considering the complexity of a co-morbid PTSD and SUD diagnosis there is a compelling argument for a revision of current treatment programmes where each disorder is treated separately. Lecomte et al. (2013) suggest that it is a mistake to treat the disorders separately, since they are inextricable from one another. Najavits and Johnson (2014) concur, stating that substance use suppresses PTSD symptoms, thus perpetuating the cycle. As stated previously, the severity of PTSD symptoms is associated with treatment attrition, while addressing PTSD symptoms is associated with successful maintenance of treatment gains post treatment (Lopez et al., 2015). According to Khoury et al. (2010), a comprehensive understanding of PTSD and SUD co-morbidity is imperative in both the treatment of and prevention of SUD. Finally, Gielen et al. (2012) present a compelling argument for the integration of services, since undiagnosed PTSD among patients with SUD may be deprived of a more effective, concurrent treatment plan.

2.4 Demographic Variables

The scope of this paper does not allow for an exhaustive exploration of the many variables which may have a bearing on the complex association between trauma, SUD and PTSD, therefore, the candidate has attempted to give an overview of recurring themes that emerged from the literature consulted.

2.4.1 Socio-economic Status

Globally, as well as in South Africa, there is an established link between disadvantaged communities and social problems (Abrahams et al., 2006; Dunkle et al., 2004; Kalichman et al., as cited in Wong et al., 2008; Benjamin, 2014). In a 2011 WHO study, it was reported that disadvantaged communities have higher alcohol related deaths and injuries (Adams et al., 2013). Furthermore, impoverished communities have higher prevalence rates

of substance abuse, yet have poor access to treatment facilities (Myers, Louw & Pasche, 2010).

A study on exposure to violence among South African adolescents from disadvantaged communities, established that respondents experienced disturbingly high levels of both domestic and community violence. In terms of community violence alone, it was reported that 98.9% of respondents had witnessed community violence (Kaminer et al., 2013). Similar results were also reported in a separate study among a sample of women in Lavender Hill and Vrygrond, Western Cape, where it appeared that exposure to trauma was the norm rather than the exception (Dinan, McCall & Gibson, 2004). The study conducted in Lavender Hill seems to be generalisable to other socially disadvantaged communities, since research shows that there is a higher prevalence of IPV among poor and indigent women (Zembe et al., 2016). Atwoli et al. (2015) found that males who had witnessed trauma more frequently tended to have low-average levels of education. Furthermore, their study found that more males than females had witnessed trauma.

Dada et al. (2018) cite interesting findings in terms of the type of substance used, relative to gender, age and highest level of education. The study focused on alcohol and other drug use (AOD) among a sample of women who used substance abuse treatment facilities in the Western Cape over the period of 2000 to 2013. Data were collected from 51 treatment sites participating in SACENDU. The results of their study showed that coloured women were 18 times more likely to use MA, with users of MA being twice as likely to be unemployed and have a secondary or tertiary education than women admitted for alcohol use. In addition, it was reported that women admitted for heroin treatment were more likely to be white, between the ages of 19 to 25, were four times more likely to be unemployed and three times more likely to have a tertiary education than women admitted for alcohol use problems. Over the counter and prescription medication use was eight times more likely to occur among

women who were white and have a tertiary qualification. Unfortunately, the aim of the study was to ensure accurate data on the AOD trends among women, therefore limitations of the study precluded possible explanations of the findings. Nevertheless, the study was able to identify an idiosyncratic correlation to gender, age and demographics relative to AOD.

Topper et al., (2015) reported their findings on a study conducted in an Eastern Cape community indicating that people who came from impoverished backgrounds were more likely to have PTSD, as were those who earned weekly wages. Gielen et al. (2012) confirm the relationship between PTSD and lower socio-economic status but added that a co-morbid PTSD and SUD diagnosis is also more prevalent among those who are socially disadvantaged and unemployed. Low-income communities tend to be situated in urbanised geographical spaces. Urban lifestyle and low-income communities may have higher prevalence rates of PTSD since they are more vulnerable to traumatic event re-exposure (Peirce et al., 2011)

2.4.2 Gender and Posttraumatic Stress Disorder

International research has consistently shown that there are gender differences in prevalence rates of experiences of trauma. Women experience more trauma related to interpersonal violence and sudden death of a loved one, while men tend to experience more trauma related to natural disasters, non-sexual violence, accidents, witnessing serious injuries and death and war related trauma (APA, 2013; Nemeroff et al., 2006, as cited in Winstok & Weinberg, 2018). Women also present with more PTSD symptoms than men who have been exposed to trauma (Hetzl-Riggin & Roby, 2013, as cited in Giordano et al., 2016). Breslau et al., (2009, as cited in Winstok & Weinberg, 2018) echo these findings, stating that women are more vulnerable to developing PTSD after experiencing trauma, while men may experience more traumatic events than women, without developing PTSD (Breslau et al., 2009; Frans et

al., 2005, as cited in Winstok & Weinberg, 2018; Breslau et al., 1997; Breslau, Peterson & Schulz, 2008; Breslau et al., 1998; Ditlevsen & Elklit, 2012; Kessler et al., 1995, as cited in Peirce et al., 2011).

Another distinguishing feature of gender specificity regarding PTSD lies in the presentation of symptoms, with women more likely to experience internalising symptoms, such as anxiety and depression, while men are more likely to present with externalising symptoms such as aggression, anger and irritability (Tolin & Foa, 2006, as cited in Winstok & Weinberg, 2018).

Various theories have been proposed to explain the gender differences in prevalence rates and symptom severity. Padmanabhanuni, Pretorius and Campbell (2017) offer empirical findings which show that women and men differ in their cognitive appraisals of trauma as a possible explanation for the contrasting psychological outcomes between genders. It was found that young girls' processing of threat was more strongly associated with internalizing difficulties than among young boys (Little et al., 2009, as cited in Padmanabhanuni et al., 2017). Women and young girls tend to interpret threat and traumatic events as more menacing than boys and are prone to blaming themselves or personalizing the event more often than their male counterparts (Delahanty et al., 1997, as cited in Kucharska, 2017; Tolin & Foa, 2002, as cited in Padmanabhanuni et al., 2017). Differences in cognitive processing of the event have been noted post trauma, with women experiencing a sense of powerlessness more frequently than men (Delahanty et al., 1997, as cited in Padmanabhanuni et al., 2017). While evidence has clearly demonstrated that women and girls overestimate the severity of trauma compared to boys and men, it is unclear whether this applies to all types of traumas (Tolin, 2002, as cited in Kucharska, 2017; Tolin & Foa, 2002, as cited in Padmanabhanuni et al., 2017).

Winstok and Weinberg (2018) question the efficacy of the traditional approach to understanding gender and PTSD, which attempts to understand gender differences in PTSD presentation by focusing on PTSD studies as a starting point. Winstok and Weinberg (2018) propose a reverse, alternative approach by beginning with a focus on gender studies as a path to understanding PTSD. They contend that by shifting the focus to gender studies as a starting point, it is more likely that researchers will gain valuable insights into the mechanisms of gender that precipitate and maintain PTSD and its symptoms. Winstok and Weinberg (2018) use “Gender Motivation Theory” as a theoretical platform from which to demonstrate how gender studies explain PTSD and why the disorder presents differently in men and women. Salient points of the theory follow.

“Gender Motivation Theory” has been informed by two theories, one based in human evolution and the other in historical division of labour according to gender. The first theory, “Sexual Selection Theory” (Archer, 1996, as cited in Winstok & Weinberg, 2018), which is rooted in human evolution, suggests that men were focused on reproduction and the need for a competitive advantage over rivals. In order to gain a competitive advantage over other suitors, social status played a crucial role. Women, on the other hand, were predominantly focused on conceiving, birth, and child rearing; thus, personal safety and risk reduction were of critical importance.

The second theory, “Social Role Theory” (Bettencourt & Kernahan, 1997, as cited in Winstok & Weinberg, 2018), explains that within the division of labour, specific gender roles were assigned. These roles in turn, created expectations of particular gender characteristics, resulting in gendered patterns of behaviour, passed down generationally through socialization. In a similar vein to “Sexual Selection Theory”, men would be expected to show a degree of fearlessness as a demonstration of strength, thereby prohibiting men from acknowledging fear or vulnerability and thereby risk being perceived as weak. Kucharska,

(2017) seems to echo this sentiment, based on a study conducted in Warsaw and Wroclaw, Poland, among a sample of university students. Males who held more traditional and stereotypical views on masculinity may have under-reported the severity of PTSD symptoms.

From the two theories, two gender motivations were identified; status enhancement which is supported by the acquisition of personal and social status, and risk reduction, which elevated personal safety above other motivations. Status enhancement was found to be more significant to men than to women, while personal safety was found to be of greater significance to women than men (Winstok & Straus, 2011; Winstok et al., 2017, as cited in Winstok & Weinberg, 2018).

Winstok and Weinberg (2018) argue that the differences in PTSD presentations and prevalence rates can be explained when taking into account the two gender motives aligned to “Gender Motivation Theory”, namely, status enhancement and risk reduction. As men are more likely to pursue personal and social status, they may be drawn to encounters that are potentially dangerous or confrontational, since these afford them opportunities to demonstrate their physical prowess. Consequently, situations of physical confrontation may not be perceived by men as traumatic, but rather as an opportunity for status enhancement. Alternatively, the impact of a physical assault is mediated by the acquisition of social and personal status, possibly explaining why men tend to present with fewer and less severe PTSD symptoms.

