Alcohol and Substance Use and Dependence Within the LGBTQ+ Adult Population: An Exploration of Psychological and Social Factors

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ABSTRACT

Background: Alcohol and drug use and dependence rates are substantially more prevalent within the LGBTQ+ population when compared with the general heteronormative population. These contribute to numerous health disparities for the LGBTQ+ community. Several psychosocial variables are posited to influence substance use within this population, including current minority stress, and past difficulties including childhood bullying and ACEs, all of which likely contribute to mental health difficulties such as social anxiety. Current evidence indicates different sexual orientation and gender groups will have unique relationships with substance use and associated factors. However, there is a current lack of research splitting the LGBTQ+ population into distinct categories, particularly within the UK and in relation to pansexual, asexual and transgender communities.

Aims: The current study aimed to provide a snapshot of current alcohol, smoking, vaping and various drug use rates within the UK adult LGBTQ+ population, and ascertain which psychosocial variables (other substance use, ACEs, childhood bullying, mental health symptoms, social anxiety, and LGBTQ+ related minority stress) had a relationship with alcohol use and drug use. The current study also aimed to identify key differences between alcohol and substance-dependent individuals in the sample compared with non-dependent participants, as well as substance use differences between sexual orientation and gender groups. Finally, the study wished to gain insight into the main reasons and contexts for LGBTQ+ substance use.

Method: Data was collected via an online Qualtrics survey with LGBTQ+ adults living in the UK being eligible to participate. Respondents filled out a series of questionnaires relating to their substance use, mental health, as well as both childhood and current life experiences. 352 participants completed the study and were included in analysis, which involved a series of correlations, multiple regression, MANOVA, and content analysis.

Results: Correlational and regression analysis found that alcohol use had a positive relationship with drug use and was predicted by this, whilst drug use was positively correlated with both alcohol use and ACEs. MANOVA analyses identified that LGBTQ+ smokers showed significantly higher alcohol and drug use, as well as

significantly higher total minority stress, social anxiety, victimization events and ACEs. Victimization events had the strongest relationship with drinking, drug use and smoking compared with other minority stress components. No significant differences in substance use were found between groups based on sexual orientation or gender identity, but there were several differences on psychosocial variables, particularly minority stress. The most commonly-reported reason for using substances was management of mental health symptoms.

Conclusions: This study has provided an up-to-date snapshot of substance use prevalence within the LGBTQ+ population, with this population showing higher rates on all substances compared with the general UK population. Results provide some support for the link between the psychosocial variables and substance use, but more so for smoking, followed by drug use. Limitations of the study are discussed, as well as providing suggestions for future research to gain larger subgroups to help establish which psychosocial variables are most prevalent in predicting LGBTQ+ substance use. Longitudinal research with ethnically diverse samples are also warranted.

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1. INTRODUCTION

1.1. Alcohol in the UK

Alcohol use is highly prevalent within the United Kingdom (UK), with a national health survey noting 79% of adults drinking alcohol in the last year, 49% reporting at least weekly consumption, and 21% drinking at harmful levels (14 or more units per week). Those regularly drinking over 14 units weekly are most represented in the 55-64 year-old group for females, at 22%, and the 55-64 and 65-74 year-old groups for men, at 36% (NHS Digital, 2022).

Alcohol consumption is highly normalized within the UK, embedded in social events due to its nature as acting as an “interactional lubricant”, with many people drinking as a form of easing nervousness during socializing, and holding the belief it improves their conversational abilities (Monahan & Lannutti, 2000). Within certain micro-environments, e.g. university campuses, alcohol use is highly encouraged, as well as being a setting to access affordable alcohol, contributing towards a norm of binge-drinking among students (Davoren et al, 2015). Binge-drinking is defined as the process of drinking 4 or more drinks within a two-hour period (National Institute on Alcohol Abuse and Alcoholism, 2023). This pattern is associated with many negative health behaviours, including unprotected sex, using tobacco and illicit drugs, and poorer occupational performance (Miller et al, 2007).

1.2. Gender Differences in Alcohol

Typically, males have shown higher levels of alcohol consumption throughout history, which remains a trend in the present day. For example, 19% of UK adult males report binge-drinking in the last week compared with 12% of females (NHS Digital, 2022). This appears a consistent pattern globally, with a multinational study identifying that men were more likely to be current drinkers and engage in high-volume, high-frequency and heavy episodic drinking in 35 countries (Wilsnack et al, 2009). However, the level of weekly drinking, frequency of moderate drinking, and quantity of alcohol consumed per drinking session have all increased over the last 40 years but proportionally more amongst females (Mäkelä et al, 2012). Within the transgender population, this pattern has often found to be reversed, with transgender

females engaging in more hazardous alcohol use than transgender males (Tran et al, 2023).

1.3. Associated Risks of Alcohol

Alcohol continues to pose risks to people's health, and has been established as the primary cause of morbidity, disability and death among people aged 15 to 49 years (Office for National Statistics/ONS, 2021), with alcohol-related death figures rising in the previous decade (NHS Digital, 2020). A well-established link also exists between heavy alcohol consumption and development of psychological difficulties, with a literature review finding that presence of alcohol use disorder (AUD) increased the risk of major depressive disorder (Boden & Fergusson, 2011). Alcohol dependence rates are particularly high among male psychiatric inpatients experiencing mood or anxiety disorders or psychosis, particularly among males (Hulse et al, 2000), with co-occurring psychological problems augmenting the probability of relapse among those receiving alcohol intervention (Witkiewitz & Villarroel, 2009). Despite its illegality, 9% of 11-15 year-olds in the UK had drunk alcohol in the past week (Zambon, 2021), which has health implications due to the adolescent brain being more vulnerable to the effects of alcohol, positioning them at higher risk of developing neuro-cognitive or psychiatric problems lasting into adulthood (Welch et al, 2013).

Alcohol's psychoactive and pleasure-inducing properties result in it being an addictive substance, with 1.38% of England's population during 2019-20 estimated to have alcohol dependence (Public Health England/PHE, 2024). High "trait anxiety" and having a parent with alcoholism are strongly associated with alcohol dependence for men and women, whilst high impulsivity and antisociality are only correlated with alcohol dependence for women (Poikolainen, 2000), suggesting there may be different factors operating based on gender.

1.4. Tobacco and Vaping

Whilst alcohol is the most widely used substance in the UK, currently around 12.9% of the UK's adult population report smoking tobacco, an evident reduction from 20.2% in 2011 (ONS, 2023). This decline has been the sharpest in 18-24 year-olds, dropping from 25.7% in 2011, to 11.6% in 2022. There has been a clear decrease in smoking and reduced initiation across the last five successive generations (Opazo Breton et al, 2022). A recent government bill has pledged to raise the legal age of

smoking in the UK by one year annually, with aims to become a “smoke-free” society (Department of Health & Social Care, 2024).

Smoking has had a historical link with drinking behaviours, and harmful drinking is significantly correlated with ongoing smoking, difficulties quitting, and relapse (Falk et al, 2006). Longitudinal studies have identified mortality rates from coronary heart disease, stroke and smoking-related cancer are highest among men who simultaneously smoke, and drink more than 15 units of alcohol weekly, in comparison with smokers who drink less, and non-smoking drinkers (Hart et al, 2010). This highlights the bidirectional relationship existing between smoking and drinking.

Conversely, the current UK vaping prevalence rate is 7% for adults, and 8.6% for children aged 11 to 17, with this rate doubling between 2021 and 2022 (Office for Health Improvement & Disparities, 2022). Concerningly, it appears that early vaping exposure may increase the likelihood of adolescents going on to use illicit drugs. For example, within a sample of 5207 children born between September 2000 and January 2002, 7.6% of those who had vaped by age 14 had used cocaine by age 17, compared with 3.1% of non-vapers (Silva et al, 2023). This relationship appears to be bidirectional, with vaping predictors amongst 30-year-olds being cigarette smoking, alcohol and cannabis use, and having a friendship network consisting of cigarette smokers (Struik et al, 2022).

1.5. Recreational Drug Use

In the year ending June 2022, 1 in 11 adults in the UK aged 16-59 reported last-year drug use, with this being 1 in 5 among 16-24 year olds. Within the last year, 2.7% of people reported using a Class A drug at least once, and 2.6% reported using any drug more than once monthly (ONS, 2022). Cannabis was reported as the most frequently used drug, in line with previous studies’ findings internationally (United Nations Office on Drugs & Crime, 2011). Additionally, the UK is the second-highest cocaine consumer globally, with its high use being linked with binge-drinking culture (Organisation for Economic Co-Operation and Development, 2023).

The UK continues to see a sharp rise in the number of drug-related deaths, which has surpassed the rate in many other European countries (European Monitoring Centre for Drugs & Drug Addiction, 2023). Furthermore, 11% of patients admitted to

an intensive cardiac care unit had taken recreational drugs in the days prior to their hospitalization (Pezel et al, 2023). These health increase with “polydrug use”, the use of multiple substances simultaneously by an individual. This is reported by around a third of a UK drug-using sample, and has been strongly correlated with tobacco smoking, hazardous drinking, and presence of a mental health disorder (Smith et al, 2011). This suggests that a person using more drugs frequently is also more likely to smoke and/or drink heavily.

1.6. Medical Model of Addiction

A substantial amount of prior theories behind addiction and substance use behaviours have come from a biological standpoint. That is, the medical model of addiction assumes there exists a set of objectively observable manifestations that are caused by physical condition, representing a deviation from normal functioning, with this deviation being localized somewhere in the body (Kincaid & Sullivan, 2010). The ”disease model” would therefore suggest a chemical vulnerability provides an individual with a predisposition to alcoholism and other drug dependence (Giannini & Slaby, 1989). This standpoint dominated the research underpinnings of psychopathology and substance use for a large part of the twentieth century and into the twenty-first. For example, twin studies have examined concordance rates between monozygotic twins reared apart for alcoholism, illicit drug use, and antisocial personality disorder (Grove et al, 1990), whilst biochemical research has identified that markers such as platelet MAO activity levels were decreased amongst alcohol abusers compared with non-alcoholics (Pandey et al, 1988). However, despite a high level of focus on finding medicalized causes behind psychological distress, no objective measures of psychiatric diagnoses have been found (Harper, 2020), and possible biological drivers behind different mental health conditions are not consistently found (Moncrieff & Middleton, 2015). Psychologists themselves also contribute to this, with Rapley et al (2011) positing that psychology’s own insecurities over whether it can be counted as a ‘science’ being a driving factor behind psychologists preferring to talk about illness and the brain rather than social factors underpinning distress. The way in which psychiatry and clinical psychology is structured is therefore likely to conceal from view the nuanced causes of psychological distress. More recently, the Division of Clinical Psychology has acknowledged that psychiatric diagnoses of mental health problems has a number of

shortcomings, from an empirical and conceptual point of view, and that there is an overall need for a ‘paradigm shift’ away from the medical model (DCP, 2013). Within psychological services across the UK, there is an increased willingness to adopt a trauma-informed approach to care, taking into account the pervasive nature of trauma within populations seeking treatment, and its strong relationship with experiencing supplementary psychological difficulties (Sweeney et al, 2018). One model of formulation that acknowledges the many limitations with the medical approach to distress is the Power Threat Meaning Framework (PTMF) – which instead proposes that distress is related to experiencing social adversity and trauma, which prompts an individual to engage with different behaviours to survive this adversity (Johnstone & Boyle, 2018). It is with this lens that the current study will adopt, that LGBTQ+ individuals and their experiences as minorities likely play a role in their use of substances and overall mental health.

1.7. LGBTQ+ Substance Prevalence Rates

Returning to substance use rates, prevalence rates for several different substances are higher for LGBTQ+ individuals than non-LGBTQ+ groups. For example, among 147 LGB individuals, 60% smoked cigarettes, and 59% participated in binge-drinking. 43% reported cannabis use, and 15% either present or past use of ‘hard’ drugs (Wilcheck-Aviad & Oren, 2022). Another study found that 41.3% and 21.8% of LGB adults reported past-year cannabis use or had an AUD, compared with 18.7% and 11% of the general adult population (SAMHSA, 2021). This disparity also appears to be evident among adolescents. Among Australian 14 to 17-year-olds, 26.4% of LGBTQ+ adolescents reported drug use in the previous six months, around three times the rate (9.7%) within the same-age heterosexual population (Hill et al, 2023). This notion is further corroborated by a “Youth Risk Behaviour Survey”, which found transgender youth reported more than three times the lifetime prevalence of prescription and opioid misuse, and almost 12 times the heroin use rate than cisgender youth (Johns et al, 2019). This contrast seems to take a lifetime trajectory, with LGB adults over 65 years old presenting with higher ratios of cannabis use, and prescription misuse of opioids and tranquilizers (Han et al, 2021).

1.8. Disparities within LGBTQ+ Populations

This disparity between heterosexual and LGBTQ+ populations seems to be enhanced for female populations. For example, sexual minority (SM) women differ more from heterosexual women in their alcohol and drug use when compared with SM men's comparison to heterosexual men (Talley et al, 2014). A literature review encompassing 105 studies has also found that bisexuals had an overall higher prevalence rate of past-month heavy episodic drinking than gay and lesbian (LG) participants, but that this difference was particularly pronounced between lesbians and bisexual women (Shokoohi et al, 2022). Additionally, there is also a growing breadth of research investigating pansexual people's experiences with alcohol and other substances. Early findings indicate that pansexuals, when compared with their LG peers, reported higher usage of cannabis, cocaine, ketamine, ecstasy, prescription opioid and hallucinogens. Conversely, asexuals reported lower levels than all other SM groups (Scroggs et al, 2023).

Considering specific substances, Gagnon et al (2023) identified bisexual men to have higher prevalence of cannabis use disorder compared with heterosexual males, whilst transgender women had higher odds of alcohol and opioid use disorder compared with cisgender women. Lifetime heroin use has also often been found to be significantly higher among lesbian and bisexual women, and bisexual men, compared with heterosexual individuals (Schuler et al, 2019). Several drugs including mephedrone and methamphetamines (crystal meth) are significantly more frequently used amongst men who have sex with men (MSM) due to their association with "chemsex", inducing hypersexual feelings (Scrivner et al, 2013). However, a growing body of research shows sexualized drug use is growing among women who have sex with women, particularly those identifying as Queer (Hibbert et al, 2019). Some studies have found lesbian and bisexual women demonstrate earlier drinking, and more frequent tobacco and cannabis compared with heterosexual women (Talley et al, 2019), whilst gay males have been found to have an older age of onset for all psychoactive substances compared with straight and bisexual men (Demant et al, 2017; Sönmez & Palamar, 2022).

1.9. LGBTQ+ Experiences of Substance Services

Despite overall increased prevalence of substance use within the LGBTQ+ community, this population faces further barriers to equal care and support, including treatment for an alcohol or drug dependency. More than 80% of LGB adults needing substance use treatment do not obtain it (Medley et al, 2016). Furthermore, qualitative research has unveiled that for LGBTQ+ individuals in Scotland, their identity is rarely asked about during substance interventions despite it being relevant to their usage. Group settings often feel unwelcoming towards female or transgender people, whilst clinicians may often hold heterosexist assumptions (Dimova et al, 2022). A cross-sectional survey has also found that 27.6% of transgender males report using substances to directly cope with discrimination experienced within healthcare settings (Reisner et al, 2015). These findings synthesized indicate that fear of, or enacted discrimination, are likely to delay help-seeking and reduce the effectiveness of support offered for LGBTQ+ individuals struggling with their substance use.

1.10. Substance Use and Minority Stress

There are a number of possible explanations for heightened rates of substances within LGBTQ+ populations. Due to societal stigma and discrimination based on sexual orientation and/or diverse gender identity, fewer LGBTQ+ individuals engage in traditional roles like marriage and childrearing, which typically come with responsibilities associated with limiting alcohol use (Hughes, 2005). Moreover, semi-annual longitudinal studies have linked enacted stigma with concurrent elevations in alcohol use and subsequent increases in binge-drinking (Newcomb et al, 2012; Dermody et al, 2016). Minority Stress Theory (Meyer, 2003), posits psychological difficulties are often the result of stressful social environments that stem from holding a marginalized identity. LGBTQ+ young adults may experience familial rejection and multiple layers of systemic oppression which make them more vulnerable to mental health challenges and high substance use, which often become points to poverty and homelessness for many SM's (Ecker et al, 2020). Within a sample of over 1500 SM young people, high-risk alcohol consumption and dependency was significantly correlated with minority stressors – particularly violence and harassment, most

pronounced among gay men, and bisexual men and women (Demant & Saliba, 2020).

There may also be further components of minority stress, including discrimination 'incidents', identity concealment, and internalized heterosexism, which produce a sense of discomfort, leading to further utilization of psychoactive substances to manage unpleasant emotions (Stogner & Gibson, 2011).

1.10.1. Identity Concealment

Identity concealment (IC) is the deliberate, conscious withholding of information about one's LGBTQ+ identity from people in the person's close or wider network. This may be linked with wishing to avoid discriminatory experiences from external sources, or an internalized non-acceptance of the held identity (Mohr & Kendra, 2011). IC can often result in the person engaging in sexually discordant behaviours such as pursuing relationships with people of the opposite sex despite not being opposite-sex attracted – which is linked with poorer physical health and psychosocial functioning, and higher binge-drinking rates (Mendelsohn et al, 2022). Some studies have found that heterosexual-identifying individuals who experience same-sex attraction report higher rates of alcohol abuse and dependence (11.4%), compared with LGBTQ+ peers and non-same-sex attracted heterosexual-identifying people (Rentería et al, 2021). This remains a feature of many SM's lives, with up to 80% being out to limited numbers of people in their social circle (Pachankis & Bränstrom, 2018). Physiologically, higher cortisol levels have been identified in people reporting low levels of disclosure of their sexual identities (Juster et al, 2016), whilst those concealing to a greater extent have shown greater prevalence rates of cancer, tuberculosis and pneumonia (Cole et al, 1996). Considering substance use, individuals prone to self-censorship have been found to engage in binge-drinking more frequently and experience more negative alcohol-related side effects (Hartman et al, 2015). However, IC's link with alcohol is contested, with some studies finding those who engage in IC use substances at higher rates than their uncloseted peers (Stall et al, 2001), whilst others identified that daily IC was associated with lower daily alcohol consumption (Kiekens et al, 2022).

1.10.2. Internalized Stigma

Heterosexism, the idealization of heterosexuality as the norm, grants privilege to male-female couples and stigmatizes relationships that fall outside of this (Herek, 1990). Individuals who have grown up in highly heterosexist environments are more likely to internalize these feelings, resulting in psychological difficulties (Meyer, 2003). There may be some differences in terms of different sexual orientations' experience of this, with one study finding bisexual males experienced more internalized stigma than gay men (Lee et al, 2022). In a sample of 1071 gay and bisexual men, internalized homophobia (IH) was positively associated with depression, which in turn was positively associated with recent drug use – depression acting as the mediator between IH and recent drug use. IH also had a direct positive association with drug-related problems for participants (Moody et al, 2018). Moreover, a meta-analysis of 49 studies showed an overall positive significant relationship between IS and substance use. However, this relationship was moderated by the type of substance and sexual orientation, with the highest effect sizes being for heroin and cocaine, and the lowest for cannabis and GHB, and highest effect sizes for samples of exclusively lesbians, whilst no significant differences were found for males (Huynh et al, 2022). IS may also operate in mediating the relationship between enacted stigma and depressive symptoms for MSM (Li et al, 2021).

1.10.3. Victimization & Childhood Bullying

Whilst the UK has legislation in place such as the Equality Act (2010) designed to legally protect people against discrimination, and tolerance towards LGBTQ+ people has increased generally over the last two decades, there are still many instances of discrimination and violence that LGBTQ+ individuals face. 13% of SM's in the UK report receiving unequal treatment by healthcare staff due their LGBTQ+ status, with this rising to 32% for transgender people. Furthermore, 12.3% of SM's reported verbal harassment from someone they lived with over the last year, with the greatest rates among pansexual, transgender and non-binary respondents (Government Equalities Office, 2018). Concerning substances, among a sample of LGBT individuals assigned female at birth, there were significant associations between victimization and alcohol, hallucinogens and non-medical prescription drug use – with community engagement acting as a moderator (Phillips II et al, 2022). Being exposed to sexual orientation microaggressions has also been identified to

significantly increase risks of hazardous drinking and frequency of drug use among LGBTQ+ students (Winberg et al, 2019), whilst holding a positive sense of LGBTQ+ identity is hypothesised to buffer against homonegative microaggressions' relationship with alcohol (Kalb et al, 2022).

LGBTQ+ individuals are also more likely to have experienced victimization from early years. Childhood bullying has unique associations with risk of heavy drinking and cannabis use, even after adjusting for effects of demographics, impulsivity and family and peer risk factors, with Kim et al (2011) finding bullying explained 5% of the variance in violence and heavy drinking, and 7% of the variance in cannabis use during young adulthood. Young people identifying as LGBTQ+ experience all forms of bullying-victimization at higher rates than their heterosexual peers (Kahle, 2020). The predominant underpinning factor behind this is the frequent social discrediting of SM individuals (Hatzenbuehler & Pachankis, 2016), and due to particular social norms within the peer group, e.g. traditional masculinity (Birkett & Espelage, 2015). In the UK, "The School Report" identified 45% of LGBT pupils and 64% of transgender pupils have experienced bullying related to their identities (Stonewall, 2017), whilst being twice as likely to be a cyberbullying victim compared with heterosexual pupils (Kann et al, 2018), and consequently more likely to be targeted for weight or race-based discrimination (Bucchianeri et al, 2016). Despite this, only one-third of LGBTQ+ students report a clear process for reporting and tackling anti-LGBTQ+ bullying in school (Just Like Us, 2021). Without a robust support network, LGBTQ+ youth may go on to internalize their bullying experiences, come to anticipate peer rejection, and develop hypervigilance through fear of future discriminatory events – which augment long-term psychological distress in this population group (Gower et al, 2018). For example, compared with LGBTQ+ youth not victimized at school, those who are become 5 to 6 times more likely to attempt suicide (Ybarra et al, 2015), as well as engaging more in risky substance-related behaviours, e.g. drink driving (Russell et al, 2012), contributing to health inequalities experienced by LGBTQ+ people.

Within the UK, around 17% of LGB adults demonstrate symptoms of PTSD related to childhood bullying they experienced that was linked with their actual or perceived sexual orientation – with a smaller number of these using alcohol, prescription and/or non-prescription drugs to cope with traumatic victimization memories (Rivers, 2004).

Whilst there is some evidence to suggest that there may be gendered responses to bullying-victimization during childhood that manifest differently in adulthood, e.g. male victims reporting suicidal ideation more frequently versus female victims reporting agoraphobia more often in early adulthood (Copeland et al, 2013), long-term effects of LGBTQ-related bullying and trajectories of different SM groups and its link with substance use are still relatively understudied.

1.10.4. Rejection Anticipation & Social Anxiety

Another key facet of minority stress is rejection anticipation (RA), the idea that LGBTQ+ people come to expect alienation by the heterosexist dominant culture (Meyer, 2003). RA has been found to be detrimental to SM young people's mental health – with experiences of rejection and internalization of heterosexism often coming at younger ages due to declining age of 'coming out', when mental health is more vulnerable to these experiences (Russell & Fish, 2019), as well as social media representations of SM-targeted violence also contributing towards RA (Paterson et al, 2019). Whilst research into gender and sexual orientation differences is limited, existing studies have found that gay men and lesbians do not appear to have significantly different RA rates (Feinstein et al, 2012), whilst bisexual females may have lower RA rates than lesbians generally (Dyar et al, 2016). RA is correlated with a number of adverse mental health consequences including loneliness, anxiety and depression (Gao et al, 2017). Research regarding RA's link with substance use is conflicted, with one study finding that higher RA was associated with increased depressive symptoms but not smoking (Li et al, 2021), whilst another identified that RA predicted likelihood of smoking, and interacted with past structural stigma to predict higher alcohol use rates (Pachankis et al, 2014). However, LGBTQ-related RA has been linked with Social Anxiety Disorder (SAD), with individuals presenting with elevated concern around social evaluation based their sexual orientation being more susceptible to developing increased attention towards ambiguous or threatening social cues (hypervigilance) and avoidance behaviours relating to this (Maiolatesi et al, 2023).

SAD has a high comorbidity rate with alcohol use, with 48% of individuals with a lifetime SAD diagnosis also meeting criteria for a lifetime diagnosis of AUD (Grant et al, 2005). As well as having established links with elements of minority stress

including RA and IS, evidence has also found that experience of anti-gay bullying during school is associated with social anxiety during adulthood (Hart et al, 2019). Moreover, social anxiety seems to play a role in the long-term development of addictive behaviours. For example, a 14-year longitudinal study, excluding participants who had substance use disorders at baseline, identified that having SAD at study entry was correlated with a 4.5 and 6.5 greater odds of alcohol and cannabis dependence at follow-up (Buckner et al, 2008). In terms of prevalence rates of SAD, a literature review encapsulating 46 studies found consistently higher social anxiety rates in SM individuals compared with heterosexuals. Furthermore, in studies that analysed sexual orientation differences within SM's, bisexual individuals presented with higher rates than their LG peers, as did behaviourally bisexual people (Mahon et al, 2022). A relatively rare number of studies break down orientation and gender identity categories further, but among those that have, e.g. Mahon et al (2018), transgender and non-binary individuals, as well as those identifying as pansexual, asexual or queer report higher levels of social anxiety than other SM's.

1.10.5. Community Connectedness

However, there may be buffering factors of the negative effects of minority stress. Feeling connected to the LGBTQ+ community is tied with reduced psychological distress (Haslam et al, 2012), whilst being linked with alcohol reduction in transgender and non-binary individuals over a period of time (Clinkenbeard, 2023). Additionally, SM adolescents in Canada living in communities with greater levels of LGBTQ+ acceptance and hosting affirming events such as Pride, showed reduced lifetime illegal drug use for both males and females, and lower tobacco and cannabis use for females (Watson et al, 2020). However, there is also evidence supporting the idea that LGBTQ+ community connectedness can actually augment substance use. For example, qualitative research has found that use of methamphetamines among MSM is often seen as a way of increasing a person's access to a community they wish to join (Stanton et al, 2022), showing how drug use may be an entry point to a community for people wishing to reduce feelings if isolation and stigma. Moreover, gay community attachment has been shown to hold a direct negative association with feelings of IH, but a direct positive relationship with drug-related difficulties (Moody et al, 2018). This dichotomy may be explained by the "gay bar" concept, with the main space for SM's to socialize having high availability of substances which

serve as social reinforcement and facilitate people bonding together (Senreich & Vairo, 2014). Different sexual orientations and gender identities may have distinct relationships with these spaces. For example, outness and community involvement is related with higher alcohol and drug abuse rates for bisexual women, but not for lesbians or queer women (Feinstein et al, 2017). LGBTQ+ community connectedness may also reduce internalizing symptoms like depression among gay men generally, but this association is highest for non-White gay men and those with higher femininity (Petruzzella et al, 2019). This indicates LGBTQ+ people belonging to ethnic minorities, and those less conforming to gender norms are likely to benefit to a wider degree from feelings of inclusion by other LGBTQ+ people, possibly due to systemic racism and masculinity within society which may leave these people feeling more isolated and inferior. This may be important for less known sexualities, such as pansexual and asexual individuals whose orientations are frequently misunderstood by both the heteronormative population and within the LGBTQ+ community, contributing towards increased felt stigma (Rothblum et al, 2020).

1.11. Substance Use and Adverse Childhood Experiences

Another contribution towards heightened rates of substance use and dependence within LGBTQ+ populations is adverse childhood experiences (ACEs). LGB people show higher rates of ACEs than heterosexual populations, with bisexuals scoring the highest on 6 out of 8 categories in one study (Andersen & Blosnich, 2013). A further study identified that lesbian women reported a 104% higher incidence of physical abuse and 69% higher rate of sexual abuse than their heterosexual sister control group (Stoddard et al, 2009). LGBTQ+ people are also positioned at higher risk of experiencing multiple ACEs, with 43% of SM 14 to 18-year-olds being exposed to 4 or more ACEs, with particularly high rates among pansexuals and those identifying as transgender or non-binary (Craig et al, 2020). Higher proportions of ACEs among gender minorities is also supported by Suarez et al (2021), who found the prevalence of 4+ ACEs was more than seven times the rate of the general population among a transmasculine sample. Negative reactions to an individual's sexual or gender identity within the home has been found to be a key factor in raising their probability for exposure to ACEs when compared with non-LGBTQ+ siblings (McGeough & Sterzing, 2018).

A wide body of evidence has established a link between ACEs and substance difficulties in adulthood. Child abuse experiences as well as living in a dysfunctional household is significantly correlated with both smoking behaviours and alcohol abuse in adult years (Anda et al, 1999; Dube et al, 2002). Considering the impact of multiple ACEs, people reporting 4 or more have been found to be twice as likely to become smokers, seven times more likely to abuse alcohol, ten times more likely to try recreational drugs, and twelve times at risk of suicide attempts (Felitti et al, 1998). Synthesizing the above literature, this presents a clear argument that with LGBTQ+ individuals being exposed to more ACEs generally when compared with their heterosexual, cisgender peers, this enhances the likelihood of placing them on a trajectory involving poorer mental health, and using a range of substances. Neurophysiologically, it has been posited that early exposure to ACEs can impact brain structures including the amygdala and prefrontal cortex, key components of the brain involved with impulsivity and behaviour inhibition. This may contribute towards lower levels of executive functioning leading to substance use and possibly dependence beginning in adolescence and being sustained into adulthood (Trossman et al, 2021).

1.12. Research Summary

Considering the topics discussed so far, existing research has found that substance use among LGBTQ+ individuals is higher than in the general population, and is likely to contribute to a number of health disparities. Several hypotheses around why heightened rates of substance use may exist in this population have been considered, including current minority stress (discrimination experiences, rejection anticipation, identity concealment, and internalized stigma) as well as the role of community participation, and current social anxiety disorder. Historic experiences such as childhood bullying and ACEs have also been considered in terms of their relevance to substance use and dependence during adulthood. There is a need to explore these factors in a UK context due to the health inequalities that currently exist and the associated physical and mental health difficulties associated with alcohol, tobacco and recreational drug use and dependence.

1.13. Literature Review

A scoping review was conducted to explore the current trends in the literature regarding substance use and prevalence within LGBTQ+ populations, to help inform the present study's aims, and develop research questions. Due to a large proportion of the current research stemming from the USA, it was decided that this literature review would focus solely on UK-based research.

1.13.1. Search Strategy

This scoping review looked at substance use for LGBTQ+ people in a UK-specific context. Four databases (Academic Search Ultimate, APA PsycInfo, APA PsycArticles, and SCOPUS) were utilized to conduct the literature search. Limiters were implemented to include only peer-reviewed articles published between 2014 and 2024 to ensure recent data, the rationale behind this being that in the last ten years the landscape of sexuality and gender identity has changed dramatically, with a significantly larger number of people identifying as LGBTQ+ in the 2021 census than in 2011 in the UK (Stonewall, 2022). Search terms were:

1. "LGBTQ" or "LGBT" or "Gay" or "Lesbian" or "Bisexual" or "Transgender" or "Queer" or "Non-Binary" or "Sexual Minority" or "Gender Minority"
   AND
2. "Substance use" or "Substance abuse" or "Substance dependence" or "Alcohol abuse" or "Addiction"
   AND
3. "Minority stress" or "discrimination" or "Internalized stigma" or "Internalized homophobia" or "Rejection anticipation" or "Identity concealment"
   OR
4. "Adverse childhood experiences" or "ACEs"
   OR
5. "Childhood bullying" or "School victimization"
   OR
6. "Social anxiety" or "Social phobia" or "Social anxiety disorder"
   AND
7. "United Kingdom"

From this search, a total of 37 studies were returned. Abstracts of each study were examined to assess inclusion suitability. Journal articles that did not include at least

one measure of substance use as a primary measure within the study and use data from within the UK were excluded. Articles not including a measure of at least one psychosocial variable described above were also excluded from the final review. This left 6 studies remaining for further discussion and critique, that had been published within the last ten years, included a sample of LGBTQ+ participants living in the UK, and had measured substance use and at least one psychosocial variable of interest. These will now be discussed in turn.

1.13.2. Sexual Minority vs Non Sexual Minority studies

An initial UK-based study identified was that of Amos et al (2020). The researchers utilized a sample of 9885 adolescents from the "Millennium Birth Cohort study" – comprising of adolescents born between September 2000 and January 2002 – when they were 14 years of age. 629 (6.4%) of these identified as SM's. Variables measured included mental health difficulties, subjective wellbeing, depressive symptoms, life satisfaction and levels of bullying/victimization. Substance wise, frequency and lifetime use of smoking, alcohol and cannabis were measured. Statistical analysis identified that SM's were more likely to have tried alcohol (Odds Ratio/OR 1.85, 95% CI 1.47-2.33), smoked cigarettes (OR 2.41; 95% CI 1.92-3.03), and used cannabis (OR 3.22, 95% CI 2.24-4.61) at some point in their lives when compared with their non-minority counterparts – reaching strong statistical significance (all $p < .0001$). These OR's remained elevated for SM's for lower life satisfaction, higher levels of depression symptoms, and experiences of bullying-victimization. However, no significant differences were found for regular smoking, drinking, cannabis or other drug use. A clear advantage of this study is the longitudinal nature, with this cohort having been studied since birth, with many psychosocial variables being investigated throughout their lives so far. The high sample size also means greater statistical power when comparing the different groups. Having said this, one limitation includes the way in which SM's were identified. Whilst they asked participants about their sexual attraction (either opposite sex, same sex, or both), all non-heterosexuals were placed into one broad category, which is very frequently seen within health research but can be critiqued for homogenising the experiences of a broad range of individuals with many varying perspectives (Fish, 2008). Although data was present for bisexuals as well as heterosexuals and same-sex attracted participants, statistical analysis looking at

between-group differences including bisexuals was not performed, as it was underpowered, therefore bisexuals and same-sex attracted participants were combined into the larger SM group.

Furthermore, the sample examined individuals in their early adolescence, many of whom may not have realized their sexuality at this stage, or did not feel comfortable disclosing this. Long-term effects of difficulties such as bullying and mental health difficulties in childhood and their impact on use of different substances needs to be explored in further studies, with adult samples.

Paquette et al (2017) looked at a larger age range sample (16-44 years; n = 15,162), using Britain's "National Survey of Sexual Attitudes and Lifestyles 3" (NATSAL-3) and asked about a larger number of illicit drugs (9 in total), alcohol use, smoking, sexual orientation, physical and sexual health and limited their sample to sexually active individuals. Multivariate logistic regression was performed for statistical analysis. Among the sample, 25.6% of males and 12.5% of females reported using an illicit drug in the previous year. Among males, bisexuals were more likely to report drug use compared with heterosexuals (OR 1.41), but gay males were significantly more likely (OR 6.93). In contrast, among females, those identifying as bisexual were most likely to report drug use (OR 4.02), followed by lesbians (OR 2.18) when compared with heterosexual women. Within the entire sample, prevalence for illicit drug use was significantly higher among men and women reporting treatment for depression ($p = .047$), as well as current smokers and more regular binge drinkers ($p < .001$). A key strength of this study is that the NATSAL-3 is a stratified, clustered probability sample, and the researchers ensured to weight the sample to be similar to the 2011 census in terms of health status, geographical location and ethnicity, so can be viewed as broadly representative of the overall UK population. Having said this, whilst the study analysed many different variables including treatment for depression and use of alcohol and tobacco, it did not look specifically into how childhood adversity and current discrimination may contribute to/predict these drug rates, nor does it explore SM's other than gay, lesbian and bisexual groups.

A study that looks at the way in which trauma and discrimination factors may contribute to health inequalities for LGBTQ+ individuals is that of Woodhead et al (2016). This was a predominantly mental health focussed study, being the first in the

UK to explore how discrimination, lifetime and early trauma and coping strategies predict mental ill health among non-heterosexual individuals. Data came from both the Adult Psychiatric Morbidity Survey and the South East London Community Mental Health study (n=8455). Major, anticipated and everyday discrimination, as well as childhood and lifetime traumatic events, and strategies for coping were all measured – whilst common psychiatric symptoms, wellbeing, alcohol use, and illicit drug use of 11 substances were also assessed. Pearson's χ^2 with Rao and Scott corrections, a useful technique when looking at complex survey data to manage the effect of sampling (Rao & Scott, 1987), and multivariate logistic regression were used when analysing the data. Adjusting for the variables of age, marital status, ethnic background, educational attainment and gender, a statistically significant difference was found in common mental disorder rates between heterosexuals (22%) and non-heterosexuals (42.1%; OR 2.78, $p < .001$), as well as harmful alcohol use (3.9% of heterosexuals, 18.8% of non-heterosexuals (OR 3.30, $p < .001$)). This significant difference was also found in rates of past-year drug use (15.9% of heterosexuals, 50.6% of non-heterosexuals (OR 3.66, $p < .001$). Adjustments were also made to the model to account for individual discrimination and childhood/lifetime trauma, with adding individual discrimination to the model having no impact on the effect size for hazardous alcohol use, whilst adding childhood/lifetime trauma reduced the effect size considerably, but still remained significant ($p = .024$). Furthermore, the study looked at usage of different coping mechanisms to manage being treated unfairly, with non-heterosexuals being significantly more likely to smoke cigarettes (27.8% versus 16.6% of heterosexuals, $p = .029$) and drink alcohol (36.6% versus 23.3% of heterosexuals, $p = .027$). Sampling wise, this study shows strength in being representative of a local area (South East London), and is the first to look at differing coping mechanisms between non-heterosexual and heterosexual populations. However, a prime limitation is the low number of non-heterosexuals within the sample, meaning a binary heterosexual/non-heterosexual variable had to be used for analyses; increasing likelihood of Type 2 errors. This also made comparisons between subgroups of the LGBTQ+ population difficult to undertake. Furthermore, whilst Woodhead et al (2016) incorporate different forms of discrimination and trauma within their model, other aspects of minority stress such as identity concealment, social support, and internalized stigma are not considered.