Based on the premise that women tend to be motivated by risk reduction, encounters that result in either physical or sexual assault imply a failure to reduce risk, resulting in a loss of social status. Winstok and Weinberg (2018) suggest that women may perceive the trauma as more severe because, unlike men who gain social status through physical conflict, women

do not have the same physical strength to fend off an assailant and therefore have very limited means of regaining status through risk reduction.

Finally, Winstok and Weinberg (2018) suggest that “Gender Motivation Theory” may also be helpful in understanding the differences in PTSD symptoms among men and women. It is well established that men tend to present with more externalising symptoms such as irritability, aggression and anger, while women tend to show more internalising symptoms such as depression, anxiety and negative personal attributions. Winstok and Weinberg (2018) explain that the externalising behaviour most typical among men may be an attempt to regain status enhancement. Outward expressions of anger and aggression potentially demonstrate that despite having suffered an assault, the male victim has not been defeated and can still demonstrate his physical superiority. As women seek to re-establish personal safety, it is understandable that they might withdraw from society as a means of regaining risk reduction. In their attempt to ensure their personal safety, women who have experienced trauma are likely to avoid situations of confrontation and therefore, will not externalise their symptoms, since this may be perceived by would be assailants as an invitation to attack (Winstok & Weinberg, 2018).

While Winstok and Weinberg (2018) present their argument with vigour, they do acknowledge that “Gender Motivation Theory” has its limitations, particularly since the research is based on cisgendered (the term used to describe individuals whose internal sense of gender corresponds with the biological gender identified at birth, <https://www.merriam-webster.com/dictionary>) individuals and has not been tested on individuals who identify as alternatively gendered. In their conclusion, Winstok and Weinberg (2018) stress that “Gender Motivation Theory” is merely a starting point in understanding gender and PTSD since both societies and gender roles are not static. As societies and gender roles evolve, so should theoretically underpinning of gender studies and its link to PTSD presentation. Regardless of

which theoretical approach is used to formulate PTSD, there appears to be sufficient empirical evidence pointing to gender specific presentations and acquisition of the disorder.

2.4.3 Gender, Type of Trauma and Substance Use Disorder

Studies worldwide seem to indicate links to trauma type and gender. Giordano et al., (2016) reported that while male and female patients in a SUD facility experienced the same number of traumatic events, the type of trauma differed, with women having experienced more sexual assaults and men more likely to witness violent acts than women. A study conducted in Australia confirms that more recent research highlights that differences in terms of gender exposure to trauma relate more to the type of trauma experienced, rather than just incidences of trauma. The studies confirm that women are more likely to suffer sexual assault than men do, and sexual assault is strongly associated with onset of PTSD (Breslau, 2002; Creamer, Burgess & McFarlane, 2001; Kessler et al., 1995; Mills et al., 2010, as cited in Dore et al., 2012; Stein et al., 2002, as cited in Peirce et al., 2011). The higher rates of sexual assault among females have been found to occur in adolescent populations as well (MacLeod & Brownlie, 2014, as cited in Catchpole & Brownlie, 2017; Seedat et al., 2010). Berg et al., (2017) found that twice as many women being treated for SUD had a history of childhood sexual abuse as women in the general population, which indicates that women are vulnerable to sexual assault from childhood into adulthood.

Cosden et al., (2015), as cited in Giordano et al. (2016) show that far more women than men presenting for SUD treatment had a history of childhood sexual abuse. Stark contrasts were evident in the prevalence rates of physical violence, with 69% of women and 22% of men in treatment facilities having suffered physical abuse. Sanford et al. (2014, as cited in Giordano et al., 2016) expand further, stating that in a sample of substance abusers

presenting in court, women had far more traumatic experiences than men. A study conducted among outpatients being treated for SUD found that women were five times more likely than men to report experiences of trauma (Keyser-Marcus et al., 2015, as cited in Giordano et al., 2016).

A South African study conducted among Xhosa speaking adolescents (n=230) concluded that adolescent boys in this community were far more likely to be exposed to extreme forms of violence, particularly the use of weapons, than girls from the same community (Lambert et al., 2005, as cited in Kaminer et al., 2013). While most international studies have found no gender disparities regarding witnessing domestic violence, Kaminer et al. (2013) reported that boys were far more likely to witness violence between adults in the home than girls were. A further contrast in this finding was that more boys reported being sexually abused than girls, however, the researchers suggest that the results may be an indication of how boys understand inappropriate touching of the genitals, especially in light of circumcision rituals.

In addition to experiencing more sexual assaults than men, international studies show that women also experience more IPV than men. IPV refers to “all acts of physical, sexual, psychological and emotional violence committed by a current or former intimate partner or spouse” (Machisa et al., 2011, as cited in Zembe et al., 2016). As one of the most violent countries in the world, South Africa has especially exceptionally high rates of violence against women, possibly attributable to deeply entrenched patriarchal values (Van der Merwe & Swartz, 2014). Of particular relevance to this study are the findings by Dada et al. (2018) that women who abuse alcohol and other drugs are more vulnerable to intimate partner violence than the general population (Gass et al., 2011; Wechsberg et al., 2013, as cited in Dada et al, 2018).

IPV accounts for 62.4% of the total interpersonal violence burden in females. More women are killed in South Africa by their current or ex-intimate male partner than in any other country with a rate of 8.8 per 100 000 women (Abrahams et al., as cited in Joyner & Mash, 2012).

IPV is experienced as a betrayal and is associated with more severe psychiatric distress in both genders (Barlow & DeMarni Crower, 2006; Borges et al., 2014; Cortina & Kubiak, 2006; Kimerling, Ouimette & Weitlauf, 2007; Kessler et al., 1995; Kucharska, 2015, as cited in Kucharska, 2017). These findings are particularly pertinent to the Western Cape, which has the highest rates of crime against women in the country (South African Police Services, 2006, Safety and Security, as cited in, Zembe et al., 2016).

2.4.4 Gender and Substance Use

While worldwide research consistently asserts that alcohol abuse rates tend to be higher among males than females, the difference in this gap has been narrowing significantly over the past few years (Reddy et al., 2003, as cited in Adams et al., 2013). Studies conducted by WHO (2010) suggest that binge drinking has become more prevalent among female consumers of alcohol even though men consume more alcohol than women (Adams et al., 2013). Dada et al. (2018) cite the findings of a study conducted by the South African Demographic Health Survey showing that problematic drinking is more prevalent among women relative to men. Furthermore, women were more inclined to drink alcohol on a daily basis and demonstrated more problematic patterns associated with their alcohol consumption (Dada et al., 2018). The study found that binge drinking on weekends was marginally higher for women (25%) than men (23%). The significant increase in admissions over the past decade for alcohol abuse seem to substantiate the statistics reported in studies conducted.

Louwagie et al. (2010, as cited in Jacobs & Jacobs, 2016) concur with these findings, stating that problematic drinking patterns are on the rise among women, especially in the Western Cape.

Surveys conducted showed that coloured women from low-income communities in Cape Town exceeded their male counterparts' alcohol consumption in other provinces by 3.5 times (McLoughlin et al., 2013, as cited in Lesch & Adams, 2016). A study by Myers (2006) found that 28% of female substance users partook in daily use of MA, compared with 22% of men. The findings of the study suggest that as with alcohol, women are more likely to use MA in a problematic way than their male counterparts.

Aside from gender differences in the consumption of alcohol, there appear to be problem behaviours that are gender specific. One area in which this is prominent is the motivation for drinking. It has been suggested that men are inclined to use alcohol as a tool for emotional regulation, while a study of young female undergraduate psychology students found that they consumed alcohol to cope with feelings of stress, poor self-esteem and lack of confidence, indicating that the use of alcohol to cope with negative feelings is not unique to men (Govender, Nel, & Sibuyi, 2016). However, the behavioural consequences seem to differ quite vastly. The use of alcohol for emotion regulation may initially soothe distressing emotions among men, but the transition from emotion regulation to emotion dysregulation is quite precarious, playing a significant role in triggering IPV (Grigorian et al., 2020).

In conclusion, emerging research has shown that gender patterns in alcohol and MA use are beginning to change. Where previously men were reported to be higher consumers of alcohol, the gap between alcohol consumption by men and women has begun to narrow markedly. While both men and women use alcohol to cope with difficult and uncomfortable emotions, the effect on emotional regulation among men tends to be unpredictable.

2.4.5 Adolescents as a Vulnerable Age Group

Advances in technology such as functional Magnetic Resonance Imaging (fMRI) have helped scientists learn more about the human brain and its development. fMRI scans have taught neuroscientists that the brain continues its development to maturity at approximately 25 years of age (Blakemore, 2012; ; Crone & Steinbeis, 2017; Gogtay et al., 2004, as cited in Smith et al., 2015; Knežević, 2018, as cited in Knežević, 2018). The prefrontal and lateral temporal lobes, responsible for the execution of more complex cognitive tasks such as the capacity to predict consequences, develop last (Blakemore, 2012; Crone & Steinbeis, 2017, as cited in Knežević, 2018).