1.13.3. Specific Subgroup Studies

The only study found within the UK looking at specific sexual orientations and how these map onto substance use was conducted by Bauer et al (2020). Similarly to Paquette et al's study, data came from the National Surveys of Sexual Attitude and Lifestyles, but whilst the former used NATSAL-3 (2010), the current study used NATSAL-1, 2 and 3 (1990, 2000 and 2010 datasets) as well as a 2000 "Towards Better Sexual Health" study of sexual attitudes and lifestyle amongst young people of 14 to 25 years in Northern Ireland. This study is unique in that it looks specifically into differences between asexual individuals when compared with their allosexual and "gray-asexual" counterparts. Variables measured were sexual attraction, alcohol and tobacco consumption, as well as general health and attributed importance of religion. Tobacco and alcohol consumption were compared using Chi-Square (χ^2) tests as well as Odds Ratios using logistic regression. Across all four studies and controlling for other variables such as gender, health and age, asexuals showed a significantly higher rate of abstinence from alcohol – 40% to 77.8%, OR 0.05 to 0.19, $p < .01$ - when compared with abstinence rates of allosexuals (10.2-27.2%). This is in line with other research conducted with US samples (Barger et al, 2021). This was in direct contrast with other sexual orientations, with LGB individuals having significantly more respondents drinking above recommended guidelines (OR 1.82 for same-sex attracted only, and OR 1.88 for mostly same-sex attracted but at least once attracted to the opposite sex). Additionally, asexuals had ORs of 0.28 and 0.33 on the NATSAL-II and III, being 67 and 72% less likely to smoke tobacco compared with their allosexual peers, a statistically significant difference ($p < .01$). In contrast, whilst asexuals were 28% less likely to smoke tobacco in the NATSAL-1, this was not a significant difference. However, it should be noted that the NATSAL-1 was completed in 1990, at a time when cigarette smoking was much more prevalent within the whole of the UK population. Bauer et al (2020) undertook a second part of the study, conducting interviews and focus groups with asexual participants from a New York and Vancouver sample. This identified different somatic, social-environmental, and cognitive-psychological factors affecting asexuals' abstinence, including the theme of asexuals lacking interest in alcohol due to its strong link with sexual activity, particularly within the LGBT community. Whilst this study holds strength in studying asexuals, who are historically a highly under-researched group,

from both a quantitative and qualitative perspective, it is worth noting that the themes from the qualitative part of the study must be interpreted with caution when considering asexuals living in the UK. This is due to the vastly different drinking cultures within the USA and Canada, when compared with the UK. Furthermore, whilst Bauer et al (2020) measure a range of variables, future research would benefit from incorporating more specific psychological and social variables to further inform why asexuals consistently show lower alcohol and substance use rates than other populations.

1.13.4. Gender Minority studies

Two further UK based studies have been identified looking at gender minorities rates of alcohol and substance use. Firstly, Rimes et al (2019) utilized the "Youth Chances" dataset to identify a sample of 677 16-25 year-olds, and examined mental health, self-harm, suicidality, and substance abuse, as well as LGBTQ-related victimization. This study compared four groups, 1) transgender females, 2) transgender males, 3) non-binary assigned male at birth (NB AMAB) and 4) non-binary assigned female at birth (NB AFAB). Utilizing a series of one-way ANOVA and χ^2 analyses, prevalence of a current mental health problem was found to be higher in all groups when compared with the general population, with the transgender male and NB AFAB groups being significantly more likely to report a mental health difficulty than the transgender female and NB AMAB groups ($p < .001$). Daily tobacco was highest in the transgender male group (31%), and lowest in the NB AMAB group (18.2%). In contrast, the NB AMAB group showed the highest mean AUDIT score (5.2) and the transgender male group the lowest (4.3). Weekly drug use was elevated in the NB AMAB group (8.7%) a prevalence rate 2.5 times higher than the NB AFAB group, which presented with the lowest rate (3.4%). However, no significant differences were found between groups in daily smoking, weekly drug rates or mean AUDIT scores.

With regard to LGBTQ-related victimization, significant differences between groups were identified for intimidation, physical assault, blackmail, and damage to property. The most significant result was physical assault($p < .001$), with those assigned male at birth showing significantly higher rates (43.8% for transgender females, 46.9% for NB AMAB) than those assigned female at birth (26.9% for transgender males, 27.7%

for NB AFAB). This study holds strength with respect to its breaking down of gender diverse participants into transgender-identifying and non-binary, and by sex assigned at birth. It also was the first to compare substance use, mental health and victimization rates by gender minority categories. Having said this, the data was collected between 2012 and 2013, thus the results should be interpreted carefully due to many more people identifying as non-binary a decade later. The researchers also did not apply corrections when undertaking multiple comparisons, and so this raises the likelihood of a Type 1 error occurring. These were not applied due to the lack of prior research in this area and therefore a more exploratory approach to their study, however still influences how liberally the results can be interpreted. Finally, in a similar way to some other studies discussed, this research looked at an adolescent sample – who may still be early on in their gender discovery journey – and did not explore the role of sexual orientation or analyse how victimization experiences and mental health may contribute to greater substance use rates within particular subgroups.

Another study, conducted by Davies et al (2024), administered a cross-sectional online survey (n=462), looking specifically at gender minority groups, again including transgender male and female, and non-binary participants. Data was collected on alcohol-related harms using the AUDIT and a specific alcohol-related harms questionnaire looking at 13 different consequences of alcohol drinking. Additional measures included discrimination, gender minority stress, current mental distress, loneliness and drinking motives. Their statistical methodology included comparing the different gender minority categories with ANOVA, as well as Pearson correlations and regression models to explore the associations between variables and contributors to the overall model. Men were identified as having significantly higher mean AUDIT scores (13.42 ± 9.10) compared with women (10.16 ± 7.22) and those reporting multiple gender identities (8.87 ± 6.81). Moreover, non-binary participants reported significantly lower experiences of discrimination compared with the other groups ($p < .001$). Correlation and regression analyses showed that as AUDIT scores increased, so did scores on discrimination and gender congruence, and the association between discrimination and alcohol consumption was mediated by coping motives and drinking to manage dysphoria. A key advantage of this study is the level of co-production incorporated throughout. Transgender and non-binary

participants were consulted with and involved in the development and execution of each research stage – including creating carefully adapted questions that ensured optimal inclusivity of gender-diverse participants and examination of concepts clinically relevant to this population group. Co-production is a practice that can strongly improve the effectiveness of research by ensuring it is well informed by preferences and needs a community may have (Ostrom, 1996). Despite this, Davies et al (2024) focused solely on looking at differences within gender-diverse participants and did not include sexual orientation as a variable within their study. Therefore, there may have been stressors and experiences unique to specific orientations influencing alcohol use that could not have been captured. Additionally, confounders such as recreational drug use were not studied, highlighting necessity for further exploration of this alongside alcohol use in future studies.

1.14. Study Rationale & Aims

The above literature review firstly highlights that LGBTQ+ substance use is generally understudied in countries outside of the USA, including in the UK. Due to the UK having particularly high levels of both alcohol and drug use, and a wide number of associated adverse health consequences, it is vital that we think about determinants that may make the LGBTQ+ population more vulnerable to substance use and dependence.

Many studies, including some discussed above, place LGBTQ+ participants into one homogenous category, ignoring possible distinct experiences within each category, with a far fewer number of studies splitting these into defined subcategories and looking at group differences. When this is done, the predominant orientations included are LGB, with much fewer studies including asexual, pansexual and other groups. With more people identifying in these ways, it is crucial that we consider unique experiences linked to sexual orientation both currently and historically, and how these may inform understanding around use of substances in such cohorts. Whilst two studies identified looked at disparities in substance use rates in gender minority groups, they did not include analysis of sexual orientation groups, and there are no current studies known that look at both sexual orientation and gender minority subgroups in a UK context. Thinking about life experiences, there is a clear

requirement for further research looking into how particular experiences such as childhood bullying, ACEs and current minority stress, may impact the degree of substance use within the LGBTQ+ population in the UK, and the differences between the diverse groups in this population. There is still much less research exploring adult psychological profiles of bullying victims, with the large majority of studies including child and adolescent participants (Valera-Pozo et al, 2021). This matches the findings of the literature review that current published studies are often looking at adolescent samples, with a need for more investigation into the way in which variables such as childhood bullying and ACEs predict problematic alcohol and substance use in adulthood. Outland (2016), who developed the LGBT Minority Stress Measure, has proposed a need for studies directly testing between-group differences to help expand the body of evidence. Most research focuses on certain parts of minority stress but does not necessarily look at all the varied aspects of this.

Finally, alcohol is by far the most studied substance in established research. Some studies identified also examined tobacco smoking and other drug use, predominantly cannabis, but rarely measure lifetime use and frequency of usage of a wide array of recreational drugs. There is currently a clear lack of studies looking at prevalence rates of other recreational drugs in the LGBTQ+ population, including cocaine, ketamine, amphetamines, as well as other less commonly used drugs such as mephedrone and LSD.

Considering the above commentary, the current study hopes to provide a up-to-date picture of alcohol, tobacco and recreational drug use rates in the LGBTQ+ UK adult population, in a sample with a range of different sexual orientations and gender identities. It will then explore the way in which different psychological and social factors, including mental health difficulties, ACEs, childhood bullying, social anxiety, and a range of minority stress factors, link with alcohol use, recreational drug use, substance dependence, and smoking. It aims to look at which of these variables may be closely associated with substance use and whether specific differences exist between different categories of drinkers, substance dependent individuals versus non-dependent individuals, smokers and non-smokers, as well as variations between sexual orientation and gender minority LGBTQ+ groups. It is also hoped that some insight into the main reasons and contexts associated with substance use can be explored.

There is clinical importance to this study with regard to addressing health inequalities experienced by the LGBTQ+ population. For example, by exploring how different variables may predict harmful use and dependence, this may help inform future care pathways for these populations and how we may clinically assess substance use and psychological difficulties for LGBTQ+ individuals based on their sexual orientation and gender identity.

1.15. Research Questions and Hypotheses

The research questions (and related hypotheses) that will be explored in the current study will be:

1. RQ1: Is there a relationship between alcohol use and 1) drug score, 2) mental health, 3) ACEs, 4) childhood bullying, 5) social anxiety, and 6) minority stress? Is there a relationship between alcohol use and the seven categories of minority stress?

Hypothesis 1: There will be a significant relationship between alcohol use and the different psychosocial variables measured in the study.

Hypothesis 2: There will be a significant relationship between alcohol use and the different categories of minority stress.

Hypothesis 3: One or more of the psychosocial variables will significantly predict alcohol use.

2. RQ2: Is there a relationship between drug use and 1) alcohol use, 2) mental health, 3) ACEs, 4) childhood bullying, 5) social anxiety, and 6) minority stress? Is there a relationship between drug use and the seven categories of minority stress?

Hypothesis 4: There will be a significant relationship between drug use and the different psychosocial variables measured in the study.

Hypothesis 5: There will be a significant relationship between drug use and the different categories of minority stress.

Hypothesis 6: One or more of the psychosocial variables will significantly predict drug use.

3. RQ3: Are there significant differences between low-risk, hazardous and dependent LGBTQ+ drinkers in the measured psychosocial variables?

Hypothesis 7: Drinker groups will show a significant difference in drug score.

Hypothesis 8: Drinker groups will show a significant difference in scores on other psychosocial variables.

4. RQ4: Are there significant differences between substance dependent participants and non-dependent participants in the measured psychosocial variables?

Hypothesis 9: There will be a significant difference in alcohol use between the dependent and non-dependent groups.

Hypothesis 10: There will be a significant difference in scores on other psychosocial variables between the dependent and non-dependent groups.

5. RQ5: Are there significant differences between smoking and non-smoking participants in the measured psychosocial variables?

Hypothesis 11: There will be a significant difference in both alcohol and drug use between the smoking and non-smoking groups.

Hypothesis 12: There will be a significant difference in scores on other psychosocial variables between smoking and non-smoking groups.

6. RQ6: Are there significant differences between sexual orientation groups in their alcohol use, drug use, and other psychosocial variables?

   Hypothesis 13: Sexual orientation groups will show significant differences in alcohol and drug scores.

7. RQ7: Are there significant differences between gender identity groups in their alcohol use, drug use, and other psychosocial variables?

   Hypothesis 14: Gender identity groups will show significant differences in alcohol and drug scores.

   A final research question taking a more exploratory focus will be:

8. RQ8: What are the main reasons and contexts for substance use reported by LGBTQ+ individuals?

2. METHOD

2.1. Overview

This chapter will begin by discussing the epistemological position I have taken throughout this research and different ethical considerations for the study. The design of the study, along with different materials will be reported, followed by a summary of the sample, study procedure and statistical analysis.

2.2. Epistemological Position

The current study will adopt a critical realist approach (Bhaskar, 2020). Taking a realist ontological stance assumes there are realities that exist in the world, and phenomena can occur via cause and effect (Jenkins, 2010). However, regarding people's individual experiences of being LGBTQ+ and ways in which this may relate to psychological health and substance use, an interpretivist position is also adopted. This posits that our understandings of the world have been constructed from our own individual perspectives (Avenier & Thomas, 2015).

Critical realism is situated between positivist and relativist antitheses (Bhaskar & Danermark, 2006) – which allows for broad generalizations to be made regarding observations in data, whilst simultaneously considering the deeper role of context and social history that are likely to shape people's perspectives on their identities and inter-related phenomena. This theoretical underpinning has been used in prior substance use research, e.g. Kersey et al (2023), and utilizing this in the present study it is hoped to help draw on multiple sexuality and gender-related factors including the biopsychosocial and sociocultural and how these combine to produce particular substance use behaviours.

2.2.1. Reflexivity

Whilst the present study is largely quantitative, reflexivity remains an important skill, to acknowledge one's own positionality in crafting the research questions (Jamieson et al, 2023), and ties in with the study's overall epistemological stance. My own experiences of being LGBTQ+ and growing up in an environment where this identity was stigmatised and othered has given me an interest in supporting others who identity as LGBTQ+ in my clinical practise as well as providing me with a passion to conduct research with this population to continue to improve the knowledge base and psychological outcomes. My own exposure to prolonged school bullying related to holding an LGBTQ+ identity, and memories of how this manifested – particularly in terms of social anxiety, internalized stigma, and rejection anticipation – have all provided me with insight and understanding into how specific psychological processes may operate for individuals going through similar experiences. Knowing that alcohol and recreational drugs are widely available for individuals once they reach the age of 18, and how each individual forms a different relationship with these substances based on their past and present experiences, gave me a strong interest in investigating further the link between alcohol and drug use, and their relationship with a range of psychosocial factors that are prevalent within LGBTQ+ communities. Discussions I have had with other LGBTQ+ people, including some who have struggled with substance use, have further highlighted that often these behaviours come from a place of unresolved trauma and minority stress. Considering my own position again, my awareness that there are a wide range of sexual orientations and gender identities that fall under the LGBTQ+ umbrella, many of which have not been given a voice in prior research, also prompted me to engage in my value of inclusivity and undertake a large number of inter-group comparisons.

2.3. Ethical Considerations

2.3.1. Ethical Approval

Ethical approval with minor amendments was sought and obtained from the University of East London Ethics Committee on July 20th, 2023 (see Appendix A & B). As participants were recruited from a volunteer sample of the general public, no further ethical approval, e.g. NHS Ethics, was warranted.

2.3.2. Informed Consent

Upon opening the online survey, participants were presented with a Participant Information Sheet/PIS (see Appendix C). This explained the voluntary nature of the research, and summarized the purpose of the study, participation inclusion criteria, and the procedure of the study, including the type of questions and expected completion time. Participants were also told of the possible benefits and negative consequences from taking part, as well as being given an explanation of how their data would be kept and stored both during and after the study's completion and who would have access to this data.

Participants were given the primary researcher's contact details and invited to initiate contact if they had any questions or concerns prior to participating. The PIS also explained that participants could withdraw from the study at any time whilst completing the questionnaire and their data would not be used. They were also informed they would be able to withdraw from the study following completion if they wished, by emailing the primary researcher with their unique 'pin' by a specific date when data analysis would begin.

To provide informed consent, participants were presented with a Consent Form (see Appendix D). This required them to read through several statements, then provide a 'pin' (e.g. a memorable date or place) for their data to be identified if they wished to withdraw, but without providing identifying information or contact details, to preserve participant confidentiality and anonymity. Confidentiality was also assured by explaining that anonymized data would be kept on the primary researcher's OneDrive, an encrypted database. Participants were then required to select "I consent" or "I do not consent" and click to the subsequent page. Ticking "I do not consent" took participants to a final page to bypass the study, whilst ticking "I consent" enrolled them in the survey.

2.3.3. Potential Distress

Prior to giving informed consent, participants were notified that the study included questions about alcohol and drug use, mental health, and both current past life experiences and discrimination. It was acknowledged that these questions may cause distress, and participants may feel uncomfortable answering these. The nature of the study in terms of its exploration of substance use for LGBTQ+ people

and their life experiences was also stated in a Study Advert (see Appendix E) which was circulated during the recruitment phase.

Additionally, participants were signposted to several organisations, including those that support people in a mental health crisis, and/or people who are worried about their substance use. A full list of these can be found in the PIS (Appendix B). This is in line with general research guidance that participants should be given information about relevant support organizations to help with potential distress (Wright, 2020).

Contact details for these organisations and a summary of the type of support they offer was included. These were included again in the Debrief sheet (see Appendix F), upon study completion, which also gave a summary of the research's main aims, and contact details for the primary researcher, research supervisor, and Chair of the School of Ethics Committee. Queries regarding the study were also encouraged to be raised with the primary researcher should the participant wish.

2.4. Design

The study utilized a cross-sectional design where participants were invited to fill out a series of self-report online questionnaires at one time point only. An online, anonymous survey was the optimum approach to gathering data as participants are more likely to report sensitive or perceived socially undesirable behaviours in this way compared with face-to-face contacts (Gnambs & Kaspar, 2015).

Due to the current study wishing to explore relationships and predictions between variables, and identify if there were significant differences between specified groups, a quantitative approach to the research was taken. The predictor variables were ACEs, childhood bullying, social anxiety symptoms, and minority stress (consisting of seven sub-categories; identity concealment, discrimination events, victimization events, everyday discrimination, rejection anticipation, internalized stigma, and community connectedness). The outcome variables were alcohol use, drug use, and substance dependence.

2.5. Materials

2.5.1. Applications

Qualtrics XM, a subscription online survey platform was utilized for the development of the questionnaire. IBM SPSS Statistics 27 was used for data preparation and statistical analysis.