Epidemiological evidence seems to substantiate that adolescent drug users are at greater risk of lifelong drug use and a more rapid escalation to substance dependence in comparison with their adult counterparts (Anthony & Petronis, 1995, as cited in Lyoo et al., 2015). Adolescence is a critical period of brain development, where the capacity for delayed gratification is still maturing (Casey & Jones, 2010; Chudasana & Robbins, 2006; Giedd et al., 1992; Rapoport & Gogtay, 2008, as cited in Lyoo et al., 2015). The overactive reward circuitry and simultaneous underactive self-regulatory and avoidance circuitry during adolescence has been proposed as a possible explanation for risk taking behaviour during adolescence (Casey & Jones, 2010; Ernst & Fudge, 2009; Somerville et al., 2010 as cited in Bjork et al., 2021). Environmental insults to the brain during adolescence can impede typical brain development, increasing the risk of irreversible damage to the brain (Giedd et al., 1992; Rapoport & Gogtay, 2008, as cited in Lyoo et al., 2015). When taking into account the precarious nature of brain development during adolescence, the implications of trauma

and substance use and/or abuse during this stage highlight the need to identify adolescents as a particular risk group.

Khoury et al., (2010) cite studies that suggest that neurological wiring in brain patterns may make adolescents who suffered childhood sexual abuse more susceptible to psychiatric disorders later on. It is suggested that individuals have a stress threshold for trauma, which, once exceeded is likely to precipitate a diagnosis of PTSD (Arnow, 2004; Dube et al., 2002; Gillespie & Nemeroff, 2005; Kingston & Raghavan, 2009; Mills et al., 2006; Schneider, Baumrind & Kimerling, 2005, as cited in Khoury et al., 2010). Khoury et al. (2010) propose that childhood trauma and substance abuse problems predict the intensity of PTSD in the future.

Adolescents warrant special attention given the findings of many studies indicating that youth in South Africa are exposed to high levels of violence and traumatic events (Finkelhor, Ormrod, & Turner, 2007; Williams et al., 2007, as cited in Padmanabhanuni et al., 2017). Exposure to trauma and adversity early in development has been shown to predispose individuals to mental health difficulties and substance abuse disorders. Substance use disorders and mental health problems increase the likelihood of further traumatic experiences, which then in turn, exacerbate substance abuse (Haller & Chassin, 2014, as cited in Catchpole & Brownlie, 2016).

Some of the highest levels of interpersonal injury among youth is found in the Western Cape. Reports show that homicide is the second highest cause of death among children aged 10 – 14 years and is the leading cause of death for youths aged 15 – 19 years (Groenewald et al., 2008, as cited in Kaminer et al., 2013). The high rates of violent crime in the metropole may be attributed to the prevalence of gang activity, particularly turf wars which account for a multitude of deaths in the region (Keegan, 2005; Prinsloo, Matzopoulos,

& Sukhai, 2002; Shields, Nadasen, & Pierce, 2008, as cited in Kaminer et al., 2013). The impact of trauma exposure among youth has been found to be cumulative, with a positive correlation between the number of traumas and greater risk of both internalising and externalising psychiatric symptomatology (Finkelhor, Ormrod, & Turner, 2007; McCart et al., 2007; Seedat et al., 2004; Shields, Nadasen, & Pierce, 2008, 2009; Suliman et al., 2009; Ward et al., 2007 as cited in Kaminer et al., 2013). Other studies have shown that repeated exposure to trauma is associated with lowered IQ, which in turn often leads to absenteeism, poorer academic performance and incomplete schooling (Delaney-Black et al., 2002; Putnam & Trickett, 1997, as cited in Swain, Pillay & Kliwer, 2017). Worth noting is that while many youths exposed to trauma meet the criteria for PTSD, some do not, yet they meet sub-clinical thresholds which carry symptoms of PTSD. Sub-clinical thresholds contribute to compromised mental health as well, but are often missed in clinical interviews (Swain, Pillay & Kliwer, 2017).

The concept of poly-victimization has emerged from research conducted on youth, indicating that different forms of childhood victimization tend to cluster, overlap, or co-occur. Not only is there a high degree of co-occurrence between witnessing of domestic violence and direct victimization of children in the home (Jouriles et al., 2008; Slep & O’Leary, 2005, as cited in Kaminer et al., 2013), but children’s exposure to family and community violence also tends to overlap (Kennedy, 2008; Lynch & Cicchetti, 1998; Margolin et al., 2009, as cited in Kaminer et al., 2013). Poly-victimization has significant contextual importance since international and local research shows that children’s development is impacted by their surroundings, which in turn, influences behaviour, including substance use (Brook et al., 2006; Parry et al., 2004, as cited in Florence & Koch, 2011).

A study conducted by Kaminer et al. (2013) among a group of adolescents living in Cape Town, between the ages of 12 – 15 years, revealed that poly-victimization was particularly prevalent in the city. Six types of violence were tested: witnessing community violence, being directly threatened or assaulted in the community, witnessing domestic violence, being directly victimized at home, experiencing direct or indirect exposure to school violence and finally, being a victim of sexual abuse. The results of the study revealed alarmingly high rates of poly-victimization; 93.1% of the sample had experienced more than one type of violence, over 50% of the sample had experienced four or more types of violence. 98.9% had witnessed community violence, 40.1% had been directly threatened or assaulted in the community, 76.9% had witnessed domestic violence, 58.6% had been directly victimized at home, 75.8% had experienced direct or indirect exposure to school violence, and 8% reported experiencing sexual abuse (Kaminer et al., 2013). Given the findings that poly-victimization has particularly harmful effects on mental health, the future trajectory for Cape Town youth is disturbing.

2.4.6 Adolescents and substance abuse

International and national trends indicate that adolescent substance use is a serious social problem (Degenhardt, Whiteford, & Hall, 2014; Toumbourou et al., 2014; Whiteford et al., 2013, as cited in Hendricks, Savahl, & Florence, 2015). South Africa seems to be following the international trends with indications that substance abuse among adolescents is accelerating (Lachma et al., 2012). Early substance use exposes youth to risky situations at ages when they have poorer decision-making skills, less ability to assess risk, and limited ability to defend themselves in threatening situations (Klaczynski, 2001; Ormand et al., 1991 as cited in Kingston & Raghavan, 2009).

Results of a 2008 South African youth risk behaviour survey showed that 49.6% of the adolescents used alcohol, followed by cannabis (12.8%), heroin (11.2%), cocaine (6.4%), and mandrax (6%) (Reddy et al., 2010, as cited in Hendricks, Savahl, & Florence, 2015). Similar findings by Marojele (2008), as cited in Weybright et al (2016), applied to adolescents in grade 8 – 10 in the Western Cape. Data were collected from 10 000 grade 8 learners in the Western Cape. Although overall use of MA was low, 5% (n= 496) responded that they had used MA in their lifetime. Of greater concern is that within the 5% who had used MA, 65% (n=322) had used in the preceding month or week (Weybright et al., 2016).

Studies conducted by Dada et al. (2018) found that over half of the patients who reported cannabis abuse were under the age of 18. Early initiation of cannabis use has implications in terms of brain development, which could predict future academic problems and poor performance at school (Jacobus & Tapert, 2014, as cited in Dada et al., 2018).

Co-morbid psychiatric illnesses and SUD seem to be just as prevalent in the adolescent population as the adult population (Angold, Costello & Erkanli, 1999; Saban & Flisher 2010, as cited in Saban, Flisher, & Distiller, 2010). Dual diagnoses among adolescents present a significant challenge to mental health care facilities since the rate of readmission is extremely high. The difficulty is further compounded since the Department of Social Development is responsible for treating SUD, while tertiary psychiatric facilities treat the co-occurring psychiatric illnesses. Access to SUD treatment is limited and left untreated, has a negative impact on recovery from the psychiatric disorders, hence the frequent readmissions to an already overburdened mental health care system (Lachma et al., 2012).

Prevention strategies and outreach programmes face considerable obstacles in low-income communities. Impoverished communities in South Africa offer youth few positive opportunities for recreation, thereby increasing the risk of substance use substantially.

Substance use may also be a means of socialising and bonding with a peer group. Furthermore, given the high rates of violence within socially disadvantaged communities, belonging to an at-risk group of peers may serve as a form of protection against perpetrators of violence (Hendricks, Savahl, & Florence, 2015).

2.5 Conclusion

In summary, global research has shown that substance abuse trends among adolescents is cause for concern. The prevalence of poly-victimization in the Western Cape raises alarms in terms of the future mental health outcomes for youth in the province. The risks associated with early substance use initiation may be a predictor of future pressure on mental health care facilities, which are already under considerable strain.

Salient points that emerged from the literature reviewed confirm a clear link between SUD, PTSD and a history of trauma, with childhood trauma posing a greater threat. Cumulative trauma has been identified as a contributor to greater and more complex symptom severity among individuals diagnosed with PTSD. Gender and PTSD appears to be equally distributed among the sexes but differs regarding presentation. Men have been shown to present with more externalising symptoms, such as irritability and aggression, while women present with more internalising symptoms such as depression and negative appraisals of themselves after exposure to trauma. Trauma type also appears to be gender specific, with women likely to experience more sexual assaults and intimate partner violence, while men experience more physical violence and tend to witness more traumatic events.

While South Africa has high prevalence rates of alcohol abuse, the Western Cape has been identified as the province with significantly higher prevalence rates than other

provinces in the country. Indications are that alcohol abuse in rural communities in the Western Cape is linked to the “dop” system, which was rooted in Apartheid. In urban communities in the Western Cape the use and distribution of MA is alarming and impinges on the wellbeing and safety of surrounding communities. The long-term deleterious effects of MA are concerning since studies have shown that these effects tend to be permanent even after long periods of abstinence.

Socio-economic status is a significant demographic variable, since disadvantaged communities worldwide tend to experience higher levels of violent crime, both within the community and domestically. Furthermore, poorer communities seem to have higher SUD rates and encounter several barriers to treatment for the illness.

Finally, adolescents have been identified as a high-risk group, since brain development is not fully mature yet. Neuronal damage has been associated with early exposure to trauma as well as initiation of substance use and abuse during adolescence. More specifically related to South Africa are the high rates of exposure to community violence as well as personal experiences of violence and physical assault within their homes.

Many of the studies in the literature review were internationally based and had not been compared to the South African context. Most of the studies on PTSD, history of trauma, gender and SUD and PTSD co-morbidities tended to focus on the correlation between one or two variables, for instance, depression and MA use. Furthermore, studies located in inpatient substance abuse treatment facilities in South Africa, particularly the Western Cape, lacked focus on multiple variables relative to trauma, PTSD, demographic factors and PTSD simultaneously. The gaps encountered in the review lend support to the rationale of this study, which was located in the Western Cape, included several treatment facilities, and focused on several variables simultaneously.

CHAPTER 3

METHODOLOGY

3.1 Research Design

The study used a quantitative, correlational design. Quantitative research essentially is concerned with some form of numerical measurement and the relationship between variables (Hedde, 2002). Correlational analysis attempts to determine the relationship between two variables, which was the aim of this study (Pretorius, 2007).

3.2 Setting for the Study.

The study was conducted at private and semi-private, secondary treatment clinics, for adult in-patients who met the DSM 5 criteria for SUD. The clinics were situated in the city of Cape Town in the Western Cape, South Africa. Rehabilitation treatment facilities were selected since the focus of the study was on SUD and all inpatients had already met the criteria for SUD.

3.3 Participants and Sampling

The participants in the study were adults, 18 years of age and older, who had voluntarily been admitted for treatment, as defined by Mental Health Care Act 17, 2002, sub-rule 9 (1), to a treatment clinic for Substance Use Disorder. There is no data on the exact number of patients admitted in SUD rehabilitation facilities in the Western Cape area. A sample of 62 inpatients was used for the study.

Stratified random sampling was used to obtain a sample of a minimum of 62 subjects as was recommended in order to obtain reliable results for a regression analysis (Green, cited

in Austin & Steyerberg, 2015). Stratified sampling criteria used for the study was the selection of participants who met the criteria as specified in the DSM 5 for Substance Use Disorder and were undergoing rehabilitative treatment. The strength of the sample size was determined using G-Power analysis. G-Power analysis helps determine the power of a sample size relative to type 1 error.

3.4 Research Instruments

Participants completed three self-report scales, namely, the extended Life Events Checklist-5, Post Traumatic Stress Disorder Checklist-5 Questionnaires, and a demographic questionnaire.

3.4.1 The Life Events Checklist Questionnaire (LEC-5).

The LEC-5 (Appendix A) is an updated version of the LEC, a 16-item questionnaire that helps identify which Potential Trauma Exposures culminate in PTSD (Gray et al., 2004). The LEC-5 includes a seventeenth item “any other stressful event or experience” to allow for potentially traumatic events which may not have been listed in the questionnaire, but which may have been a traumatic experience for the individual (Ashbaugh et al., 2018). An example of a Potential Trauma Exposure, as listed on the LEC, is “exposure to a natural disaster”, such as an earthquake or flood. As a self-administered questionnaire, the LEC-5 is thought to possibly be more comfortable for respondents presenting with trauma, in primary and secondary health care settings. Items on the questionnaire allow participants to select one of five possible responses; “Happened to me”, “Witnessed it”, “Learned about it”, “Part of my job”, or “Doesn’t apply” (Gray et al., 2004; Ashbaugh et al., 2018).

The LEC is accepted as having good reliability, with Kappa coefficients of .40 or higher on 14 of the items, .60 or higher for 8 of the items. Low Kappa coefficients were ascribed to low baseline rates (Gray et al., 2004).

3.4.2 The Post Traumatic Stress Disorder Checklist (PCL-5)

The PCL-5 (Appendix B) is reported to be one of the most readily used self-report questionnaires (Mc Donald & Calhoun, 2010, as cited in Sveen et al., 2016). In line with the changes made in the DSM 5 diagnostic criteria for PTSD, the PCL-5 is a revised version of the PCL (Weathers et al., 1993, as cited in Ashbaugh et al., 2018; Weathers et al., as cited in Sveen et al., 2016). The revised questionnaire consists of 20 items corresponding to the 20 symptoms of PTSD, as listed in the DSM 5. The DSM 5 has grouped the 20 symptoms into four clusters, Cluster B (intrusion symptoms), Cluster C (avoidance), Cluster D (negative alterations in mood and cognitions) and Cluster E (alterations in reactivity and arousal) and these clusters in turn form four subscales of the PCL-5 (Weathers et al., 2013, as cited in Sveen et al., 2016; Weathers et al., as cited in Ashbaugh et al., 2018). Participants are asked to select one event from the LEC-5, which they consider having been the worst event experienced and then on a ranging scale of “0” (not at all) to “4” (extremely), indicate the extent to which this event has caused distress over the past month. Studies conducted with varying samples have reported psychometric properties showing good internal consistency, test-retest reliability and convergent validity (Sveen et al., 2016; Blevins et al., 2015 as cited in Ashbaugh et al., 2018; Gray et al., 2004). Cronbach’s alpha values ranging between $\alpha = .76$ to $.97$ have been reported in several studies (Armour et al., 2015; Frewen et al., 2015; Hoge et al., 2014; Keane et al., 2014 as cited in Ashbaugh et al., 2018). Pertinent to the current study are the results of a study conducted in Zimbabwe, which reported Cronbach’s alpha of a $\alpha .92$ (Verhey et al., 2018).

3.4.3. Demographic Questionnaire

A demographic questionnaire (Appendix C) was used for the study, to determine key characteristics of the participants, such as “age”, “gender”, “race”, “educational level” as well as whether the participant was receiving treatment in a state funded or private rehabilitation facility.

3.5 Procedure

A list of state and private treatment facilities was obtained from the Department of Social Development (DSD) website, which listed rehabilitation facilities in the Western Cape. The researcher obtained email addresses and appropriate contact personnel from the DSD list and emails were sent to 12 treatment centres. Centres that responded were then followed up with a further email or phone call to set up a meeting with the researcher and the facility’s clinic manager and team. Meetings were used to share the questionnaires, for the researcher to discuss the aims of the study and to address any questions the clinic team had. Thereafter, a convenient time was arranged for the researcher to meet with potential participants.

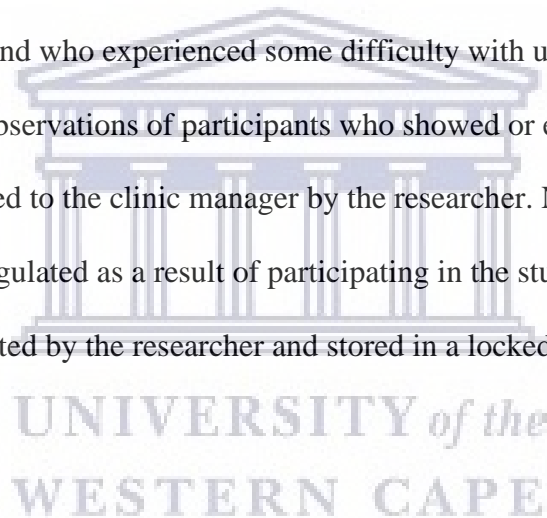
When meeting with inpatients, the researcher introduced herself and gave a brief talk about the study. Information sheets were distributed to all South African participants, whose place of residence was in the Western Cape. Informed consent was carefully explained by the researcher to all participants, stressing that participation was entirely voluntary, and no negative consequences would follow should anyone decline to participate. Prior to handing out consent forms, the researcher fielded questions from participants regarding the study and addressed concerns about confidentiality. Participants were assured that all questionnaires completed did not require their names and no rehabilitation facilities would be named in the

manuscript. Once questions were satisfactorily answered, participants who volunteered to participate were given consent forms to sign.

Before handing out the questionnaires, the researcher clarified her role in the study and the limitations of that role, which, by law, precluded engaging in any form of therapy. Participants were encouraged to speak to the appropriate personnel should the questionnaires elicit emotional distress. The questionnaires were distributed by the researcher and administered in English. Clear instructions for completion of the questionnaires were given and time allowed for questions to be asked and answered. The researcher remained with the participants until the questionnaires were completed, allowing her to assist participants who were Afrikaans speaking and who experienced some difficulty with understanding some of the English vocabulary. Observations of participants who showed or expressed signs of distress were communicated to the clinic manager by the researcher. None of the participants became emotionally dysregulated as a result of participating in the study. All completed questionnaires were collected by the researcher and stored in a locked, fireproof cabinet.

3.6 Data Analysis

Data analysis was conducted using the statistical software package for the social sciences (SPSS). In addition to descriptive statistics, t-tests and intercorrelations, stepwise regression analysis was performed to determine the predictors of PTSD symptoms. The variables included in the t-tests and intercorrelation tests were age, gender, LEC-5 Total, PCL-5 Checklist Total and the four PCL-5 subscales. The LEC-5 total gave an indication of the number of traumatic experiences participants were exposed to and whether these exposures were direct experiences of trauma or indirect experiences of trauma. The four PCL-5 subscales included were Cluster B – intrusive symptoms, Cluster C – avoidance



symptoms, Cluster D – alterations in mood and cognition and Cluster E – alterations in reactivity and arousal.