2.5.2. Demographics

This covered the first five survey questions and included researcher-created questions for participants to report their demographics. Mandatory questions were age, gender identity, and sexual orientation. Optional questions were ethnicity and relationship status. Options for gender identity were male, female, transgender male, transgender female, non-binary/genderqueer, agender, and Other (with a text field for self-description). Options for sexual orientation were gay man, lesbian, bisexual man, bisexual woman, pansexual, asexual, heterosexual, and Other (with another text field for self-description).

2.5.3. Health

The following two questions on the survey asked about health. There was a mandatory question asking participants about any mental health problems they experienced or had been diagnosed with in the last year, with options to select being Depression, Anxiety, Trauma/PTSD, OCD, Bipolar disorder, Psychosis, Personality Disorder, Eating Disorder, Not Applicable (N/A), or Other (with a box for free text entry). There was an optional question after this for participants to disclose if they had any physical health difficulties or neurodevelopmental conditions.

2.5.4. General Substance Use

To assess general smoking and drinking behaviours, participants were asked to tick “Yes” or “No” to answer three successive questions about whether they smoked tobacco, vaped/used e-cigarettes, or drunk alcohol. If a participant answered “Yes” to these, a further question appeared, asking how many cigarettes or vapes they use per day, and/or how many units of alcohol they drink weekly.

2.5.5. Alcohol Use

Participants’ alcohol use was measured by the Alcohol Use Disorders Identification Test (AUDIT; Babor et al, 1989). This questionnaire, developed by the World Health Organization, is a very frequently used alcohol screening instrument consisting of 10

questions, giving a total score out of 40 indicating overall level of alcohol use. These questions cover quantity of alcohol consumption, types of drinking behaviour, and alcohol-related difficulties. Questions 1 to 8 are 5-point questions giving the participant a score of 0, 1, 2, 3 or 4. Questions 9 and 10 are 3-point questions giving the user a score of 0, 2 or 4. Total scores ranging from 0 to 7 fall into the “low-risk” category, whilst scores between 8 and 14 indicate “hazardous” alcohol usage. Scores of 15 and above suggest possible alcohol dependence.

This questionnaire is well-validated and a systematic review has identified its high internal consistency, with an average of above 0.8 across multiple studies (Allen et al, 1997). A further review has demonstrated the AUDIT to have high effectiveness at identifying alcohol-related problems both in its original as well as language-adapted versions in varying countries and cultures (de Meneses-Gaya et al, 2009). A score of 8/40 has been identified to have 92% sensitivity and 93% specificity for hazardous drinkers (Saunders et al, 1993). AUDIT scores also have significant correlations with several different alcohol biomarkers (Dasgupta, 2015), further highlighting its validity as an assessment tool.

2.5.6. Drug Use

A researcher-created questionnaire was developed to assess overall lifetime drug use and frequency of use for specific recreational drugs. This questionnaire displays a list of twelve different drugs (cannabis, cocaine, amphetamines/speed, poppers, MDMA/ecstasy, ketamine, heroin, LSD, magic mushrooms, mephedrone, methamphetamines, and volatile substances). For each drug listed, it prompts the participant to tick the frequency of usage, ranging from “Never” to “Daily or Almost daily”. Their response gives them a score for each drug from 0 to 7, with a maximum total score of 84.

2.5.7. Substance Dependence

The respondent was asked to identify the drug they had most frequently used in the prior twelve months (this questionnaire was bypassed if individuals ticked “Never” to every drug listed in the questions prior). To assess possible substance dependence, the Severity of Dependence Scale (SDS; Gossop et al, 1995) was used. This is a five-item questionnaire which asks the participants to consider their most frequently used drug when responding. The questionnaire gives a maximum score of 15, with

higher scores indicating greater levels of psychological dependence on the substance. The SDS has been found to have high diagnostic utility and internal consistency in a community sample (Martin et al, 2006), and strong test-retest reliability of 0.89 (Gossop et al, 1997). It has also shown good construct validity for a cut-off of 3 for cannabis and cocaine dependence (Steiner et al, 2008; Kaye & Darke, 2002), 4 for ecstasy (Bruno et al, 2009), and 5 for amphetamine and heroin (Topp & Mattick, 1997; Castillo et al, 2010). For drugs where a specific cut-off could not be found, a cut-off of 3 was used to classify the person as dependent.

2.5.8. ACEs

To investigate childhood trauma, the ACE-Q (Felitti et al, 1998) was used. This 10-item questionnaire presents respondents with a list of different events including childhood maltreatment (physical, sexual and emotional abuse, emotional and physical neglect, and observing domestic violence), and household adversity (parental separation, substance use of a household member, mental ill health of a relative, or incarceration of a household member). Respondents must tick “Yes” or “No” for each ACE, with each “Yes” scored as 1 to provide an overall score out of 10. This questionnaire is very routinely used to assess ACEs and has been found to have strong patient acceptability (Flanagan et al, 2018), and strong internal consistency and construct validity, with a high correlation with the Childhood Trauma Questionnaire, suggesting criterion validity (Wingenfeld et al, 2011). A score of 4 or more is deemed to be clinically significant in predicting outcomes such as depression, suicidality, and problematic substance use (Felitti et al, 1998).

2.5.9. Childhood Bullying

Bullying during childhood was measured using a shortened version of the Retrospective Bullying Questionnaire (RBQ; Shäfer et al, 2004). The original questionnaire is a 44-item scale looking at four distinct areas; including people’s experiences of bullying during both primary and secondary school, their general experiences at school, and bullying or harassment within the workplace. Due to the length of the original questionnaire, it was deemed appropriate to only include the first two sections (primary and secondary school bullying) within the current study that are scorable. A respondent is classed as a ‘victim’ if they report being bullied in at least one form “sometimes” or more often than this (frequency question), and

class the experience as at least “Quite serious” (intensity question). Participants are then grouped into either “Non-victim”, “Primary-school victim”, “Secondary-school victim” or “Stable victim”. In this study, participants are given an overall bullying score of 0 if they were a non-victim, 1 if they were a victim at either primary or secondary-school, and 2 if they were victims at both primary and secondary-school.

This questionnaire was preferred as most bullying questionnaires are directed towards child respondents, as opposed to asking adults to retrospectively report on bullying during their childhood, therefore this questionnaire can be used with an adult sample. Furthermore, it has high values for two-month test-retest reliability (r = 0.88 for primary and 0.87 for secondary-school) (Hamburger et al, 2011).

2.5.10. Social Anxiety

To measure symptoms of social anxiety within the sample, the Severity Measure for Social Anxiety Disorder (Social Phobia) – Adult (Craske et al, 2013) was adopted. This is a 10-item measure which prompts respondents to consider their thoughts, feelings and behaviours regarding different social situations over the last week. Each question requires a response of “Never”, to “All of the time” – resulting in a score between 0 and 4 for each question. The maximum score on the questionnaire is 40. It has been praised for its time efficiency and ability to capture a broad range of symptoms, possessing strong concurrent validity and an internal consistency score of .95 (Rice et al, 2021). For a sample of people seeking treatment for SAD, a mean score of 25.7 was observed (LeBeau et al, 2016) – suggesting a score of 26 and above could be deemed as a ‘clinical sample’. It has been adopted by the American Psychiatric Association as a formal social anxiety measure for adults.

2.5.11. Minority Stress

The LGBT Minority Stress Measure Short Form (Outland, 2016) was used to measure different aspects of LGBTQ+ related minority stress experienced by participants. This is a 25-item measure that gives a total possible score of 125. Participants are asked to read a series of statements and respond from “Never happens” up to “Happens all of the time” which give a score for each item from 1 to 5. The subcategories of Identity Concealment, Microaggressions, Rejection Anticipation and Discrimination Events have four questions each to give a total possible score of 20 in each domain. The other subcategories (Victimization Events,

Internalized Stigma and Community Connectedness) have three questions each to give a possible score of 15.

The study questionnaires can be referred to in Appendices G to N.

2.6. Participants

2.6.1. Inclusion Criteria

For someone to be eligible to participate in the study, they needed to be 18 years or older, and identify as part of the LGBTQ+ community and hold either a non-heterosexual and/or non-cisgender identity. They were also eligible for participation if they resided in the UK, and they needed to have a good fluency in the English language.

2.6.2. Exclusion Criteria

Potential respondents were excluded from participating if they identified as both heterosexual **and** cisgender or lived in a country other than the UK. As this is a study looking at the adult LGBTQ+ population, anyone under 18 years was automatically excluded from taking part.

2.6.3. Recruitment

The study involved a mixture of convenience and snowball sampling. It was advertised using a researcher-created poster, giving brief information about the research and what it would entail. This poster, along with the link to the Qualtrics survey, was shared with LGBTQ+ forums and groups, and circulated on social media websites, including LGBTQ+ networks on Facebook, Twitter and LinkedIn. Members of the researcher's professional network also shared the study advert and link on their social media accounts as well. The study was also advertised on LGBTQ+ specific applications, such as "Lex", a platform for non-binary and queer individuals. Participants self-selected onto the sample by clicking the Qualtrics link and providing their consent for participation. Individuals were encouraged to share the study within their networks to maximize sample size. Another stream of recruitment came from the website Prolific. The research supervisor placed the study on this platform, and

gained a further 200 study respondents – offering a small financial incentive for taking part (around £1.50).

2.6.4. Sample Size

A power analysis using GPower Software yielded a necessary sample size of 115 for correlational analysis, and 154 for a MANOVA with 7 groups (e.g. for sexual orientation) and 14 response variables (all psychosocial variables and the seven minority stress components). Green (1991) also recommends for multiple regression, “N > 104 + m”, m being the number of predictor variables. With the possibility of a maximum of 13 predictor variables (for example, to predict alcohol use in the sample), this would recommend an overall sample size of 117. Therefore, a sample size between 115 and 154 was preferred.

A total of 418 Qualtrics responses were gathered, between August 3, 2023, and February 29, 2024. On inspection, 53 responses were removed from the dataset where only the PIS and consent form had been viewed, as well as if participants met the exclusion criteria for age or LGBTQ+ status. This left 365 remaining participants in the dataset, however another 13 were removed from the dataset as they did not complete all of the questionnaires, so withdrawal of consent was assumed. This left a full sample of 352 participants, of which a full breakdown of demographics will be found in the results section.

2.7. Procedure

Participants initially clicked on the Qualtrics link which took them to the PIS. Here, they read more about the details of the research study, before progressing to a consent form. Upon consenting to the study and providing a unique pin code, they were presented with the demographics page consisting of mandatory and optional questions. Following this, general substance use questions were asked, followed by the AUDIT. Then, participants were taken through the Drug questionnaire and, if they disclosed lifetime use of any drugs listed, they were asked if they had taken drugs in the last year. If they reported “Yes”, they were asked to list this drug and complete the SDS with this drug in mind. Participants were then asked to complete the ACE-Q, RBQ, Severity of Social Anxiety Scale, and the LGBT Minority Stress Measure in

that order. Following completion, participants were presented with two optional questions asking them to disclose their perceived main reasons for substance use, and disclose what environments their substance use occurs in. Participants then reached the end of the study and were provided with a debrief sheet to read before closing the survey.

2.8. Analytic Approach

Questionnaire responses were exported from Qualtrics to SPSS. Data was saved on the researcher's password-protected laptop at the secure home address. The data was then inspected, with incomplete responses being removed. With the remaining data, with the critical realist epistemological stance in mind, it was decided a combination of the following tests would be used to answer the research questions:

- Pearson's R Correlation to test for associations between variables
- Multiple Linear Regression to estimate the relationship between the measured independent variables and each of two dependent variables (alcohol score and drug score)
- A series of one-way MANOVAs to identify potential significant differences between different groups in the sample, e.g. drinking categories, sexual orientation groups, gender identity groups

For the two open-ended questions at the end of the study, and to answer the final research question, a content analysis was used. This is a research method used to discover the presence of particular words and phrases within qualitative data, and helps to analyse the relative presence of these words by counting the number of times they occur in the data in a systematic way (Drisko & Maschi, 2016). Certain words that appeared in the qualitative response, such as 'home', that in this instance would become a theme "using substances at home", were inputted into an Excel database, with numbers of each theme being counted and placed in order of frequency.

3. RESULTS

3.1. Overview

This chapter presents the study's findings in relation to the research questions. Initially, the sample are described in terms of their overall demographics. To answer the various research questions, descriptive statistics are presented for substance use and psychosocial variables, followed by reporting or correlational and multiple regression analyses. MANOVA analyses are then presented, followed by a small-scale content analysis.

3.2. Descriptive Statistics

3.2.1. Survey Respondents

A total of 418 individuals accessed the online Qualtrics survey throughout the duration of the study. However, 29 (6.9%) did not progress beyond the PIS, and a further 37 (8.9%) dropped out of the study before answering all mandatory questions, so were removed from the data, with a listwise deletion approach to quantitative analysis being employed. This identified an overall questionnaire retention rate of 84.2%, leaving a total of 352 participants. Of the completers, 341 (96.9%) filled out the optional open-ended questions at the end of the survey.

3.2.2. Sample Characteristics

At the beginning of the survey, questions regarding participant demographics, mental and physical health were asked. A full breakdown of this information including percentages is found in Table 1.

The participant's ages ranged from 18 to 73 years with a mean of 33.13 (SD = 10.53). The most predominant ethnicity in the sample was White, with 87.2% of the sample reporting this (n=307), followed by "Mixed", with 12 participants identifying in this way (3.4%).

"Female" was the most popular gender identity, with 169 participants identifying this way (48%). A total of 5 people identified as "Other" for their gender identity, and 35 identified as "Other" for their sexual orientation. For sexual orientation, 18/35 (48.6%) who identified as "Other" described themselves as "Queer" in the self-description box. For MANOVA analysis, individuals belonging to a group with very low numbers

were merged with another group, with participants identifying as ‘Heterosexual’ merged with the ‘Other’ sexual orientation group, and those identifying as ‘Agender’ and ‘Other’ merged with the ‘Non-Binary/Genderqueer’ group.

Around two-thirds (65.1%) of the sample reported at least one mental health problem within the last year, and over a quarter reported 3 or more (27.0%). Of these, the most commonly reported difficulty was “Anxiety”, with 188 participants (53.4%) reporting experiencing this. One-third of the total sample disclosed a physical health problem (33.2%), whilst almost one-fifth mentioned neurodivergence (19.3%) – most commonly ADHD and Autism. By sexual orientation, reported physical health problems were most frequently reported in the Pansexual group (24%), whilst neurodivergence was most commonly reported in the Other group (54%).

Table 1 – Sample Characteristics

Characteristic	**N (/352)**	**%**
Age (in years) (/351)		
18-25	93	26.5
26-30	82	23.4
31-40	106	30.2
41-50	39	11.1
51-60	22	6.3
61+	9	2.6
Gender Identity		
Male	107	30.4
Female	169	48.0
Transgender Male	10	2.8
Transgender Female	12	3.4
Non-Binary/Genderqueer	48	13.6
Agender	1	0.3
Other	5	1.4
Sexual Orientation		
Gay man	70	19.9
Lesbian	54	15.3
Bisexual man	35	9.9
Bisexual woman	101	28.7
Pansexual	42	11.9
Asexual	13	3.7
Heterosexual	2	0.6
Other	35	9.9
Relationship Status		
Single	138	39.2

Long-term Relationship	115	32.7
Married	51	14.5
Engaged	11	3.1
Divorced	2	0.6
Separated	4	1.1
Widowed	2	0.6
Dating	22	6.3
Civil Partnership	7	2.0
Mental Health condition in last 12 months		
Yes	229	65.1
No	123	34.9
Mental Health Conditions		
Depression	162	46.0
Anxiety	188	53.4
Trauma/PTSD	66	18.8
OCD	34	9.7
Bipolar Disorder	6	1.7
Psychosis	8	2.3
Personality Disorder	26	7.4
Eating Disorder	36	10.2
Other	27	7.7
Ethnicity		
White	307	87.2
Non-White	45	12.8

3.2.3. Substance Use

Descriptive statistics for usage of different substances within the sample is found in Table 2. 11.6% of the sample reported both drinking alcohol and vaping, and 8.8% reported drinking alcohol and smoking. A further 10.2% reported usage of all three.

Table 2 – Substance Use Descriptive Statistics

Substance	N	%
Generic substances		
Tobacco smoker	83	23.6
Vaper/e-cigarette user	91	25.9
Alcohol drinker	278	79.0
Recreational drugs – lifetime		
Cannabis	220	62.5
Cocaine	110	31.3
Amphetamines/Speed	57	16.2
Poppers	103	29.3
Ecstasy/MDMA	93	26.4

Ketamine	64	18.2
Heroin	2	0.6
LSD	47	13.4
Magic mushrooms	67	19.0
Mephedrone	15	4.3
Methamphetamines/crystal meth	12	3.4
Volatile substances	9	2.6
Recreational drugs – at least monthly (frequent)		
Cannabis	71	20.2
Cocaine	16	4.5
Amphetamines/Speed	7	2.0
Poppers	23	6.5
Ecstasy/MDMA	11	3.1
Ketamine	11	3.1
Heroin	1	0.3
LSD	1	0.3
Magic mushrooms	5	1.4
Mephedrone	0	0.0
Methamphetamines/crystal meth	3	0.9
Volatile substances	1	0.3
AUDIT score		
Low-risk drinker (0-7)	207	58.8
Hazardous drinker (8-14)	100	28.4
Dependent drinker (15+)	45	12.8

3.2.3.1. Sexual Orientation/Gender Identity Disparities

Relating to substance use prevalence rates within different sexual orientation and gender minority groups, please see Table 3.

Table 3 – Sexual Orientation & Gender Minority Group Substance Use Rates

Group	% Alcohol drinkers	% Tobacco smokers	% Vapers
Sexual Orientation	1.Pansexual (83.3) 2.Bisexual Woman (83.2) 3.Gay Man (82.9) 4.Bisexual Man (80) 5.Lesbian (74.1) 6.Other (70.3) 7.Asexual (53.8)	1.Bisexual Woman (26.7) 2.Pansexual (26.2) 3.Gay Man (25.7) 4.Asexual (23.1) 5.Bisexual Man (20) 6.Other (18.9) 7.Lesbian (18.5)	1.Bisexual Man (34.3) 2.Bisexual Woman (31.7) 3.Other (24.3) 4.Pansexual (23.8) 5.Gay Man (22.9) 6.Lesbian (18.5) 7.Asexual (15.4)
Gender Identity	1.Transgender Female (91.7) 2.Male (84.1) 3.Female (79.9) 4.Transgender Male (70) 5.Non-Binary/Other (64.8)	1.Transgender Female (33.3) 2.Transgender Male (30) 3.Male (25.2) 4.Female (23.1) 5.Non-Binary/Other (18.5)	1.Transgender Male (50) 2.Transgender Female (33.3) 3.Male (27.1) 4.Female (24.9) 5.Non-Binary/Other (20.4)

Note: % is based on proportion within each group

For gender groups, the highest proportion of alcohol drinking was in the Transgender Female group, who also show the highest rate of tobacco smoking. Transgender

Males show the highest vaping prevalence. The Non-Binary/Other group showed the lowest rates on all three substances.