The stepwise regression analysis included variables “significant other”, “age”, “gender”, LEC-5 total score, PCL-5 total score as well as the scores for subscales Cluster B, Cluster C, Cluster D and Cluster E.

3.7 Validity and Reliability

Reliability and validity are key components of research. The trustworthiness of the researcher as well as the ease with which the study may be replicated hinge upon scientifically acceptable levels of reliability and validity. Methodical adherence to procedure in each stage of the research ensures the reliability and validity of the study. It was therefore vital that participants gave their informed consent before participation in the study commenced.

The two measuring instruments used in the study have been well researched and have psychometric properties that conform to scientific rigour. Additionally, the results of each of these measures was verified according to stipulated methods, which have proven to be reliable and valid. Standardised administration of the research instruments ensured that participants received the same instructions and information, thereby ensuring equal participation in the study. Finally, the use of quantitative methods allowed for greater accuracy and validity of scores.

3.8 Ethics

This study was governed by and adherent to the ethical conditions set out by the University of the Western Cape. Ethical approval was obtained from the Biomedical Research Ethics Committee (BMREC). Permission from the BMREC needed to be obtained

due to the sample selection being drawn from an inpatient population. Permission was also be obtained from the appropriate authorities at the rehabilitation centres from which the research sample was obtained.

The possibility of emotions associated with past trauma being elicited as a result of completing the LEC-5 and PCL-5 was discussed upfront with the clinic manager prior to meeting with the participants. The researcher stressed the importance of appropriate staff being available to process and contain any strong emotions elicited from the completion of the questionnaire. All participating facilities had recovery assistants, social workers or clinical psychologists on the premises whenever questionnaires were administered.

As part of obtaining informed consent, participants were also informed that although the risk was minimal, it was possible that completing the questionnaire may trigger emotions associated with traumatic experiences. The researcher stressed the voluntary nature of participation in the study, assuring participants that they were free to withdraw from the study at any time. Both the researcher and the clinic managers assured participants that withdrawing from the study or choosing not to participate would carry no negative repercussions for them.

While the role of the researcher did prohibit a therapeutic relationship with any of the research participants, every effort was made to engage with participants in a warm and empathic manner. The researcher was careful to track the participants' response to the questionnaires and alerted the clinic manager when a participant presented with anxiety or verbally expressed distress on completion of the questionnaire. At no point of the study did any of the participants decompensate or become emotionally dysregulated.

CHAPTER FOUR

RESULTS

The aim of the study was to investigate the correlates of substance abuse among patients diagnosed with SUD at local rehabilitation centres, particularly as it related to demographic variables, history of trauma, and PTSD status. Table 1 below provides a description of the sample.

Table 1: Description of sample

Demographic		N	%
Gender:	Female	26	41.9
	Male	36	58.1
Age:	Mean	33.9	
	SD	10.93	
		62	
Employment	Full Time	15	24.2
	Part Time	10	16.1
	Student	5	8.1
	Unemployed	32	51.6
Highest Grade	High School	27	43.5
	Diploma	19	30.6
	Undergraduate Degree	7	11.3
	Postgraduate Degree	9	14.5
Marital Status	Unmarried	32	51.6
	Living with a partner	8	12.9
	Married	15	24.2
	Divorced	7	11.3
Type of Facility	State Funded	13	21.0
	Private	49	79.0

As can be seen in Table 1, the majority of participants were male (58.1 %). The mean age of participants was 33.9 years (SD =10.9). Most of the sample were unemployed (51.6%), and 16.1% were employed part time.

The majority of participants (43.5%) had a high school education, 30.6% had attained a diploma, 11.3% had an undergraduate degree and the remainder of the sample, 14.5% had a postgraduate qualification. Just over half the sample were unmarried (51.6%), 12.9% were living with a partner, 24.2% were married and 11.3% were divorced. Although the entire sample attended private facilities, a small percentage, 21%, were state funded. Most of the participants were privately funded (79%).

RESULTS CHAPTER

The means, standard deviation and coefficient Alpha for the PCL-5 and its subscales as well as the LEC are detailed below.

Table 1: Descriptive statistics and reliabilities of the PCL and LEC

	Mean	SD	Alpha
LEC TOTAL	22.2	3.8	.82
PCL TOTAL	40.3	20.2	.94
PCL Cluster B	9.2	6.1	.89
PCL Cluster C	4.3	3.0	.82
PCL Cluster D	14.8	7.0	.81
PCL Cluster E	12.1	7.1	.83

According to Table 1 above, the Alpha coefficients indicate good reliabilities of the scales and are consistent with those reported in other studies (Geier et al., 2018; Murphy et al., 2017; Verhey et al., 2018).

4.1. Descriptive statistics and reliabilities of the PCL and LEC

Cronbach's alpha coefficient is used to measure internal consistency of measuring instruments. In the current study, the alpha coefficients for both the LEC and the PCL-5 were within the acceptable range, between 0.57 to 0.78 (Geier et al., 2018; Murphy et al., 2017; Sveen, Bondjers & Willebrand, 2016; Verhey et al., 2018) The alpha coefficient for LEC total was .82, indicating good reliability. For the PCL-5 total the alpha coefficient was .94, considered to show excellent internal consistency. All alpha coefficients for each of the four PCL-5 subscales, Cluster B (Intrusion), Cluster C (Avoidance), Cluster D Negative alterations in mood and cognition) and Cluster E (Alterations in reactivity and arousal) showed good internal consistency.

Good internal consistency of both the LEC and the PCL-5 confirms that the instruments measured what they were designed to measure, therefore were appropriate instruments for the study. The alpha coefficients found in the current study are consistent with other studies in developed countries (Murphy et al., 2017; Geier et al., 2018). A recent study established the reliability and validity of the LEC and PCL-5 for lower middle-income countries (LMIC) in Sub-Saharan Africa as well, further supporting the use of both instruments for the current study (Verhey et al., 2018).

Table 2: Descriptive statistics, intercorrelations and reliability of study variables

* $p < .05$ ** $p < .01$

Variable	1	2	3	4	5	6	7
1. Age	–						
2. LEC Total	.03						
3. PCL Total	-.29*	.63**	–				
4. PCL Cluster B	-.24	.52**	.84**	–			
5. PCL Cluster C	-.25	.38*	.75**	.63**	–		
6. PCL Cluster D	-.23	.54**	.89**	.60**	.54**	–	
7. PCL Cluster E	-.28*	.74**	.92**	.70**	.61**	.81**	–
Mean	33.9	22.2	40.3	9.2	4.3	14.8	12.1
SD	10.93	3.8	20.2	6.1	3.0	7.0	7.1
Alpha		.82	.94	.89	.82	.81	.83

Age was negatively related to the PCL-5 total ($p < .05$) and the PCL Cluster E subscale. There were no other significant correlations between age and the PCL subscales. The correlation between age and the LEC total was also not statistically significant.

The LEC total was positively related to the PCL-5 total ($p < .01$) and all the PCL Clusters including the PCL Cluster B subscale (Intrusion), the PCL Cluster C (Avoidance) ($p < .05$), Cluster D (Negative alterations in cognition) subscale and the PCL Cluster E subscale (Alterations in arousal and reactivity)

The PCL-5 total was positively related to all the PCL Clusters ($p < .01$) including Cluster B (Intrusion) subscale, Cluster C (Avoidance) subscale, Cluster D (Negative alterations in cognition) subscale and Cluster E (Alterations in arousal and reactivity) subscale shown in Table 2.

The PCL subscales were positively related to one another ($p < .01$) including, Cluster B (Intrusion) subscale Cluster C (Avoidance) subscale, Cluster D (Negative alterations in cognition) subscale, and Cluster E (Alterations in arousal and reactivity).

Table 3: PTSD and gender

	No PTSD		Probable PTSD	
	n	%	n	%
Female	10	38.5	16	61.5
Male	13	36.1	23	63.9

Table 3 above indicates that more men (63.9%) than women (61.5%) displayed PTSD symptoms.

Table 4: Differences between men and women in terms of LEC and PCL

Variable	Women		Men		t-value	p-value
	Mean	SD	Mean	SD		
LEC-5	21.7	4.5	22.8	2.9	-.71	.483
PCL-5	40.7	24.3	40.1	17.2	.12	.910
Intrusion symptoms	10.1	6.7	8.6	5.7	.84	.410
Avoidance	4.3	3.3	4.3	2.9	.07	.941
Alterations: Mood & Cognition	14.5	8.4	15.0	6.0	-.30	.801
Arousal	12.0	8.0	12.2	6.5	-.14	.890

Table 4 shows that there were no statistically significant differences between men and women with respect to LEC scores, PCL-5 total score and the PCL-5 subscales.

Table 5: Differences between those who have a significant other and those who do not in terms of LEC and PCL.

Variable	No significant other		Significant other		t-value	p-value
	Mean	SD	Mean	SD		
LEC-5	22.8	4.1	21.36	3.3	.95	.351
PCL-5	42.6	19.9	36.5	20.7	1.14	.260
Intrusion symptoms	9.5	6.4	8.7	5.7	.45	.660
Avoidance	4.4	3.0	4.0	3.0	.50	.650
Alterations: Mood & Cognition	15.3	7.2	13.8	6.8	.84	.407
Arousal	13.4	6.8	10.0	7.1	1.88	.070

Table 5 shows that the differences for those who have a significant other and those who do not, were not statistically significant.