By sexual orientation, pansexuals showed the highest prevalence of drinking alcohol, 30% higher than asexuals. The greatest proportion of smoking was among bisexual females and lowest for lesbians, whilst vaping was most popular among bisexual males and least among asexuals.

3.2.3.2. Hazardous & Dependent Drinking rates

The mean total AUDIT score within the sample was 7.41 (SD = 6.32), marginally below the threshold for hazardous alcohol use. 145 participants – 41.2% of the sample – were classified as either 'hazardous' or 'dependent' drinkers scoring 8 or above for their alcohol use. 34.9% reported drinking alcohol more than once per week, whilst 22.4% reported having had a relative, friend, or medical professional express concerns about their drinking at some point.

3.2.3.3. Recreational Drug Use rates

On the drug use questionnaire, out of a maximum score of 84, the mean Drug Score within the sample was 5.26 (SD = 6.94). Cannabis was by far the most frequently used – with a 62.5% lifetime rate, and 20.2% frequent rate (at least monthly), whilst cocaine was the second most taken, with lifetime and frequent rates of 31.3% and 4.5%.

Cannabis use was most prevalent in the "Other" Sexual Orientation group, with a 73% lifetime and 32.4% frequent rate. Lifetime prevalence for cocaine was highest in the Gay Male group (42.9%) whilst Bisexual Females showed the highest frequent use (7.9%). For both cannabis and cocaine, asexuals showed the lowest prevalence rates. For lifetime use, heroin had the lowest prevalence (0.6%), whilst mephedrone was the drug used by the lowest proportion of the sample frequently (0%).

A full breakdown on lifetime and frequent use of each drug based on sexual orientation and gender identity groups can be found in Appendix O.

3.2.4. Drug Dependence

Individuals responding 'Never' to all recreational drugs automatically bypassed the SDS, leaving a total of 243 participants answering these questions. Of these, 64.6%

(n=157, 44.6% of overall sample) reported they had used recreational drugs in the last year. 50 participants were categorized as 'substance dependent' – a total of 14.2% of the sample. For gender identity, transgender males were the most represented (40%), whilst females held the lowest proportion (11.2%). For sexual orientation, the highest proportion was among the "Other" group (21.6%), whilst asexuals held the lowest rate (0%). Primary substances reported for this group are found in Table 4.

Table 4 – Primary Substances for dependent participants

Primary Substance	**N**	**%**
Cannabis	32	64
Cocaine	8	16
Ketamine	4	8
Methamphetamine	2	4
Amphetamine	1	2
Mephedrone	1	2
Tobacco	1	2
Tramadol	1	2

3.2.5. Psychosocial Variables

For the mean scores with standard deviations of the scored elements of the Retrospective Bullying Questionnaire, the ACE-Q, the Severity Measure for Social Anxiety Disorder (Adult), and the LGBT Minority Stress Measure, please see Table 5. For the LGBT Minority Stress Measure, mean scores for each subsection are also presented. Mental Health score is computed by the number of different mental health difficulties participants disclosed experiencing over the last 12 months, i.e. their score would be 2 if they reported two different mental health difficulties. For the RBQ, participants were given a score from 0 to 2, based on if they were a non-victim, bullying victim in either primary or secondary school, or bullying victim in both.

Table 5 – Psychosocial Variable Descriptive Statistics

Variable	**Mean score**	**SD**
Mental Health Score	1.57	1.57
ACE-Q	2.84	2.36
Severity Measure for Social Anxiety Disorder (Adult)	13.34	10.43
LGBT Minority Stress Measure	47.59	15.18
Identity Concealment(/20)	8.61	4.28
Everyday Discrimination(/20)	8.92	4.10
Rejection Anticipation(/20)	9.12	3.98
Discrimination Events(/20)	5.39	2.70
Victimization Events(/15)	5.10	2.60
Internalized Stigma(/15)	5.67	3.14

Community Connectedness(/15)	11.23	2.73
RBQ		
Overall Bulling Score	0.55	0.73

Proportions of the different types of bullying victims, ACEs and possible clinical symptoms of Social Anxiety are also presented in Table 6.

Table 6 – Rates of Childhood Bullying, ACEs, and Social Anxiety

Variable	N	%
Childhood bullying		
Non-victim	211	59.9
Primary school victim	22	6.3
Secondary school victim	68	19.3
Stable victim	51	14.5
ACEs		
1 or more	282	80.1
2 or more	228	64.8
4 or more	125	35.5
Social Anxiety		
Above clinical threshold (26+)	54	15.3

3.3. Hypotheses Summary

This next section presents all results of the statistical tests undertaken. Table 7 presents a list of the study's hypotheses and whether the results indicate we can accept or reject each hypothesis.

Table 7 – List of Study Hypotheses and Outcome

Hypothesis	Outcome (Accept/Reject)
1. There will be a significant relationship between alcohol use and the different psychosocial variables measured in the study.	Reject
2. There will be a significant relationship between alcohol use and the different categories of minority stress.	Reject
3. One or more of the psychosocial variables will significantly predict alcohol use.	Accept
4. There will be a significant relationship between drug use and the different psychosocial variables measured in the study.	Reject
5. There will be a significant relationship between drug use and the different categories of minority stress.	Reject
6. One or more of the psychosocial variables will significantly predict drug use.	Accept
7. Drinker groups will show a significant difference in drug score.	Accept

8. Drinker groups will show a significant difference in scores on other psychosocial variables.	Reject
9. There will be a significant difference in alcohol use between the dependent and non-dependent groups.	Accept
10. There will be a significant difference in scores on other psychosocial variables between the dependent and non-dependent groups.	Reject
11. There will be a significant difference in both alcohol and drug use between the smoking and non-smoking groups.	Accept
12. There will be a significant difference in scores on other psychosocial variables between smoking and non-smoking groups.	Reject
13. Sexual orientation groups will show significant differences in alcohol and drug scores.	Reject
14. Gender identity groups will show significant differences in alcohol and drug scores.	Reject

3.4. Correlational Analyses

To investigate RQ1 and 2, bivariate correlational analyses were performed, to examine whether there were significant associations between variables.

3.4.1. Assumptions

Pearson's Product Moment Correlation is a parametric test, holding several assumptions. Linearity was assessed via inspection of scatterplots between the investigated variables, whilst Z scores and boxplots were used to identify outliers. Z scores above 3 standard deviations away from the mean are generally considered to be outliers (Tabachnick & Fidell, 2013). Six cases were identified as outliers, so were checked in case of data entry or measurement error. Subsequently, it was felt all outliers represented genuine data points, as qualitative reports of using substances to cope with feelings corresponded with scores on other questionnaires by these cases. Shapiro-Wilk scores for all variables returned as < .001, suggesting the normality assumption requiring significance values of < .05, had been violated. However, the Central Limit Theorem indicates data tends to be normal in sample sizes of more than 40 (Field, 2009), with data distribution holding less relevance in samples with hundreds of observations (Altman & Bland, 1995). Thus, Pearson's Correlation was still performed, however the non-parametric Spearman's Rank-

Order Correlation was also conducted (see Appendix P), with results being compared to aid careful interpretation of inter-variable correlations.

Pearson's Correlation Coefficients between variables have been listed in Table 8:

Table 8 – Pearson Correlation Coefficients

	M.H.	AUDIT	DR.	Ace-Q	C.B.	S.A.	Tot. M.S.	I.C.	E.D.	R.A.	D.E.	V.E.	I.S.	C.C.
M.H.	1	.067	.149*	.394**	.289**	.501**	.283**	.051	.248**	.261**	.215**	.305**	.086	-.141*
AUDIT		1	.356**	.034	.026	.128*	.095	.020	.033	.049	.026	.165*	.106*	-.071
DR.			1	.195**	.110*	.115*	.110*	-.007	.110*	.117*	.068	.172*	.069	.036
ACE-Q				1	.300**	.328**	.254**	.068	.257**	.207**	.263**	.276**	.020	-.073
C.B.					1	.330**	.262**	.073	.176**	.261**	.305**	.360**	-.009	-.065
S.A.						1	.438**	.169*	.382**	.363**	.291**	.391**	.146*	-.242**
Total M.S.							1	.608**	.698**	.830**	.708**	.684**	.530**	-.387**
I.C.								1	.164*	.469**	.223**	.129*	.378**	-.106*
E.D.									1	.547**	.520**	.544**	.105*	-.171*
R.A.										1	.525**	.571**	.382**	-.131*
D.E.											1	.634**	.220**	-.192**
V.E.												1	.168*	-.179**
I.S.													1	-.157*
C.C.														1

Note: *=p < .05, ** = p < .001, M.H. = mental health score, DR. = drug score, C.B. = childhood bullying score, Tot. M.S. = Minority stress total score, I.C. = identity concealment, E.D. = everyday discrimination, R.A. = rejection anticipation, D.E. = discrimination events, V.E. = victimization events, I.S. = internalized stigma, C.C. = community connectedness.

Due to a large number of correlations being examined, the p value was reduced to lessen the probability of a Type 1 error (Field, 2013). The p value was set at an arbitrary level of p < .001, and so only correlation coefficients demonstrating a p value of < .001 were deemed significant in this study. numerous correlations being examined, Strength of correlation was determined according to Cohen's (1998) guidelines: weak (r = +/- .10 to .29), moderate (r = +/- .30 to .49) and strong (r = +/- .50 to 1.0).

3.4.2. Relationships between Variables

Of all correlated variables (excluding the different subcategories of the LGBT Minority Stress Measure and their correlations with each other), the strongest relationship identified was between Mental Health and Social Anxiety, and this was a significant, strong positive relationship (r = .501, p < .001). The second strongest

relationship was between Minority Stress Total and Social Anxiety, and this was also significant and in a positive direction ($r = .442$, $p < .001$).

3.4.3. AUDIT Correlations

To answer RQ1, correlation coefficients between the AUDIT and the psychosocial variables were examined.

AUDIT score showed a significant, moderate, positive relationship with Drug Score on both correlations ($r = .356$, $p < .001$). This indicates that higher drug score in this sample is associated with higher scores obtained on the AUDIT. At the $p < .001$ level, this was the only significant relationship with AUDIT found in this sample. However, it should be noted one variable was just above statistical significance in its relationship with AUDIT. This was:

1) A weak positive relationship between AUDIT and Victimization Events on the Pearson correlation ($r = .166$, $p = .002$).

However, this relationship did not meet significance in the current study and so should be interpreted with caution.

3.4.4. Drug Score Correlations

To answer RQ2, correlation coefficients between Drug Score and other variables were explored, of which two significant associations were identified.

As discussed prior, a moderate positive relationship was found between Drug Score and AUDIT. Furthermore, Drug Score also showed a significant weak positive relationship with ACE-Q Score ($r = .195$, $p < .001$). That is, a higher Drug Score was associated with higher ACE-Q scores in this sample.

Similarly to AUDIT correlations, it should be noted that whilst no other variables showed a significant relationship with Drug Score at $p < .001$ level, the variable “Victimization Events”, in a similar way to its relationship with AUDIT score, was just above statistical significance in its relationship with Drug Score ($r = .173$, $p = .001$).

3.5. Regression Analyses

To gain further information to answer RQ1 and RQ2, two multiple regression analyses were performed to identify predictors of alcohol use and predictors of drug use in this sample.

3.5.1. Multiple Regression 1 (Predicting Alcohol Use)

3.5.1.1. Assumptions

Linearity between dependent variables (DV) and each independent variable (IV) and between DV's and IV's collectively, as well as homoscedasticity were checked via a scatterplot of studentized residuals by unstandardized predicted values. No IV's had correlations > .07, and all Tolerance values were > .01, assuring no multicollinearity, and a Durbin-Watson value of 1.948 assured independence of observations. Six cases with studentized residuals greater than ± 3 were found, but were within the safe threshold of > 0.2 for leverage (Huber, 1981), and < 1 for Cook's Distance, thus no data points had high influence, thus were kept in the dataset. Residuals appeared approximately normally distributed on a Normal Q-Q Plot.

3.5.1.2. Analysis & Results

The dependent variable was AUDIT score, with independent variables included being those significant at the $p < .05$ level in Pearson's correlation. These were: 1) Drug Score, 2) Social Anxiety, and 3) Victimization Events.

R^2 for the overall model was 14%, with an adjusted R^2 of 13.3%, a weak effect size according to Cohen (1998). That is, the IV's accounted for 13.3% of the variance in AUDIT score. The regression model statistically significantly predicted AUDIT score, F (3, 348) = 18.959, $p < .001$, adj. $R^2 = .133$. Drug Score added statistically significantly to the prediction ($p < .001$), whilst Social Anxiety and Victimization Events did not ($p = .304$; $p = .114$). Regression coefficients and standard errors can be found in Table 9.

Table 9 – AUDIT Multiple Regression Model

AUDIT Score	*B*	95% CI for *B*		*SE B*	B	R^2	ΔR^2
		LL	*UL*				
Model						.140	.133
Constant	4.919	3.836	6.002	.551			
DR.	.305*	.214	.395	.046	.335*		
S.A.	.034	-.031	.098	.033	.056		
V.E.	.210	-.051	.471	.133	.086		

Note: Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. *p < .05. DR. = Drug Score, S.A. = Social Anxiety, V.E. = Victimization Events.

Predictions were made to determine mean AUDIT score for individuals receiving a Drug Score of 10, a Social Anxiety score of 20, and a Victimization Events score of 4. Mean AUDIT score was predicted as 11.63 (95% CI, 7.46 to 15.79) out of 40.

3.5.2. Multiple Regression 2 (Predicting Drug Use)

3.5.2.1. Assumptions

Multiple regression assumptions were satisfied in a similar way to those outlined in section 3.4.1. Whilst 7 outliers were identified with Studentized Residuals greater than ± 3, none exceeded the threshold for high leverage or influence, and so were retained.

3.5.2.2. Analysis & Results

For this regression, the dependent variable was Drug Score. The independent variables all had correlations with Drug Score significant at the p < .05 level on Pearson's Correlation, and these were: 1) Mental Health Score, 2) AUDIT, 3) ACE-Q score, 4) Everyday Discrimination, and 5) Victimization Events.

R^2 for the overall model was 16.7%, with an adjusted R^2 of 15.5%, a weak effect size (Cohen, 1998). The multiple regression model statistically significantly predicted Drug Score, F (5, 346) = 13.865, p < .001. AUDIT (p < .001) and ACE-Q score (p = .008) both contributed significantly to the model. Mental Health score (p = .383), Everyday Discrimination (p = .692), and Victimization Events (p = .417) did not. Regression coefficients and standard errors are referenced in Table 10.

Table 10 – Drug Score Multiple Regression Model

Drug Score	*B*	95% CI for *B*		*SE B*	B	R^2	ΔR^2
		LL	*UL*				
Model						.167	.155
Constant	4.888	-.965	1.941	.739			
M.H.	.212	-.266	.689	.243	.048		
AUDIT	.372**	.264	.480	.055	.339**		
ACE-Q	.424*	.109	.739	.160	.144*		
E.D.	.040	-.158	.237	.100	.023		
V.E.	.132	-.188	.453	.163	.049		

Note: Model = "Enter" method in SPSS Statistics; *B* = unstandardized regression coefficient; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *SE B* = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. *p < .05, **p < .001. M.H. = Mental Health score, E.D. = Everyday Discrimination, V.E. = Victimization Events.

Predictions were made to determine mean Drug Score for individuals receiving an AUDIT score of 15, 4 ACEs in childhood, experiencing 2 mental health difficulties in the last 12 months, scoring 12/20 for Everyday Discrimination and 9/15 for Victimization Events. Mean Drug Score was predicted as 9.29 (95% CI, 7.91 to 10.68).

Overall, 15.5% of the variance in Drug Score in the sample was accounted for by the psychosocial variables included in the regression model. AUDIT score and ACE-Q score are the strongest predictors of drug use in this sample.

3.6. MANOVA Analyses

To explore further differences between groups related to substance use, a series of one-way MANOVA's were performed including Tukey-Kramer post-hoc analysis to identity specific differences between groups. Within this section, differences between specific groups will only be reported on if they meet the $p < .001$ significance level or marginally above this. Effect sizes will be reported using partial η^2, using the thresholds of .01 for small, .06 for medium, and .14 for large (Miles & Shevlin, 2001).

3.6.1. MANOVA 1 (Drinker Groups)

To answer RQ3, the first one-way MANOVA was performed to explore whether any significant differences existed between low-risk, hazardous and dependent drinkers in the sample. This was done by splitting the sample into three groups based on their overall AUDIT score, and using the AUDIT's classifications of low-risk drinking (score of 0-7), hazardous drinking (8-14), and dependent drinking (15+).

3.6.1.1. Assumptions

Absence of multicollinearity and inter-variable linearity was confirmed by correlation coefficients and scatterplots, whilst Normal Q-Q plots assured normality, although MANOVA is generally robust to normality deviations. However, Mahalanobis Distance values identified several multivariate outliers, and the Box's Test of Equality of Covariance was significant ($p < .001$), with the Levene Test of Equality of Error Variances indicating most variables met the assumption of homogeneity of variance, but Drug Score did not ($p < .001$). However, it was decided outliers would remain in the dataset and the test still be performed, as MANOVA is robust to violations when the sample size is large (Hoekstra et al, 2012). Instead, Pillai's Trace was used for interpretation as the most conservative, robust test for unbalanced sample groups (Ateş et al, 2019). For significant results, Tukey-Kramer post-hoc tests were conducted, a method suitable for unequally sized groups (Hayter, 1984). Means and confidence intervals (CI's) for each drinker group on different variables are presented in Table 11.

Table 11 – Means/CI's for Drinking Category Groups

Variable	Mean	CI (95%)
Mental Health Score		
Low-risk	1.50	1.29-1.72
Hazardous	1.65	1.34-1.96
Dependent	1.73	1.27-2.19
Drug Score		
Low-risk	3.73	2.82-4.63
Hazardous	6.17	4.87-7.47
Dependent	10.27	8.33-12.20
ACE-Q score		
Low-risk	2.73	2.41-3.06
Hazardous	2.86	2.40-3.33
Dependent	3.31	2.62-4.00
Social Anxiety score		
Low-risk	12.25	10.84-13.67
Hazardous	14.10	12.07-16.14
Dependent	16.62	13.59-19.66
Total Minority Stress		
Low-risk	46.61	44.54-48.68
Hazardous	47.88	44.90-50.86
Dependent	51.42	46.98-55.86
Identity Concealment		
Low-risk	8.64	8.05-9.22
Hazardous	8.13	7.29-8.97
Dependent	9.58	8.33-10.83
Everyday Discrimination		
Low-risk	8.73	8.17-9.29
Hazardous	9.38	8.57-10.19
Dependent	8.80	7.60-10.00
Rejection Anticipation		
Low-risk	8.89	8.35-9.43
Hazardous	9.39	8.61-10.17
Dependent	9.56	8.39-10.72
Discrimination Events		
Low-risk	5.37	5.00-5.74

Hazardous	5.45	4.92-5.98
Dependent	5.38	4.58-6.17
Victimization Events		
Low-risk	4.84	4.48-5.19
Hazardous	5.31	4.80-5.82
Dependent	5.87	5.11-6.62
Internalized Stigma		
Low-risk	5.44	5.02-5.86
Hazardous	5.54	4.93-6.15
Dependent	7.00	6.09-7.91
Community Connectedness		
Low-risk	11.29	10.91-11.66
Hazardous	11.32	10.78-11.86
Dependent	10.76	9.96-11.56

3.6.1.2. Analysis & Results

There was a statistically significant difference between the drinking groups on the combined dependent variables, F (24, 678) = 2.779; $p < .001$; V = .179, partial η^2 = .090. Additionally, there was a significant difference in Drug Score between the drinking groups, F (2, 349) = 19.447, $p < .001$; partial η^2 = .100. The effect size for both the MANOVA and the univariate ANOVA for Drug Score were medium.