Table 6: Significant predictors of PCL

Predictors of PCL-5 and subscales

Predictor	B	SE B	β	R ²	95%CI
PCL-total					
Step 1					
Constant	-40.0**	18.95		.39	[-79.02, -.99]
LEC-total	3.43**	.84	.63**		[1.71, 5.17]
Intrusion symptoms					
Step 1					
Constant	-9.6	5.85		.27	[-21.63, 2.40]
LEC-total	.81	.26	.52		[.28, 1.34]
Avoidance symptoms					
Step 1					
Constant	-3.38	3.43		.14	[-10.43, 3.70]
LEC-total	.32	.15	.38		[.01, .63]
Alterations in cognition and mood					
Step 1					
Constant	-9.20	7.04		.29	[-23.64, 5.30]
LEC-total	1.01	.31	.54		[.37, 1.70]
Arousal					
Step 1					
Constant	-17.84	5.30		.54	[-28.74, -6.93]
LEC-total	1.30	.24	.74		[.82, 1.78]

The results of the stepwise regression analysis are reported in Table 6 above. “Age”, “gender” and “significant other” did not emerge as significant predictors of the PCL total or its subscales. LEC was a significant predictor of PCL-5 total as well as Cluster B, Cluster C, Cluster D and Cluster E subscales.

CHAPTER FIVE

DISCUSSION

The aim of this chapter is to discuss the results of the data analysis of the study and the significance thereof, with respect to the aims and objectives of the study. The current study investigated the correlation between PTSD status, history of trauma and demographic variables among a sample of 62 patients being treated for SUD in inpatient substance use disorder treatment facilities. The study further investigated the predictive strength of PTSD status, history of trauma, demographic factors and SUD.

5.1 Descriptive Statistics

5.1.1 Sample characteristics

The majority of participants were male (58.1%), which seems to support other studies conducted in the Western Cape, indicating that fewer women than men seek treatment for SUD (Dada et al., 2018). Data collected by SACENDU between January 2000 to December 2013 showed a steady increase in female admissions to both inpatient and outpatient SUD treatment programmes (Dada et al., 2018). The study conducted by SACENDU indicates a positive trend in terms of women requesting treatment for SUD. However, in the current study the gap between men presenting for treatment versus women presenting for treatment is still significant.

The discrepancy between men and women presenting for treatment for SUD has been attributed to women feeling more stigmatised for their substance abuse, greater responsibility for childcare as well as financial and geographical constraints (Myers et al., 2011; Myers et al., 2014; World Healthcare Organisation, 2014, cited in Dada et al., 2018). The

aforementioned may account for the significant difference between male and female participants in the study.

The majority of participants were unemployed (51.6%). Prior studies have indicated high unemployment rates or lower work functioning among individuals diagnosed with comorbid PTSD and SUD (Peirce et al., 2011; Najavits et al., 2014). Clinically significant impairment to functioning in important aspects of life is part of the DSM-5 diagnostic criteria of SUD (Criteria A, APA, 2013). Although the high percentage of unemployed participants concur with other studies (Burnhams et al., 2013; Dada et al., 2018; Dannatt et al., 2014; Gielen et al., 2012; Gouse et al., 2013), none of the measuring instruments investigated reasons for unemployment. In light of the former, alternative explanations deserve consideration.

It is possible that unemployed individuals have more time available to complete a typical 4 to 6-week inpatient treatment programme. Unemployed individuals are not encumbered by the demands of an 8-hour working day, the administrative processes of applying for leave or the potential embarrassment of having to provide an explanation for extended annual leave request. Thus, the statistics may not be an accurate reflection of unemployment rates among inpatients being treated for SUD.

Higher unemployment rates tend to be associated with socially disadvantaged communities (Gielen et al., 2012; Statistics South Africa, 2012). Majority of participants in this study (79%) were privately funded therefore indicating that lower SES does not explain the unemployment rates among this sample. The question then arises as to how it was possible for such a high percentage of unemployed to pay for treatment that is costly. It is possible that financial support would have come from family members or parents who have the means to pay for private care. Additionally, participants who were unemployed may have

been perceived as more acutely ill by their benefactors, compared to participants who were employed and therefore perceived to be less debilitated by their SUD.

Most of the participants had a high school education (43.5%) and a significant portion had attained a diploma (30.6%). A few participants (11.3%) had an undergraduate degree and the remainder of the sample had a postgraduate qualification (14.5%). The high levels of secondary and tertiary education contrasts significantly with the findings of studies conducted in developed countries as well as the Western Cape (Arria et al., 2012; Arria et al., 2013; Rimza & Moses, 2005, as cited in Sahker, Acion & Arndt, 2015; Dada et al., 2018; Urban et al., 2013, as cited in Jacobs & Jacobs, 2016).

A longitudinal study conducted in Australia on a sample of mid-adolescent polysubstance users (alcohol, tobacco and cannabis) and non-users found that polysubstance use predicted poor high school performance and school drop-out (Kelly et al., 2014). Research findings over many years have consistently shown a strong association between cannabis use and non-completion of high school (Cobb-Clark et al., 2013; Ferguson et al., 2008; Macleod et al., 2004, cited in Kelly et al., 2014). These findings are all the more prevalent among adolescents from a lower SES compared to those who come from backgrounds of advantage (Cobb-Clark et al., 2013; Lynskey et al., 2003, cited in Kelly et al., 2014). Evidence shows that repeated use of cannabis has a negative effect on cognitive functioning, which may be a significant contributor to high school drop-out rates (Eldreth et al., 2004; Lynskey & Hall, 2000; Quickfall & Crockford, 2006, cited in Kelly et al., 2014). The effects of alcohol abuse are not to be underestimated either. Learners attending school while hungover from alcohol abuse have been shown to have high absenteeism rates and poor classroom performance (Presley & Pimental, 2006; Townsend et al., 2007, cited in Kelly et al., 2014).

Varying results have been reported regarding substance abuse among college students in the USA. On the one hand, there are studies that indicate high drop-out rates and poor academic performance by substance abusing students (Arria et al., 2012; Arria et al., 2013; Rimza & Moses, 2005, cited in Sahker et al., 2015). On the other hand, substance abuse among university students has been ascribed to a developmental stage and heavy use is outgrown as students get older (Demb & Campbell, 2009; cited in Sahker et al., 2015). In fact, some studies suggest that being a college student in the USA may even be a protective factor from developing substance use problems later on (Barnett et al., 2003; Harford et al., 2006, cited in Sahker et al., 2015).

Among the demographic data of a longitudinal study conducted in the Western Cape among a sample of women seeking treatment for SUD were statistics on levels of education (Dada et al., 2018). The data showed low levels of education across all substances abused, including polysubstance abuse. The only exception to low levels of education completed were found among women being treated for prescription and over the counter drugs, 54.55% fell in the grade eight to twelve group and 36.58% had completed tertiary education.

Based on the discussion in previous paragraphs, the sample in this study differed rather vastly in comparison with other studies. Firstly, unlike the findings reported in the study by Kelly et al., (2014), majority of participants did not come from socially disadvantaged backgrounds. Secondly, in contrast to Demb and Campbell (2009) cited in Sahker et al. (2015), any participants who may have abused substances during their mid to late adolescent years did not outgrow their substance abuse. Furthermore, attending university did not serve as a protective factor among participants in the current study (Barnett et al., 2003; Harford et al., 2006, cited in Sahker et al., 2015). Finally, when calculating the sum of those who had attained a tertiary diploma, undergraduate degree and postgraduate

degree, the total percentage is 56.4% - a sharp contrast to the statistics reported by Dada et al. (2018).

Given the higher percentage of privately funded participants (79%) in the current study, an advantaged background may account for the high levels of secondary and tertiary education (Kelly et al., 2014). However, if substance abuse during mid to late adolescence has been reported as a significant predictor of high school drop-out, why has this not been the case in the current study? One possible explanation may be that the participants in the study may have had a later age of initiation of substance use and were therefore able to complete their education. Alternatively, the SUD may have only progressed to the point of impaired functioning at a much later age. Nevertheless, the study did not include in depth history taking of the participants and the higher levels of education among this sample cannot be fully accounted for.

Majority of the participants were unmarried (51.6%) and 11.3% were divorced. Regarding a significant other, 12.9% were living with a partner and 24.2% were married. These findings are similar to those reported by Dada et al. (2018), citing 59.10% of the sample as “never been married”, 19.81% as married and 21.10% as “other”. Since the focus of the study by Dada et al. (2018) was not on demographic factors per se, no explanation for the statistics relating to marital status was offered. The focus of the current study was also not on demographic factors, thus any explanation for the higher percentage of unmarried participants is speculative. What can be concluded however, is that the absence of a significant other is neither a deterrent nor protective factor with respect to SUD among the participants in the current study.

5.2 Intercorrelations and reliability of study variables

5.2.1 Age and PCL-5 Total

Age was negatively related to the PCL-5 total ($p < .05$), meaning that as age decreased the PCL-5 total increased, alternatively, as age increased the PCL-5 total decreased. This means that younger participants were more likely to show PTSD symptoms than older participants. Studies have explored risks associated with age and the development of PTSD. Older age has been found to be a protective factor against PTSD after exposure to trauma. It has been suggested that older people may have developed resilience as a result of previous resolution of traumatic experiences and therefore may be better prepared for further adverse events (Gibbs, 1989; Norris et al., 2002b, cited in Jacobs & Harville, 2015). Other researchers have proposed middle aged and young adults as a greater risk group because they have future goals yet to be realised. This age group are also more likely to have young children as dependents as well as mortgages on properties they own, which may increase stress levels (Gibbs 1989; Vogel & Vernberg 1993, cited in Jacobs & Harville, 2015). These studies however were specifically related to natural disasters and may not be generalizable to other types of trauma.

A larger epidemiological study in the United States of America (USA) appears to substantiate the theory that older age is a protective factor against developing PTSD following exposure to trauma. The study found lower rates of PTSD among an older age population than those in younger adults (Pietrzak, et al., 2011, cited in Dinnen et al., 2015). Studies based in community living adults outside the USA however reported lower PTSD rates among older adults, or no difference between younger, middle aged and older adults (Creamer et al., 2001; de Vries & Olf, 2009, cited in Dinnen et al., 2015). In this instance it

is possible that the social cohesion found in community living may have been a more significant protective factor against PTSD than age.

Due to the sensory and cognitive decline associated with advanced age, alternative explanations for lower PTSD rates among older age populations warrant consideration (Thorp et al., 2011, cited in Dinnen et al., 2015). Thorp et al., (2011), cited in Dinnen et al., (2015) claim that several factors may confound PTSD rates among older age populations, including the propensity of older patients to express psychological distress as somatic ailments. A further proposal relates to generational conditioning and the reluctance among older people to acknowledge trauma or trauma related distress for fear of social stigma.

Taking into account the mean age (33.9 years) of the participants in the current study, suggestions made by Gibbs (1989); Vogel and Vernberg (1993), cited in Jacobs and Harville (2015), may offer some explanation for the negative correlational relationship between age and total PCL-5 score. Younger participants in the current study may indeed have been more susceptible to PTSD as a result of future aspirations being in jeopardy, property ownership and having children as dependents. The difficulty that arises with such an inference is that the study did not include demographic factors such as “number of dependents” and/or income, therefore may be a weak interpretation of the data.

While research based in developed countries may be helpful to developing nations as well, South Africa’s history and context often differs vastly from developed nations. Considering the location of the current study, a more contextual interpretation of the data may be more appropriate. Firstly, the standard deviation from the mean age of participants was 10.93. One standard deviation below the mean would be 22.97 years, a cohort colloquially referred to as “born frees” because they were born into the era of South Africa’s first democratically elected government. As has already been stated in this manuscript, post

1994 political violence may have abated, but interpersonal and community violence has increased (Terreblanche, 2002, cited in Atwoli et al., 2015). Secondly, research has established that interpersonal violence is more harmful than other traumatic events (Forbes et al, 2014; Fowler et al., 2013; Kessler et al., 1995, cited in Kucharska, 2017). Thirdly, the current study was located in the Western Cape province, which has higher homicide rates than any other province in the country. Furthermore, the province also has the highest rates of intimate partner violence. Taking all of these factors into account, it could be inferred that the younger participants have been exposed to traumatic events that are more harmful. Of greater concern is the likelihood that many of the younger participants have, in a sense, been born into an environment where violence and exposure to traumatic events is the norm. It is possible that in the face of multiple exposures to trauma, beginning at an early age, the younger participants have had little opportunity to develop the resilience needed to recover from trauma.

With regard to older age being negatively related to the total PCL-5 score, it is possible that the older participants in the current study may have had more time to develop some resilience against PTSD since they presented for treatment at a later age. Older participants may have also been exposed to more politically related violence than interpersonal violence and therefore were less at risk of developing PTSD. Of the full sample of 62 participants, only three fell into the age group of one standard deviation above the mean (≥ 44.83 years) and five were two standard deviations from the mean (≥ 55.8), which may account better for the lower PCL-5 total scores. Additionally, the study did not include in-depth history taking, therefore it would not be possible to determine quantitatively why older age was negatively related to PCL-5 total scores.

5.2.2 Age and Cluster E subscale

Age was also negatively related to the Cluster E subscale (alterations in arousal and reactivity), meaning that as age decreased Cluster E (alterations in arousal and reactivity) scores increased. There appeared to be a paucity of literature offering explanations that might link younger age to the hyperarousal and startle response that is typical of Cluster E (alterations in arousal and reactivity) symptomatology. A study examining variations in amygdala volumes may offer some insights. The amygdala is found in the sub cortical region of the brain and plays a crucial role in the evaluation of emotional cues of incoming stimuli (Tottenham & Sheridann, 2009; Tottenham et al., 2010, cited in Weems et al., 2015). Recent studies indicated that trauma and stress disrupted the developmental path of the amygdala volumes among younger individuals (Weems et al., 2015). It is possible that as a result of the disruption of normal development in the amygdala region may cause exaggerated interpretations of emotional cues and as a consequence, an over-estimation of perceived threat. Since these findings are fairly new, attributing Cluster E (alterations in arousal and reactivity) symptomatology to age related variations in amygdala volumes may be over simplistic.

5.2.3 The relationship between gender and PTSD

The results of the study revealed that more men than women presented with symptoms of PTSD. Of the female participants, 61.5% (n=16) met the threshold score (≥ 38) for probable PTSD and 63.9% of male participants met the threshold score for probable PTSD. Higher rates of PTSD among men contrasts with other studies, which indicate that women are not only more vulnerable to developing PTSD but more women than men are diagnosed with PTSD (Breslau et al., 1998; Breslau et al., 1997; Breslau et al., 2009; Breslau,

Peterson & Schulz, 2008; Ditlevsen & Elklit, 2012; Kessler et al., 1995, as cited in Peirce et al., 2011; Frans et al., 2005, as cited in Winstok & Weinberg, 2018).

The above results should be interpreted with caution given that there were more male participants than female participants. The difference percentage wise between male and female participants showing no signs of PTSD is negligible at 2.4% (more women than men). There is exactly the same difference percentage wise between women and men showing probable PTSD, 2.4% (more men than women), however there is a significant difference in how many more men participated in the study than women. A truer reflection of differences between genders would have been possible if there were an equal number of male and female participants.

5.3. Significant predictors of the PCL-5 Scale

The LEC-5 score was a significant predictor of the PCL-5 total score as well as Cluster B (intrusion), Cluster C (avoidance), Cluster D (negative alterations in mood and cognition) and Cluster E (alterations in reactivity and arousal) subscales. Unlike the PCL-5 which calculates a total score which either meets the threshold score for PTSD (≥ 38) or falls below the threshold score for PTSD, the LEC-5 does not yield a total score (Weathers et al., 2013; Gray et al., 2004). The purpose of the LEC-5 however, is to indicate the extent to which an individual has been exposed to traumatic events, known to potentially result in PTSD. Considering that the current study found that 61.5% of female participants and 63.9% of male participants showed symptoms of probable PTSD, the experience of traumatic events is a significant predictor of PTSD as well as SUD. Furthermore, the results seem to concur with previous studies reporting that the effects of cumulative trauma as a consequence of multiple traumas does increase the risk of developing PTSD (Briere, Kaltman & Green, 2008; Hendrickson et al., 2013; Martins et al., 2013, as cited in Kucharska, 2017). Finally, not only

does the experience of trauma or multiple traumas increase the risk of developing PTSD, it also indicates that the symptoms of PTSD will be distributed across all four PTSD clusters.

5.4 Summary and conclusion

The study aimed to determine how SUD correlates to demographics, history of trauma and PTSD status. The correlation analysis conducted revealed that demographic factors age of participants, relationship status and gender were not statistically significant in terms of SUD. A statistically significant, positive relationship between the LEC and the PCL-5 total as well as all four subscales of the PCL-5, Cluster B (intrusion), Cluster C (avoidance), Cluster D (negative alterations in mood and cognition) and Cluster E (alterations in arousal and reactivity) was found. The PCL-5 total was positively related to all four subscales, Cluster B (Intrusion), Cluster C (avoidance), Cluster D (negative alterations in mood and cognition) and Cluster E (alterations in arousal and reactivity). Although age was negatively related to the PCL-5 total score and Cluster E (alterations in arousal and reactivity) subscale, age overall was not shown to be statistically significant.

The second aim of the study was to determine predictors of SUD, particularly as it relates to demographics, history of trauma and PTSD status among a population of inpatients at SUD rehabilitation facilities in the Western Cape. No demographic variables emerged as significant predictors. The LEC (history of trauma) however was found to be a statistically significant predictor of the PCL-5 total (PTSD status) and all four PCL-5 subscales, Cluster B (intrusion), Cluster C (avoidance), Cluster D (negative alterations in mood and cognition) and Cluster E (alterations in arousal and reactivity) (PTSD symptoms).

In conclusion, based on the findings of the current study a history of trauma and PTSD status seem to be more significant predictors of SUD than demographic factors. Furthermore, history of trauma and PTSD status appear to be more statistically significantly

associated with SUD than demographic factors. However, despite age not emerging as a significant variable, some evidence in the study identified younger age people as a possible vulnerable population.

Additionally, the study results confirmed the consistency with which experiences of trauma and a diagnosis of PTSD occur among individuals struggling with SUD.