Post-hoc analysis revealed there was an increase in Drug Score from 3.7 ± 0.9 in the low-risk group to 10.3 ± 2.0 in the dependent group, an increase of 6.6 (95% CI, 4.0 to 9.1), which was statistically significant ($p < .001$).

3.6.2. MANOVA 2 (Substance Dependence Groups)

A second one-way MANOVA was performed to answer RQ4, to identify any significant differences on variables between substance-dependent and non-dependent participants. As in section 3.6.1, MANOVA assumptions were checked, with no Levene Test values meeting the $p < .001$ threshold on this occasion. Means and CI's for the two groups on all tested variables is presented in Table 12.

Table 12 – Means/CI's for Substance Dependence groups

Variable	Mean	CI (95%)
Mental Health Score		
Non-dependent	1.46	1.28-1.63
Dependent	2.28	1.85-2.71
AUDIT score		
Non-dependent	6.95	6.25-7.66
Dependent	10.18	8.45-11.91
ACE-Q score		
Non-dependent	2.72	2.45-2.98

Dependent	3.62	2.97-4.27
Social Anxiety score		
Non-dependent	12.70	11.53-13.87
Dependent	17.18	14.31-20.05
Total Minority Stress		
Non-dependent	46.57	44.87-48.26
Dependent	53.76	49.59-57.93
Identity Concealment		
Non-dependent	8.49	8.01-8.98
Dependent	9.34	8.15-10.53
Everyday Discrimination		
Non-dependent	8.78	8.31-9.24
Dependent	9.82	8.68-10.96
Rejection Anticipation		
Non-dependent	8.88	8.44-9.33
Dependent	10.52	9.42-11.62
Discrimination Events		
Non-dependent	5.31	5.01-5.62
Dependent	5.88	5.13-6.63
Victimization Events		
Non-dependent	4.93	4.64-5.23
Dependent	6.12	5.41-6.84
Internalized Stigma		
Non-dependent	5.50	5.15-5.85
Dependent	6.68	5.81-7.55
Community Connectedness		
Non-dependent	11.33	11.02-11.64
Dependent	10.60	9.84-11.36

There was a statistically significant difference with a medium effect size between dependent and non-dependent groups on the combined dependent variables, F (12, 339) = 2.689; p = .002; V = .087; partial η^2 = .087.

Two variables showed significant differences between groups. Due to only two groups being present, post-hoc tests were not performed.

1. AUDIT Score – there was a significant increase in AUDIT score from 7.0 ± 0.7 in the non-dependent group to 10.2 ± 1.7 in the dependent group, an increase of 3.2 (95% CI, 0.8 to 5.6).
2. Mental Health score – there was a significant increase in M.H. score from 1.5 ± 0.2 in the non-dependent group to 2.3 ± 0.4 in the dependent group, an increase of 0.8 (95% CI, 0.3 to 1.4).

Whilst not reaching the p < .001 threshold, there was one variable that was marginally above this:

1. Total Minority Stress – there was an increase in M.S. score from 46.6 ± 1.7 in the non-dependent group to 53.8 ± 3.8 in the dependent group, an increase of 7.2 (95% CI, 1.7 to 13.1, p = .002).

Effect sizes were small for all univariate ANOVAs reported, ranging from $\eta^2 = .034$ for Mental Health, to $\eta^2 = .023$ for Social Anxiety.

3.6.3. MANOVA (Smoking Groups)

To answer RQ5 and identify any significant differences between smokers and non-smokers in substance use and psychosocial variables, a subsequent one-way MANOVA was performed. Assumptions were checked and satisfied as per section 3.6.1. Table 13 presents means and CI's for both groups on the measured variables.

Table 13 – Means/CI's for Smoking groups

Variable	Mean	CI (95%)
Mental Health		
Smoker	1.96	1.63-2.30
Non-smoker	1.45	1.27-1.64
Drug Score		
Smoker	8.68	7.23-10.12
Non-smoker	4.20	3.40-5.01
AUDIT Score		
Smoker	10.05	8.72-11.38
Non-smoker	6.60	5.86-7.34
Bullying Score		
Smoker	0.68	0.52-0.83
Non-smoker	0.51	0.42-0.59
ACE-Q Score		
Smoker	3.68	3.17-4.18
Non-smoker	2.59	2.31-2.87
S.A Score		
Smoker	17.22	15.01-19.42
Non-smoker	12.14	10.91-13.36
Total Minority Stress		
Smoker	52.51	49.28-55.73
Non-smoker	46.07	44.28-47.86
Identity Concealment		
Smoker	8.96	8.04-9.89
Non-smoker	8.51	7.99-9.02
Everyday Discrimination		
Smoker	9.82	8.94-10.70
Non-smoker	8.65	8.16-9.14
Rejection Anticipation		
Smoker	10.24	9.39-11.09
Non-smoker	8.77	8.30-9.24

Discrimination Events		
Smoker	5.92	5.34-6.50
Non-smoker	5.23	4.91-5.55
Victimization Events		
Smoker	6.19	5.65-6.74
Non-smoker	4.77	4.46-5.07
Internalized Stigma		
Smoker	6.28	5.60-6.95
Non-smoker	5.48	5.11-5.85
Community Connectedness		
Smoker	10.90	10.32-11.49
Non-smoker	11.33	11.00-11.65

There was a statistically significant difference with a large effect size between smoking and non-smoking groups on the combined dependent variables, F (13, 338) = 4.652, p < .001, V = .152, partial η^2 = .152.

Post-hoc tests were not performed due to only two groups being included. Six variables showed significant differences between groups. These included both substance use measures:

1) Drug Score: there was a significant increase in Drug Score from 4.2 ± 0.8 in the non-smoking group to 8.7 ± 1.5 in the smoking group, an increase of 4.5 (95% CI, 2.2 to 6.7).
2) AUDIT Score: there was a significant increase in AUDIT score from 6.6 ± 0.7 in the non-smoking group to 10.1 ± 1.4 in the smoking group, an increase of 3.5 (95% CI, 1.4 to 5.5).

These also included four psychosocial variables:

1) Total Minority Stress: there was a significant increase in M.S. Total score from 46.1 ± 1.8 in the non-smoking group to 52.5 ± 3.2 in the smoking group, an increase of 6.4 (95% CI, 1.4 to 11.4).
2) Victimization Events: there was a significant increase in V.E. from 4.8 ± 0.3 in the non-smoking group to 6.2 ± 0.5 in the smoking group, an increase of 1.4 (95% CI, 0.6 to 2.2).
3) Social Anxiety: there was a significant increase in S.A. score from 12.1 ± 1.2 in the non-smoking group to 17.2 ± 2.2 in the smoking group, an increase of 5.1 (95% CI, 1.6 to 8.5).

4) ACE-Q Score: there was a significance increase in ACE-Q score from 2.6 ± 0.3 in the non-smoking group to 3.7 ± 0.5 in the smoking group, an increase of 1.1 (95% CI, 0.3 to 1.9).

Effect sizes for the six significant ANOVAs ranged from $\eta^2 = .075$ (Drug Score), a medium effect size, to $\eta^2 = .032$ for Minority Stress.

3.6.4. MANOVA 4 & 5 – Sexual Orientation Groups

A further one-way MANOVA was performed to answer RQ6, looking into whether there were any significant differences between the sexual orientation categories on the different variables. Assumptions were satisfied as per section 3.6.1. Table 14 contains the means and CI's for each sexual orientation group on each of the variables.

Table 14 – Means/CIs for Sexual Orientation groups

Variable	Mean	CI (95%)
Mental Health Score		
Gay man	1.07	0.71-1.43
Lesbian	1.72	1.31-2.14
Bisexual man	1.34	0.83-1.86
Bisexual woman	1.52	1.22-1.83
Pansexual	1.81	1.34-2.28
Asexual	2.08	1.24-2.92
Other	2.22	1.72-2.72
AUDIT score		
Gay man	8.26	6.78-9.73
Lesbian	6.04	4.36-7.72
Bisexual man	9.06	6.97-11.15
Bisexual woman	7.62	6.39-8.85
Pansexual	7.83	5.93-9.74
Asexual	5.31	1.88-8.74
Other	5.95	3.91-7.98
Drug Score		
Gay man	5.84	4.22-7.47
Lesbian	3.72	1.87-5.57
Bisexual man	6.34	4.04-8.64
Bisexual woman	4.85	3.50-6.21
Pansexual	5.90	3.81-8.01
Asexual	2.62	0.00-6.39
Other	6.68	4.44-8.91
ACE-Q score		
Gay man	2.00	1.45-2.55
Lesbian	3.07	2.45-3.70
Bisexual man	2.66	1.88-3.44
Bisexual woman	3.06	2.60-3.52
Pansexual	3.12	2.41-3.83
Asexual	3.23	1.95-4.51
Other	3.24	2.49-4.00
Social Anxiety score		
Gay man	11.06	8.64-13.48
Lesbian	12.57	9.82-15.33
Bisexual man	10.69	7.27-14.11
Bisexual woman	13.34	11.32-15.35
Pansexual	16.48	13.36-19.60

Asexual	18.77	13.16-24.38
Other	15.78	12.46-19.11
Total Minority Stress		
Gay man	44.13	40.63-47.63
Lesbian	48.89	44.91-52.87
Bisexual man	46.77	41.82-51.72
Bisexual woman	45.07	42.16-47.98
Pansexual	53.71	49.20-58.23
Asexual	46.38	38.27-54.50
Other	53.35	48.54-58.16
Identity Concealment		
Gay man	7.76	6.77-8.75
Lesbian	7.63	6.51-8.76
Bisexual man	10.09	8.69-11.48
Bisexual woman	8.85	8.03-9.67
Pansexual	10.31	9.03-11.59
Asexual	7.31	5.02-9.60
Other	8.16	6.80-9.52
Everyday Discrimination		
Gay man	7.04	6.17-7.91
Lesbian	10.26	9.27-11.25
Bisexual man	7.43	6.20-8.66
Bisexual woman	7.90	7.18-8.62
Pansexual	10.45	9.33-11.57
Asexual	9.46	7.45-11.48
Other	12.81	11.62-14.01
Rejection Anticipation		
Gay man	8.86	7.93-9.79
Lesbian	9.83	8.77-10.89
Bisexual man	8.77	7.45-10.09
Bisexual woman	8.55	7.77-9.32
Pansexual	9.86	8.65-11.06
Asexual	8.00	5.84-10.16
Other	10.00	8.72-11.28
Discrimination Events		
Gay man	5.00	4.38-5.62
Lesbian	5.98	5.27-6.69
Bisexual man	4.43	3.54-5.31
Bisexual woman	5.10	4.58-5.62
Pansexual	5.83	5.03-6.64
Asexual	5.46	4.01-6.91
Other	6.46	5.60-7.32
Victimization Events		
Gay man	5.23	4.63-5.83
Lesbian	5.32	4.63-6.00
Bisexual man	4.37	3.52-5.22
Bisexual woman	4.63	4.13-5.14
Pansexual	5.41	4.63-6.19
Asexual	4.77	3.37-6.17
Other	6.30	5.47-7.13
Internalized Stigma		
Gay man	5.99	5.25-6.72
Lesbian	5.06	4.22-5.89
Bisexual man	6.89	5.85-7.92
Bisexual woman	5.49	4.87-6.10
Pansexual	5.81	4.86-6.76
Asexual	5.85	4.14-7.55
Other	5.08	4.07-6.09
Community Connectedness		
Gay man	11.74	11.11-12.38
Lesbian	11.19	10.46-11.91
Bisexual man	11.20	10.30-12.10
Bisexual woman	11.45	10.92-11.97
Pansexual	9.95	9.13-10.77
Asexual	10.46	8.99-11.93
Other	11.46	10.59-12.33

There was a statistically significant difference between the sexual orientation groups on the combined dependent variables, with a medium effect size, *F* (78, 2028) = 2.621, p < .001, V = .549; partial η^2 = .092.

3.6.4.1. Substance Use

However, there was no statistically significant difference between the groups in either AUDIT score (p = .127) or Drug Score (p = .228).

3.6.4.2. Psychosocial Variables

At the p < .001 level, there was a significant difference between the sexual orientation groups on Everyday Discrimination (E.D.), yielding a large effect size, *F* (6, 345) = 14.506, p < .001, partial η^2 = .201. Post-hoc analysis identified that participants in the "Other" group reported significantly higher mean E.D. than gay males (5.77, 95% CI (3.54 to 8.00)), bisexual males (5.38, 95% CI (2.80 to 7.97)), and bisexual females (4.91, 95% CI (2.80 to 7.02)). Gay males also reported significantly lower mean E.D. than pansexuals (-3.41, 95% CI (-1.27 to -5.55)) and lesbians (-3.22, 95% CI (-1.23 to -5.20)).

No other variables showed significant between-group differences based on sexual orientation.

3.6.4.3. Three-Group MANOVA

A further exploratory MANOVA was then performed to specifically compare substance groups within the three most prevalent sexual orientations (gay males, lesbians and bisexual females). These three groups were split into two based on their Drug Score (low, 0-5 or high, 6+), creating six distinct groups.

This MANOVA gave a significant result, *F* (60, 1060) = 2.288, p < .001, V = .573, partial η^2 = .115. At the p < .001 level, two variables showed a significant difference between the groups, both with medium effect sizes:

1) ACE-Q: *F* (5, 219) = 6.546, partial η^2 = .130
2) Everyday Discrimination: *F* (5, 219) = 6.420, partial η^2 = .128

Post-hoc tests identified gay males with a low Drug Score had significantly lower mean ACE-Q scores than lesbians with a high Drug Score (-3.07, 95% CI (-1.21 to -

4.93), and bisexual females with a high Drug Score (-2.33, 95% CI (-.08 to -3.87), but not lower than gay males with a high Drug score (p = .443). Additionally, whilst not meeting p < .001 level, lesbians with a high Drug Score had a higher ACE-Q score than lesbians with a low Drug score at p < .05 level (2.30, 95% CI (0.42 to 4.18), p = .007), a difference not seen in gay male or bisexual female groups.

Furthermore, gay males with a low Drug Score had significantly lower mean Everyday Discrimination than lesbians with a high Drug Score (-4.63, 95% CI (-1.76 to -7.50), p < .001), but not than gay males or bisexual females with high drug scores (p = .948, p = .339).

No other significant between-group differences were found.

3.6.5. MANOVA 6 – Gender Identity Groups

To answer RQ7 and determine any significant differences between gender identity groups on substance use and psychosocial variables, a final one-way MANOVA was performed. As per section 3.6.1, assumptions were checked and satisfied. Table 15 contains the means and CI's for each group's scores on the measured variables.

Table 15 – Means/CIs for Gender Identity groups

Variable	Mean	CI (95%)
Mental Health Score		
Male	1.12	0.84-1.41
Female	1.50	1.27-1.73
Transgender male	2.80	1.86-3.74
Transgender female	2.58	1.73-3.44
Non-Binary/Other	2.26	1.86-2.66
Drug Score		
Male	6.61	5.31-7.91
Female	3.82	2.78-4.85
Transgender Male	5.00	0.75-9.25
Transgender Female	7.75	3.87-11.63
Non-Binary/Other	6.59	4.76-8.42
AUDIT score		
Male	8.70	7.51-9.90
Female	6.94	5.98-7.89
Transgender Male	5.30	1.39-9.21
Transgender Female	6.83	3.26-10.41
Non-Binary/Other	6.87	5.19-8.55
Bullying score		
Male	0.39	.26-.53
Female	0.53	.42-.64
Transgender Male	0.80	.35-1.25
Transgender Female	1.00	.59-1.41
Non-Binary/Other	0.76	.57-.95
ACE-Q Score		
Male	2.20	1.75-2.64
Female	2.96	2.61-3.32
Transgender Male	3.60	2.15-5.05
Transgender Female	4.00	2.68-5.32
Non-Binary/Other	3.35	2.73-3.97

Social Anxiety score		
Male	10.84	8.91-12.77
Female	12.74	11.21-14.27
Transgender Male	18.60	12.30-24.90
Transgender Female	18.67	12.91-24.42
Non-Binary/Other	17.98	15.27-20.69
Total Minority Stress		
Male	44.67	42.01-47.34
Female	44.95	42.83-47.07
Transgender Male	65.20	56.49-73.91
Transgender Female	69.33	61.38-77.29
Non-Binary/Other	53.52	49.77-57.27
Identity Concealment		
Male	8.36	7.55-9.16
Female	8.59	7.95-9.24
Transgender Male	10.70	8.05-13.35
Transgender Female	11.33	8.92-13.75
Non-Binary/Other	8.20	7.07-9.34
Everyday Discrimination		
Male	7.08	6.43-7.74
Female	8.21	7.69-8.73
Transgender Male	12.70	10.56-14.84
Transgender Female	12.83	10.88-14.79
Non-Binary/Other	13.24	12.32-14.16
Rejection Anticipation		
Male	8.71	7.99-9.43
Female	8.51	7.93-9.09
Transgender Male	12.30	9.93-14.67
Transgender Female	14.08	11.92-16.24
Non-Binary/Other	10.13	9.11-11.15
Discrimination Events		
Male	4.98	4.49-5.47
Female	5.05	4.66-5.44
Transgender Male	7.40	5.80-9.00
Transgender Female	9.00	7.54-10.46
Non-Binary/Other	6.11	5.42-6.80
Victimization Events		
Male	5.03	4.55-5.51
Female	4.65	4.26-5.03
Transgender Male	6.80	5.24-8.36
Transgender Female	7.83	6.41-9.26
Non-Binary/Other	5.76	5.09-6.43
Internalized Stigma		
Male	6.23	5.66-6.81
Female	5.17	4.71-5.63
Transgender Male	8.60	6.71-10.49
Transgender Female	8.08	6.36-9.81
Non-Binary/Other	5.04	4.22-5.85
Community Connectedness		
Male	11.72	11.21-12.23
Female	11.21	10.81-11.62
Transgender Male	9.30	7.63-10.98
Transgender Female	9.83	8.30-11.36
Non-Binary/Other	10.96	10.24-11.68

There was a statistically significant difference between the gender identities on the combined dependent variables, F (52, 1352) = 4.574, $p < .001$, V = .598; partial η^2 = .150. A large number of between-group differences were found on the different variables.