Although the Clinically Administered PTSD Scale (CAPS) is widely regarded as the “gold standard” for diagnosing and measuring PTSD (Hunt et al., 2018; Weathers et al., 2018, cited in Geier et al., 2018, p171), the clinically qualified staff needed to conduct the clinical interview would have been a considerable challenge for some of the participating facilities. While the PCL-5 can only indicate “probable PTSD” (Murphy et al., 2017; Verhey et al., 2018), its psychometric properties have been validated extensively (Price & van Stolk-Cooke, 2015, cited in Geier et al., 2017). Used in combination with the LEC-5, which has also demonstrated good reliability, the PCL-5 is a useful and less cumbersome measuring tool that can be used with confidence in local settings.

5.6 Limitations

Although the current study elicited some useful findings, some limitations were identified. Firstly, as a correlational study, the results speak to associations and do not determine any causal relationships. Secondly, the study used non-probability stratified sampling methods, thus the results apply to this particular sample of inpatients and may not be generalizable to other regions in the country. Finally, although all of the participating facilities do allocate beds for patients referred by the Department of Social development (from disadvantaged communities), they were all private or semi-private facilities. Under the

circumstances, it is possible that the strength of demographic factors may have been underestimated in this study.

5.7 Recommendations

In terms of the results that emerged from the current study as well as the literature review, the urgency with which SUD and co-morbid PTSD be treated simultaneously cannot be overstated. The LEC-5 and PCL-5 may be useful to be included at intake level. Both measuring instruments are relatively simple to administer and take considerably less time than the CAPS measuring scale. Patients with scores that fall within threshold scores for probable PTSD can be easily identified and appropriate treatment modalities could be tailored to address potential difficulties in engaging with SUD treatment.

Although the focus of the current study was not on MA use, information that emerged from the literature review indicate the need for early identification of MA use and abuse. Age appropriate prevention strategies may need to be directed at primary school level, as early as possible. The reason for beginning at primary school level is because younger children are less likely to engage in risk taking behaviour than adolescents and young adolescents. Younger children are also more likely to be wary of the consequences of their transgressions than adolescents.

Finally, the study revealed possible gaps in current research. Firstly, searches offering explanations for younger people having higher PCL-5 scores and higher scores for Cluster E (alterations in arousal and reactivity) yielded extraordinarily little information in either international or local contexts. Further research may indicate whether younger people are at higher risk of developing PTSD. Investigations are needed into whether symptoms of the Cluster E (alterations in arousal and reactivity) subscale are indeed more prevalent among

younger people with SUD. Research into hyperarousal among a younger population is important since substance use is often an attempt to ameliorate the discomfort of hyperarousal symptoms.



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APPENDIX A: LEC-5 (Life Events Checklist for DSM5)

LEC-5

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it *happened to you* personally; (b) you *witnessed it* happen to someone else; (c) you *learned about it* happening to a close family member or close friend; (d) you were exposed to it as *part of your job* (for example, paramedic, police, military, or other first responder); or (e) you're *not sure* if it fits.

Event	Happened to me	Witnessed it	Learned about it	Part of my job	Not Sure
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)					
2. Fire or explosion					
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)					
4. Serious accident at work, home, or during recreational activity					
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)					
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)					
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)					
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)					
9. Other unwanted or uncomfortable sexual experience					
10. Combat or exposure to a war-zone (in the military or as a civilian)					
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)					
12. Life-threatening illness or injury					
13. Severe human suffering					
14. Sudden violent death (for example, homicide, suicide)					
15. Sudden accidental death					
16. Serious injury, harm, or death you caused to someone else					
17. Any other very stressful event or experience					

Be sure to consider your *entire life* (growing up as well as adulthood) as you go through the list of events.

PLEASE COMPLETE PART 2 ON THE FOLLOWING PAGE

PART 2:

A. If you checked anything for #17 in PART 1, briefly identify the event you were thinking of:

B. If you have experienced more than one of the events in PART 1, think about the event you consider the *worst event*, which for this questionnaire means the event that currently bothers you the most. If you have experienced only one of the events in PART 1, use that one as the worst event. Please answer the following questions about the worst event (*check all options that apply*):

1. Briefly describe the worst event (*for example, what happened, who was involved, etc.*).

2. How long ago did it happen? _____ (*please estimate if you are not sure*)

3. How did you experience it?

It happened to me directly

I witnessed it

I learned about it happening to a close family member or close friend

I was repeatedly exposed to details about it as part of my job (for example, paramedic, police, military, or other first responder)

Other, please describe:

4. Was someone's life in danger?

Yes, my life

Yes, someone else's life

No

5. Was someone seriously injured or killed?

Yes, I was seriously injured

Yes, someone else was seriously injured or killed

No

6. Did it involve sexual violence? Yes No

7. If the event involved the death of a close family member or close friend, was it due to some kind of accident or violence, or was it due to natural causes?

Accident or violence

Natural causes

Not applicable (The event did not involve the death of a close family member or close friend)

8. How many times altogether have you experienced a similar event as stressful or nearly as stressful as the worst event?

Just once

More than once (please specify or estimate the total # of times you have had this experience _____)



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APPENDIX B: PCL-5 (Posttraumatic Stress Disorder Checklist for DSM5)

PCL-5 / PTSD Checklist

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month:

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience	0	1	2	3	4
3. Suddenly acting or feeling as if the stressful experience were happening again (as if you were reliving it)	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (e.g. heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (e.g. people, places, conversations, activities, objects or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience from the past?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (e.g. having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (e.g. being unable to feel happiness or have loving feelings for those close to you)?	0	1	2	3	4
15. Irritable behaviour, angry outbursts or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "super-alert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

APPENDIX C: Demographic Questionnaire

Age		<input type="checkbox"/>
Gender	M/F	<input type="checkbox"/>
Race	Black	<input type="checkbox"/>
	Coloured	<input type="checkbox"/>
	Asian	<input type="checkbox"/>
	White	<input type="checkbox"/>
Employment	Full time	<input type="checkbox"/>
	Part time	<input type="checkbox"/>
	Student	<input type="checkbox"/>
	Unemployed	<input type="checkbox"/>
Highest Grade Completed	Grade 5 -7	<input type="checkbox"/>
	Grade 8 – 10	<input type="checkbox"/>
	Grade 11 -12	<input type="checkbox"/>
	Diploma	<input type="checkbox"/>
	Undergraduate Degree	<input type="checkbox"/>
	Postgraduate Degree	<input type="checkbox"/>
Marital Status	Unmarried	<input type="checkbox"/>
	Living with a partner	<input type="checkbox"/>
	Married	<input type="checkbox"/>
	Divorced	<input type="checkbox"/>
Treatment Facility	State funded	<input type="checkbox"/>
	Private	<input type="checkbox"/>

How many people live in your household? What are their ages?

.....

.....

APPENDIX D



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

INFORMATION SHEET

Project Title: Correlates of substance use disorder among patients in treatment at substance use disorder rehabilitation facilities.

What is this study about?

This is a research project being conducted by Belinda van Niekerk, at the University of the Western Cape. We are inviting you to participate in this research project because you are currently in treatment for Substance Use Disorder (SUD) as an inpatient, at a secondary rehabilitation treatment facility. The aim of the study is to investigate the correlates of substance abuse among patients diagnosed with SUD at local rehabilitation centres, particularly as it relates to demographic variables, history of trauma, and PTSD status. The objectives of the study are to determine the correlates of SUD as it relates to demographics, history of trauma and PTSD status and to determine the predictors of SUD as it relates to demographics, history of trauma and PTSD status.

. What will I be asked to do if I agree to participate?

You will be asked to complete three questionnaires. The Life Events Checklist (LEC) is a questionnaire that asks questions about whether you have ever experienced or witnessed a traumatic event, for example, a car accident. The second questionnaire is called The Post-

Traumatic Checklist, which asks you to choose an event from the LEC, which you think is the worst event that has ever happened to you and has questions about how this event affected you. The third questionnaire is a demographic questionnaire, which helps the researcher understand a little bit more about you. An example of the questions in the demographic questionnaire would be about your age, your race and gender.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. To ensure your anonymity, the questionnaires you will be asked to complete are anonymous and will not contain information that may personally identify you.

To ensure your confidentiality, all completed questionnaires will be kept in a secure, locked cabinet. Only the researcher and supervisors will have access to this cabinet. If any information is recorded electronically, those files will be stored on a password protected laptop.

If we write a report or article about this research project, your identity will be protected.

What are the risks of this research?

There may be some risks from participating in this research study. There is a risk that completing questionnaires on past traumatic experiences may be emotionally difficult and upsetting. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention. Due to the fact that you are already in a treatment facility, the risk is minimised since assistance is immediately available to you.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about how many patients being treated for SUD also have histories of trauma, or have PTSD. We hope that, in the future, other people might benefit from this study through improved understanding of some of the factors that are common among patients who are being treated for SUD. Identifying PTSD early in treatment for SUD can help prevent relapse and improve the benefits of treatment for SUD.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify

What if I have questions?

This research is being conducted by **Professor Anita Padmanabhanuni** at the University of the Western Cape. If you have any questions about the research study itself, please contact

Professor Anita Padmanabhanuni at apadmana@uwc.ac.za.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Professor Anita Padmanabhanuni

Head of Department: Psychology

University of the Western Cape

Private Bag X17

Bellville 7535

Prof José Frantz

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

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chs-deansoffice@uwc.ac.za

This research has been approved by the University of the Western Cape's Humanities and Social Sciences Research Ethics Committee



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APPENDIX E



UNIVERSITY OF THE WESTERN CAPE

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CONSENT FORM

Title of Research Project: Correlates of substance use disorder among patients in treatment at substance use disorder rehabilitation facilities.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name.....

Participant's signature.....

Date.....