3.6.5.1. Substance Use

1.AUDIT Score: There was no statistically significant difference in AUDIT score between the gender identity groups (p =.134).

2.Drug Score: There was a statistically significant difference in Drug Score between the gender identity groups, F (4, 347) = 3.843, p = .005, partial η^2 = .042. However, post-hoc analysis revealed no specific group comparisons meeting statistical significance.

3.6.5.2. Psychosocial Variables

1.Mental Health: A statistically significant difference in M.H. Score was found between the gender identity groups, F (4, 347) = 8.308, p < .001, partial η^2 = .087. Post-hoc analysis identified “Non-Binary/Other” participants had significantly higher mean M.H. scores than males (1.14, 95% CI (0.45 to 1.83), p < .001).

2.Social Anxiety: There was a difference that met statistical significance in S.A. score between the gender identity groups, F (4, 347) = 6.108, p < .001, partial η^2 = .066. Post-hoc testing revealed “Non-Binary/Other” participants to have a significantly higher mean S.A. score than males (7.14, 95% CI (2.50 to 11.78), p < .001).

3.Minority Stress: The difference in Total Minority Stress between the gender identity groups was also statistically significant, F (4, 347) = 16.254, p < .001, partial η^2 = .158. Post-hoc testing found several significant between-group differences. These were:

- Transgender Females scored higher than Females (24.67, 95% CI (12.99 to 36.35))
- Transgender Females scored higher than Males (24.45, 95% CI (12.99 to 35.91))
- Transgender Males scored higher than Males (20.64, 95% CI (7.95 to 33.32))
- Transgender Males scored higher than Females (20.42, 95% CI (7.93 to 32.90))

Marginally above the p < .001 threshold, there was one further difference noted:

- “Non-Binary/Other” participants scored higher than Females (8.36, 95% CI (2.36 to 14.36), p = .001)

There were also a several significant differences noted in the Minority Stress sub-components. These were:

*1.Everyday Discrimination (*F (4, 347) = 37.510, p < .001, partial η^2 = .302.) Post-hoc analysis identified several between-group differences. These were:

- "Non-Binary/Other" participants scored higher than Males (6.16, 95% CI (4.58 to 7.73)) and Females (5.05, 95% CI (3.58 to 6.52))
- Transgender Females scored higher than Males (5.75, 95% CI (2.88 to 8.62)) and Females (4.62, 95% CI (1.83 to 7.46))
- Transgender Males scored higher than Males (5.62, 95% CI (2.50 to 8.73)) and Females (4.51, 95% CI (1.44 to 7.58))

2.Rejection Anticipation (F (4, 347) = 9.198, p < .001, partial η^2 = .096). Post-hoc tests found that Transgender Females scored significantly higher on R.A. than both Females (5.58, 95% CI (2.45 to 8.71)) and Males (5.36, 95% CI (2.18 to 8.55)).

3.Discrimination Events (F (4, 347) = 9.907, p < .001, partial η^2 = .102). Tukey-Kramer tests identified that Transgender Females scored significantly higher on D.E. than both Males (4.02, 95% CI (1.87 to 6.17)) and Females (3.95, 95 CI (1.84 to 6.06)).

4.Victimization Events F (4, 347) = 7.019, p < .001, partial η^2 = .075. Post-hoc tests showed that Transgender Females scored significantly higher on V.E. than Females (3.19, 95% CI (1.14 to 5.25)).

5.Internalized Stigma F (4, 347) = 6.887, p < .001, partial η^2 = .074. However, post-hoc analysis identified no specific significant between-group differences.

Two of these univariate ANOVA's presented as large effect sizes, these were Everyday Discrimination (η^2 = .302) and Total Minority Stress (η^2 = .158).

3.7. Content Analysis

To address RQ8 and gain a qualitative component to the data presented, a content analysis was completed for the narrative comments left by respondents to two open-ended questions at the end of the survey, which 96.9% of participants completed.

Frequency of particular words and phrases were counted and gathered in terms of reasons for substance use, and environments this took place in. Where responses included more than one theme, e.g. having fun and socializing together, both of these were counted. Table 16 contains the most commonly occurring themes for reasons for substance use, whilst Table 17 presents the most commonly occurring themes for contexts.

Table 15 – Content Analysis Themes for Reasons for Substance Use

Reason	Frequency	Supporting Quotes
1. Coping with Mental Health symptoms	109 (39 mood/depression, 30 escape/numbing, 21 general anxiety, 9 trauma, 5 low self-esteem, 3 sleep, 1 loneliness, 1 bereavement)	*"To destress and numb myself from loud circling thoughts."* *"Often because my mental health is bad and I feel like I need an escape from the daily torment of my symptoms."* *"Low self-esteem, childhood trauma, secondary school drop-out, no prospects"*
2. Fun & Recreation	92	*"I like certain alcoholic drinks and it makes me feel a bit more fun"* *"I now only drink occasionally for the fun of it"*
3. General Relaxation	84	*"Wind down at the end of the day."* *"Relaxation/enjoyment, i.e. with a meal"* *"To relax, switch off from pressure and day to day life."*
4. General Socializing	84	*"Just socially! Sometimes I will drink if I'm out with friends."* *"I enjoy the feeling of connecting with others uninhibited"*
5. Dealing with Social Anxiety/Confidence	41	*"I drink and use party substances for anti anxiety reasons, it helps me to open up and actively participate in social settings without the pressing anxiety I usually feel. I am a UK *** patient for chronic pain, anxiety and PTSD symptoms."* *"I often drink a lot in social gatherings because it helps me ignore my anxiety and actually engage with people."*
6. Social Expectation	19	*"Because I feel it is expected of me in certain social situations, even though I don't enjoy using them"* *"Family pressure me and say I am boring if I don't."*

7. Taste	18	*"I enjoy the taste of beer so that is mostly why I drink that at home"* *"I enjoy the craft of it and the taste."*
8. Cognitive/Neurodivergence Support	16	*"Helps calm my ADHD brain."* *"I take speed almost every day because it helps me to get going and complete everyday tasks such as cleaning. Also it helps me to focus on my writing."*
9. Habit	11	*"Habit, learned behaviour."* *"I have participated in alcohol misuse for over a decade and its dependency and habit."*
10. Psychoactive element	10	*"I enjoy the feeling"* *"Enjoy the sensation of an alcohol buzz."*

The participants who gave an answer with a predominant theme related to coping with mental health symptoms were examined. They had an elevated mean mental health score (2.45 compared with the sample average of 1.57), a higher mean AUDIT score (10.88 in comparison with the sample average of 7.41), and a higher mean drug score (8.34 compared with the sample average of 5.26). Based on sexual orientation, when factoring in sub-category sample size, pansexuals and those identifying as 'Other' were most proportionally represented. Amongst the gender identity groups, transgender females were most proportionally represented, followed by those identifying as 'Other'.

Table 17 – Content Analysis Themes for Environments for Substance Use

Context	**Frequency**	**Supporting Quotes**
1. Home	144	*"Usually at home"* *"My home, I don't really leave it anymore due to agoraphobia becoming an issue."*
2. Social Event	79	*"Social situations especially large groups."* *"Only when others are using in a social setting"*
3. Pub	70	*"Most commonly in a pub"* *"Pubs only"*
4. Friends	68	*"When hanging out with friends"* *"With friends at the weekend"*
5. Bar	36	*"In a bar now and again"* *"Alcohol – in the bar"*
6. Nightclub	30	*"Night clubs", "at a club mostly"*

7. Alone	18	*"I like to smoke alone and be alone"* *"When I'm chilling by myself at home and have relaxing projects to work on."*
8. Family Event	18	*"I drink alcohol at big family gatherings."* *"Usually family gatherings…or on holidays like Christmas, Easter, occasionally a birthday."*
9. Restaurant	18	*"Theatre, restaurants"* *"In a restaurant"*
10. Sexual Experience/Event	11	*"Usually chemsex environments"* *"Saunas and cruising bards"*

The participants who gave an answer with a predominant theme related to using substances at a sexual experience or event were examined. They were predominantly cisgender male (81.8%), gay male (63.6%) and substance dependent (54.5%). 72.7% of the group reported frequent (at least monthly) drug use, as well as having a higher mean AUDIT score of 9.23.

This content analysis identified that within the LGBTQ+ sample, the most prevalent context for alcohol and/or drug use is in the home, followed by at a social event. In terms of reasons, the most popular reason for alcohol and/or drug use is to support with mental health symptoms including a variety of mood, anxiety and trauma presentations. The second most popular reason for substance use is for pleasure and recreational purposes.

4. DISCUSSION

This study aimed to provide a current picture of LGBTQ+ substance use prevalence rates within a UK context. It also hoped to consider the relative impact of a number of different psychosocial variables that LGBTQ+ individuals experience on overall alcohol use and recreational drug use, as well as explore ways that LGBTQ+ hazardous and dependent drinkers, those who are substance dependent, and also LGBTQ+ smokers may differ from their LGBTQ+ counterparts who do not belong to these groups. Finally, the study aimed to identify any key differences in substance use and experience of the psychosocial variables between varying sexual orientation groups and gender identity categories.

The present study adds to the literature base by giving an up-to-date snapshot of substance use and dependence for an LGBTQ+, UK-based sample. It is also a rare example of research that has looked specifically at the distinct subgroups within this population and looks at both sexuality and gender groups. A strength of the study is that it extends beyond the usual LGB categories, including sexual orientations such as asexual and pansexual, and different gender identities including transgender and non-binary participants, and is rare in that it analyses group differences. It also contributes to the literature in terms of comparing the relative influence of both current and historical difficulties on use of a range of different substances. A small-scale content analysis also helped add further context around reasons for individuals' substance use, giving the opportunity to explore broader characteristics of participants using substances for particular purposes.

This chapter presents a summary of the study's descriptive statistics, followed by a discussion of the study's results to answer the research questions and overall hypotheses, considering the limitations and implications of the research for clinical psychology, and offering possibilities for future research.

4.1. Summary of Sample Substance Use

When interpreting the prevalence rates for different substances within this sample, it must be acknowledged that rates are expected to be higher due to the way in which the study was advertised; creating a bias for those using alcohol and drugs to participate in the study above LGBTQ+ people who do not use substances.

The present study highlighted 24% and 26% prevalence rates for smoking and vaping in the sample, with 79% reporting drinking alcohol. The alcohol drinking rate in the sample matches general UK population estimates (NHS Digital, 2022). However, 41% of the sample reported drinking above recommended guidelines, and 13% meeting the alcohol dependence threshold. This is almost double the general population rate for hazardous drinking (21%), and substantially higher than the 1.37% in overall population estimates for alcohol dependence (PHE, 2024). Additionally, smoking in this sample is 11% higher than current UK heteronormative population rates (ONS, 2023), whilst sample vaping rates sit between 3-4 times that of the general UK rate (Office for Health Improvement & Disparities, 2022).

Alcohol rates were highest in the transgender female group, at 91.7%. Additionally, smoking was highest in transgender groups (33.3% female, 30% male) compared with their cisgender and Non-Binary peers. This rate remained elevated for vaping (50% transgender males, 33.3% transgender females). This validates previous research finding higher tobacco and e-cigarette incidence for transgender individuals when compared with their cisgender counterparts (Wheldon & Wiseman, 2019). However, the present study, demonstrating higher tobacco rates in transgender females, conflict with previous evidence that female to male transgender individuals were more likely to report current smoking than male to female transgender people (Tamí-Maury et al, 2020). On the other hand, Non-Binary/Other participants held the lowest proportion of all gender groups' drinking, smoking, and vaping. Cisgender males had higher prevalence rates than females on all three substances – in line with the vast majority of prior literature (Peters et al, 2014).

Regarding sexual orientation, bisexual females had the highest proportion of tobacco smokers, followed by pansexuals. Bisexual females having higher smoking rates than lesbians is supported by Shahab et al (2017) in a cross-sectional UK context, whilst gay males in the sample showing higher tobacco use than bisexual males contradicts Shahab et al's findings. Whilst less wider research compares pansexuals and asexuals with other orientations, pansexuals in the current study showed higher alcohol, smoking and vaping prevalence than LG participants, whilst asexuals held the lowest proportion in drinking and vaping (but scored higher than lesbians, bisexual males and "Other" participants for smoking prevalence) – largely supporting Scroggs et al (2023)'s recent findings.

Cannabis was the most used drug for both lifetime and frequent rates (62.5 and 20.2%). This was followed by cocaine for lifetime rates (31%) and poppers for frequent use (6.5%). Several drugs, including heroin, mephedrone, methamphetamines and volatile substances (e.g. glue), had a very low prevalence rate within the sample. Compared with UK general population rates (ONS, 2023), this LGBTQ+ sample had higher prevalence rates for all twelve drugs included in this study, with odds ratios (OR) of 2.01 for cannabis and 2.77 for cocaine lifetime use. The OR's for different drugs ranged from 1.13 for volatile substances to 6.8 for methamphetamines.

Substance dependence rates are generally elevated within the LGBTQ+ sample compared with heteronormative data, which is estimated at 3.1% in over 16-year-olds in England and Wales (ONS, 2023). All sexual orientations other than asexuals fell above this rate, ranging from the lesbian group with 3 times the dependence rate (9.3%) to the “Other” group with 7 times the dependence rate (21.6%). An even sharper rise was found when looking at gender categories, with transgender males having a 40% dependence rate, and transgender females a 33.3% dependence rate. This means that within this sample, transgender males show a 12.9 times increased likelihood to be substance dependent than overall heteronormative population estimates, and transgender females 10.7 times increased likelihood.

4.2. Research Questions

4.2.1. Research Question 1: *Is there a relationship between alcohol use and 1) drug score, 2) mental health, 3) ACEs, 4) childhood bullying, 5) social anxiety, and 6) minority stress? Is there a relationship between alcohol use and the seven categories of minority stress?*

The significant positive relationship found between AUDIT and Drug Score highlights that in this sample, higher levels of drinking are associated with greater lifetime and frequent rates of recreational drug use. Those scoring higher on use of different drugs were more likely to be drinking above recommended health guidelines. Whilst no other significant results were found, the weak positive relationship between AUDIT and Victimization Events (VE) was just above the significance threshold on both correlations (r = .002). Whilst this needs to be interpreted tentatively, it may be that LGBTQ+ individuals experiencing more verbal harassment and identity-related threats may be susceptible to drinking more alcohol to cope with these experiences – and may be the most relevant minority stress experience to hazardous and dependent drinking. In the sample, a weak positive relationship was also identified between AUDIT and Social Anxiety score, and despite not meeting significance in this study, is generally supportive of prior literature which indicates social anxiety to be linked with alcohol dependence development (Buckner et al, 2008). RA, often linked with social anxiety in LGBTQ+ groups (Maiolatesi et al, 2023), not correlating with AUDIT in this sample challenges some findings of RA being predictive of higher alcohol use and being present in severe AUD (Pabst et al, 2023).

Moreover, whilst it was anticipated that ACEs would be correlated with AUDIT due to previous literature demonstrating this (Dube et al, 2002), the lack of association found in the current study aligns with a recent UK-based study which identified no relationship between ACEs and problematic alcohol use in adulthood (Lagdon et al, 2021). AUDIT score did not correlate with any other psychosocial variables measured, suggesting that whilst drug use, and possibly victimization events and social anxiety, are related to drinking within the LGBTQ+ population, other elements of historic and current difficulties including childhood bullying, ACEs, and internal minority stress such as RA, Internalized Stigma and Identity Concealment, may not be as relevant to alcohol consumption within this sample.

The alternative hypotheses, H1 and H2, will be rejected and the null hypotheses accepted, as AUDIT score did not correlate with all psychosocial variables, and did not correlate with all seven aspects of minority stress. However, it is noted that there is partial support, due to AUDIT score having a significant correlation with drug score, and positive relationships with victimization events and social anxiety (particularly the former), that almost met significance level.

Multiple regression highlighted that drug score, social anxiety and victimization events explained 13.3% of the variance in AUDIT score, with a low effect size. However, only drug score contributed significantly to predicting AUDIT score. This corroborates the finding that drug use is the most important variable relating to alcohol use in this sample. This may be partly due to the highly heterogeneous experiences within the LGBTQ+ population and different groups' reasons and motivations for drinking. A possible explanation for the non-significant prediction between distal distress and alcohol use is personality factors, not measured in this study. For example, one study has found an "at risk personality profile" made for a significant relationship between distal stressors and alcohol misuse, whereas an "adaptive personality profile" rendered this non-significant (Livingston et al, 2015).

Therefore, the alternative hypothesis, H3, will be accepted (and the null rejected), as at least one variable significantly predicted alcohol use for LGBTQ+ participants.

4.2.2. Research Question 2: *Is there a relationship between drug use and 1) alcohol use, 2) mental health, 3) ACEs, 4) childhood bullying, 5) social anxiety, and 6)*

minority stress? Is there a relationship between drug use and the seven categories of minority stress?

Two significant relationships with Drug Score were found from correlational analysis. The first was the moderate positive correlation found between AUDIT and Drug Score. The second was a weak positive correlation between Drug Score and ACE-Q score. Essentially, higher levels of drug use were associated with a greater number of ACEs within the sample. This positive relationship mirrors prior literature which found that ACEs led to a 10-fold likelihood of trying recreational drugs (Felitti et al, 1998), and a recent literature review highlighting that a combination of neglect, parental conflict, physical and sexual abuse during childhood predicted substance abuse (Sebalo et al, 2023). Whilst the drug questionnaire did not inquire about drug-related difficulties and only measured frequency of use, it could be inferred that this correlation is consistent with a "dose-response" concept, where people with cumulative ACEs become vulnerable to greater numbers of substance-related difficulties during adulthood (Hughes et al, 2017).

VE also showed a weak positive relationship with Drug Score just above the significance threshold on both correlations. This relationship sits as slightly stronger than the correlation between AUDIT and VE, remaining the minority stress component most closely linked to substance use within the sample thus far. This indicates VE may be the most relevant facet of minority stress that if experienced regularly by LGBTQ+ individuals, could contribute towards greater drug use. This is contrary to some evidence suggesting minority stress as a whole is more predictive of excessive substance use than individual components (Gonzalez et al, 2017), but instead in support of alternative articles finding that external minority stress, e.g. violence and harassment, but not internal processes like internalized stigma, are associated with increased odds of drug use on a given day (Wolford-Clevenger et al, 2021). The weak (but non-significant) positive relationships between Drug Score and Mental Health score also means that it could be cautiously proposed that higher drug use levels for LGBTQ+ participants may be associated with a greater number of reported mental health problems in the last year. With a moderate, significant relationship also found between Mental Health and ACEs in this sample, it could be possible that ACEs in this sample are linked with greater psychological difficulties during adulthood, which may then link with heightened drug use in line with the "Self-

Medication Hypothesis" (Khantzian, 1997). Finally, the weak relationship between Everyday Discrimination (ED) and Drug Score that did not reach significance at $p < .001$ but was below $p < .05$, indicates there may be a link between individuals being subjected to microaggressions based on their LGBTQ+ status, but we cannot conclude this from the current study, thus further research needs to more rigorously establish this link.

Multiple regression identified that AUDIT, ACE-Q, VE and ED explained 15.5% of the variance in Drug Score, a low effect size. Further analysis revealed only AUDIT and ACE-Q contributed significantly to predicting drug use. Alcohol use predicting higher drug use supports findings from heteronormative samples (Barnes et al, 2002), whilst ACEs significantly predicting drug use but not alcohol use also authenticates other findings (Villanueva & Gomis-Pomares, 2021). The lack of minority stress predicting drug use contradicts previous literature (Hatzenbuehler et al, 2008).

Similarly to alcohol, a lack of other variables predicting drug use within this sample may be reflective of the fact that different sexual orientation and gender identity groups are influenced by different factors that drive their substance use and possible dependence. For example, bisexual males may experience more internalized stigma and subsequently identity concealment (Pistella et al, 2016), whilst non-cisgender individuals typically experience higher levels of RA (Riggle et al, 2023).

The alternative hypothesis, H4, will be rejected and the null accepted, as drug use did not show a significant relationship with all psychosocial variables within the study. Similarly, the second alternative hypothesis, H5, will also be rejected as drug use did not hold significant relationships with any components of minority stress, thus the null will be accepted. Conversely, the third alternative hypothesis, H6, will be accepted, as at least one psychosocial variable predicted drug use within the sample, therefore the null will be rejected.

4.2.3. Research Question 3: *Are there significant differences between low-risk, hazardous and dependent LGBTQ+ drinkers on the measured psychosocial variables?*

In this study, dependent drinkers scored higher than low-risk and hazardous drinkers on all measures except ED, Discrimination Events and Community Connectedness. Dependent drinkers scored the lowest for community connectedness, which

according to past literature may play a role in acting as a protective factor against heavy alcohol use (Kler et al, 2023). Dependent drinkers also scored lower than hazardous drinkers for ED and Discrimination Events. One explanation for this could be that due to holding higher internalized stigma and identity concealment levels, dependent drinkers may be less open about their identity than hazardous drinkers and therefore less integrated into LGBTQ+ networks and exposed to less discrimination incidents. However, the only statistically significant between-group difference was in Drug Score, with a medium effect size. Low-risk drinkers showed significantly lower mean Drug Scores than those in the dependent drinker group. This supports the positive relationship found between drug and alcohol use in earlier analysis, but provides evidence it may only be a smaller group of people who are drinking well above recommended guidelines and showing signs of psychological dependence to alcohol that will have significantly higher drug use levels, as hazardous drinkers do not show significantly higher drug rates. Whilst they did not provide significant difference in this study, internalized stigma and social anxiety may play a role in dependent drinking for LGBTQ+ individuals, with these ANOVA's yielding the second and third largest effect sizes (0.27 and 0.21), yet further research would need to establish this more thoroughly.

No other variables showed significant between-group differences, indicating that there are likely to be extraneous factors that have not been measured contributing to hazardous and dependent drinking. The alternative hypothesis, H7, will be accepted, as a significant difference in drug use was found between drinker groups, and the null will be rejected. Conversely, the other alternative hypothesis, H8, will be rejected and the null accepted, as drinker groups showed no significant differences on the measured psychosocial variables.

4.2.4. Research Question 4: *Are there significant differences between substance-dependent participants and non-dependent participants on the measured psychosocial variables?*

The substance-dependent group scored higher on mean values for all variables, apart from Community Connectedness. Dependent participants reported significantly higher AUDIT and Mental Health scores than non-dependents. This indicates LGBTQ+ people demonstrating signs of substance dependence (in this sample

predominantly cannabis), drink greater levels of alcohol and have more mental health difficulties. The statistically significant link found between substance dependence and psychological problems here establishes there is perhaps a closer link between mental health and drug use to a dependent level compared with engaging in hazardous or dependent drinking.

Total minority stress, VE and social anxiety may also be important in substance dependence, as these ANOVA's were marginally above the $p < .001$ threshold. Caution needs to be exercised when interpreting results, but there is a possibility that substance dependent people within this sample experience overall higher levels of perceived minority stress, particularly VE, as well as greater social anxiety than their non-dependent peers. The correlations between Mental Health and both Social Anxiety and VE also suggest that social anxiety and victimization events may have an indirect impact on substance dependence, through their relationship with overall mental health.

VE being the aspect of minority stress with the most significant between-group difference also supports the findings of RQ1 and 2. Tentatively, it may be suggested that along with having elevated numbers of mental health problems and greater levels of overall drinking, participants subjected to a greater degree of LGBTQ+ related minority stress, victimization events, and experiencing social anxiety may be more likely to become substance dependent.

The alternative hypothesis, H9, will be accepted, as substance-dependents showed significantly higher levels of alcohol use than non-dependents, therefore the null will be rejected. Conversely, the other alternative hypothesis, H10, will be rejected, as groups did not differ significantly on the psychosocial variables.

4.2.5. Research Question 5: *Are there significant differences between smoking and non-smoking participants on the measured psychosocial variables?*

Smokers scored significantly higher on numerous variables compared with non-smokers in the sample. Primarily, smokers obtained significantly higher mean AUDIT and Drug Scores, with the largest effect size for Drug Score. This indicates LGBTQ+ participants who smoke also on average drink higher levels of alcohol and engage in more drug use. This corresponds with the evidence base that establishes smoking behaviours as being closely linked with binge-drinking (Falk et al, 2006), and

increased odds of cannabis and cocaine use (Lai et al, 2000). Additionally, smokers presented with significantly higher Total Minority Stress, Social Anxiety, ACEs, and Victimization Events compared with non-smokers.

These findings underline that in this sample, LGBTQ+ smokers have a greater number of ACEs, and are experiencing a higher degree of overall minority stress in their life than non-smokers. This links in with similar findings that higher frequency of ACEs position people at enlarged odds for current smoking (Edwards et al, 2007), and LGBTQ+ related minority stress processes contribute to smoking disparities for SM's (Li et al, 2024). VE being the only category of minority stress showing a significant between-group difference (and a small to medium effect size) continues a trend of VE being the most key minority stress component in its relationship with substance use – encapsulating smoking, drinking and recreational drugs.

Moreover, LGBTQ+ smokers showing more social anxiety symptoms than non-smoking participants – a finding that was non-significant for groups split based on drinking or drug dependence, with half the effect sizes – suggests social anxiety may play a greater role in smoking behaviour than other substance use in this sample. Whilst smoking is often seen as a social activity normalized within LGBTQ+ venues thus increasing likelihood of smoking initiation and reducing cessation (Nguyen et al, 2018), in the present study smokers scored lower than non-smokers on Community Connectedness. Instead, this supports literature positing people with greater social phobia may use smoking as a safety behaviour in social environments that elicit anxiety, maintaining the smoking behaviour (Buckner et al, 2020).

In all, smoking groups showed more differences when compared with drinking and substance dependent groups, as well as being the only categorization finding a between-group difference in Total Minority Stress. Therefore, it may be inferred that smoking has the strongest link with experience of LGBTQ+ related minority stress. The alternative hypothesis, H11, will be accepted, as there was a significant difference in drinking and drug use between the smoking groups, and the null will be rejected. The second alternative hypothesis, H12, will be rejected and the null accepted, as whilst several variables showed a significant between-group difference, this was not present for all psychosocial variables.

4.2.6. Research Question 6: *Are there significant differences between sexual orientation groups on the measured substance use and psychosocial variables?*

By sexual orientation, bisexual males scored the highest mean AUDIT, followed by gay males – both of which were above the threshold for hazardous drinking. Regarding drug use, those identifying as “Other” held the highest mean score, followed by bisexual males. Asexuals scored the lowest for both AUDIT and Drug Score. However, no significant between-group differences for either measure were found. This challenges prior research which found significant differences between pansexual and asexuals’ drug and alcohol use compared with LGB peers (Scroggs et al, 2023). Possible reasons for this will be discussed later in the chapter.

There was a significant difference in ED felt by varying groups with a large effect size, as those identifying as “Other” reported significantly higher levels than gay and bisexual males, and bisexual females. Furthermore, lesbians and pansexuals also reported significantly higher ED levels than gay males. This was the only variable demonstrating a significant difference. The “Other” group obtained a lower mean AUDIT score when compared with gay and bisexual males and bisexual females, but obtained the highest mean Drug Score of all orientations. This, taken with the positive relationship found in earlier correlations between Drug Score and Everyday Discrimination, may suggest that heightened experience of microaggressions faced by those identifying as “Other” may contribute to greater drug use within this category. However, this did not result in significant difference regarding Drug Score.

The alternative hypothesis, H13, will be rejected and the null accepted, as sexual orientation groups did not show a significant difference in alcohol or drug scores.

The further exploratory MANOVA conducted with the three most prevalent sexual orientation groups split based on drug score also showed significant between-group differences for ACE-Q score and ED, both of which had large effect sizes. Lesbians and Bisexual Females with a higher Drug Score presented with significantly greater ACEs than Gay Males with a lower Drug Score, whilst Gay Males with the higher Drug Score did not. Although the significance threshold was set at $p < .001$, Lesbians in the lower drug use group had a lower ACE-Q score than Lesbians in the higher drug use group, a mean of 2.3 less ACEs in fact ($p = .007$). This was not seen

for the Gay Male or Bisexual Female groups. These findings synthesized, as well as considering Drug Score and ACE-Q's significant positive correlation identified earlier, point to the possibility that ACEs may be more instrumental in contributing to elevated drug use for lesbians in this sample, and possibly bisexual women, but less so among gay men. Although gay men have an overall higher drug score, it may be that ACEs are more predictive of higher drug-taking for lesbians, whereas there may be other factors predictive of this for gay males. This is further supported by gay males with a low drug score not showing significantly lower ED than gay males and bisexual females with a high drug score, but having significantly lower ED than lesbians in the high drug score group. This may be simply because lesbians in the sample generally experienced higher ED levels than the other two groups, but knowing its link with drug use in the overall sample, it may be that ED plays a stronger role in substance use for lesbians compared with the other two groups.

These findings indicate specific psychosocial variables may be more relevant to certain sexual orientations in predicting substance use, yet further research is warranted to explore these ideas further, as the current findings are not sufficient to provide strong evidence for this.

4.2.7. Research Question 7: *Are there significant differences between gender identity groups on the measured substance use and psychosocial variables?*

The MANOVA on gender identity groups yielded a large effect size. For the different groups, whilst males in the sample gained the overall highest mean AUDIT score and transgender males scored the lowest, there were no significant differences on this measure. There were also no significant differences for Drug Score. Additionally, whilst transgender females scored highest on Drug Score overall, there was a lower level of observed power for this group, therefore this may have contributed towards the lack of significant difference between this group and others. The lack of statistical differences between transgender and cisgender groups is generally not supportive of existing literature, with a meta-analysis finding that transgender people show significantly higher smoking rates and use of specific drugs, but does align with the finding of no significant alcohol use differences (Cotaina et al, 2022). LGBTQ+ males in this sample tend to use recreational drugs at a rate higher than LGBTQ+ females on all measures except for cannabis lifetime use, which is generally supportive of

overall population trends (SAMHSA, 2017). There may be particularly high rates of substance use among transgender females when considering their mean drug score but also their prevalence of drinking and smoking being the highest of the gender groups. Meanwhile, transgender males may be over-represented in substance dependent groups. However, these general trends found need further empirical investigation.

Moreover, Non-Binary/Other participants reported significantly more mental health problems and Social Anxiety than males, in line with other UK research showing that non-binary individuals self-report a greater degree of psychological difficulties than their cisgender peers (Watkinson et al, 2024). Due to the earlier noted difference that substance dependent individuals had significantly higher mental health scores, it may be that whilst males show a marginally higher mean Drug Score than Non-Binary/Other individuals, due to generally having more concerns with their mental health, Non-Binary/Other people may have greater vulnerability towards developing dependence on substances.

Minority Stress also saw several key differences between genders. Both transgender groups scored significantly greater on overall minority stress than males and females, whilst both transgender groups and the non-binary/other group all scored significantly higher on ED than males and females. Furthermore, transgender females scored higher than males and females on RA and Discrimination Events, and higher than females on VE. These results support Minority Stress Theory and highlight how transgender individuals face a combination of different aspects of discrimination and prejudice due to their gender identity, and this accumulation of stressors contribute to poorer mental health and higher social anxiety compared with cisgender people, as well as being possible drivers towards problematic alcohol and/or drug use to cope with these stressors and associated psychological sequelae. This is authenticated by the moderate positive relationship found in correlational analysis between Minority Stress and Mental Health as well as Social Anxiety.

As there were no significant differences found in AUDIT and Drug Score between the gender identity groups, the alternative hypothesis, H14, will be rejected, and the null accepted. However, the importance of some of the other differences outlined above still need to be considered.

4.2.8. Research Question 8: *What are the main contexts and reasons for drinking alcohol and using substances for LGBTQ+ people in the UK?*

A small-scale content analysis identified the most popular context for LGBTQ+ substance use in this sample was within the home environment, with 144 responses mentioning either drinking or using substances in the home. A large number of participants also mentioned social events, with 79 responses including this. Other contextual mentions included particular venues such as pubs, bars and nightclubs. A smaller number of participants in the sample disclosed using substances alone, or using substances during a sexual experience.

The predominant reason for substance use was coping with mental health symptoms, with 109 answers reporting this. The most prevalent sub-themes within this category were depression and mood-related difficulties and using substances to manage these, substances serving an escape or emotional numbing function, and dealing with generalized anxiety and trauma. The second most common reason cited for substance use was pleasure.

To explore participant subgroups, individuals highlighting a sexual component to their substance use were examined in detail. Compared with the overall sample, this group consisted of proportionally 2.8 times more cisgender males, 3.1 times more gay males and 3.8 times more substance dependent participants. They also held a higher mean AUDIT score of 9.23, over the threshold for hazardous drinking. Moreover, lifetime prevalence rate of methamphetamines and mephedrone in this subgroup was 53.8% and 30.8% – a strong contrast with 3.4% and 4.3% in the overall sample. These findings add further validation to the current evidence that MSM are more likely than other categories of the LGBTQ+ population to engage in sexualized drug use, and to use mephedrone and methamphetamines (Poulios et al, 2024). Use of these drugs in these contexts place MSM at higher risk of sexual health complications, infections such as hepatitis, substance dependence, and decreased quality of life (de Sousa et al, 2023).

Furthermore, the profiles of participants disclosing substance use to manage mental health symptoms were also examined. The disclosure of psychiatric management, including depression, anxiety and trauma, is consistent with this group reporting higher mean Mental Health, AUDIT and Drug Scores. Thus, LGBTQ+ individuals in

this sample who reflect that they use substances to cope with mental health problems report having more psychological difficulties generally, and drink alcohol and use drugs at a higher rate on average, supporting the “Self-Medication Hypothesis”. Based on sexual orientation, pansexuals and those identifying as “Other” were over-represented (38.1% of pansexual group, and 32.4% of “Other” group), whilst bisexual males were under-represented (22.9%). Among the gender identities, transgender females were over-represented (50%), followed by Non-Binary/Other participants (38.9%), whilst males were least represented (23.4%). Mean Minority Stress score for the selected group was 52.2, 4.6 values higher than the whole sample mean.

Transgender females being most represented in this subgroup gathers further support for Minority Stress Theory, considering their highest scores of all gender groups for not only total minority stress, but also victimization events, discrimination events, rejection anticipation and identity concealment, as well as the highest mean drug score (despite the latter being non-significantly different to other groups). However, transgender males, who had the highest mean Mental Health score and were the most represented in the substance dependent group, did not qualitatively report the link between these factors as much as transgender females. Having said this, both transgender groups appear to experience the greatest levels of minority stress and mental health difficulties, but transgender females more consciously recall using substances to cope with these difficulties.

Sexuality wise, pansexuals and those identifying as “Other” being over-represented in this group of people recalling using substances for mental health reasons aligns with these two categories having the first and third highest mental health scores, and the highest and second highest total minority stress. This partially supports previous literature indicating that pansexual and ‘other’ (often identifying as queer in this sample) are at heightened risk for anxiety and depression due to “bi+ stressors” (Feinstein et al, 2022). However, in the current study’s sample, bisexuals in general scored higher on mental health and minority stress measures than gay men but lower than lesbians, and only bisexual males scored higher than both gay men and lesbians for alcohol and drug use measures – therefore not supporting this notion of “bi+ stressors”. Bisexuals, whose identity is more established within society than

other labels such as pansexual, asexual and queer, may benefit from this overall wider societal awareness of their orientation.

4.3. Research Synthesis

Bringing all of the above findings together, on a purely descriptive level, this LGBTQ+ sample showed higher prevalence rates for all substance use (except for general drinking) than UK overall population estimates. Rates of hazardous and dependent drinking were high, with 40% of the sample scoring above recommended guidelines. 14% of the sample was also categorized as substance dependent, a rate substantially higher than within general population estimates.

For the LGBTQ+ sample, use of one substance was associated with using another. Alcohol use was associated with and significantly predicted by drug use, and vice versa. Additionally, smokers took significantly more recreational drugs and drunk significantly more alcohol than non-smokers. Individuals categorized as “Substance dependent” also had significantly higher alcohol scores than non-dependents, whilst dependent drinkers took significantly more drugs than other drinking groups.

ACEs were both associated with and significantly predictive of drug use, as well as being significantly greater among smokers than non-smokers. Additionally, ACEs may be a possibly important variable for substance dependence, and more relevant to certain sexual orientations in predicting their drug use, e.g. lesbians.

Total minority stress was significantly higher among smokers, as well as transgender participants. This may also be important in predicting substance dependence in the LGBTQ+ population. A specific component, Victimization Events (VE), appears most linked to substance use. VE was highlighted as a possibly important variable associated with alcohol and drug use, as well as substance dependence. VE was also significantly higher among smokers. Meanwhile, Everyday Discrimination was potentially important for its association with drug use, and was significantly higher for pansexuals, lesbians and those identifying as “Other”. Rejection Anticipation had a small link with substance dependence, whilst Internalized Stigma had a small link with both substance dependence and dependent drinking. The other parts of minority stress (identity concealment, discrimination events, and community connectedness) held no associations with any substance use. Transgender females particularly

showed significantly higher rates of different types of minority stress than cisgender males and females.

Mental Health appeared potentially important in its association with drug use, whilst this being non-significant. However, it was not associated with alcohol or smoking in this sample. Mental Health held its strongest correlations with Social Anxiety and ACEs, with non-binary individuals presenting significantly higher Mental Health scores than males.

On the contrary, Social Anxiety, which also had significantly higher levels among non-binary participants compared with males, was significantly linked with smoking. It also was potentially important in its association with alcohol use and substance dependence, however this was non-significant.

Childhood bullying held no associations or links with any substance use measures.

The primary reasons reported for substance use was managing mental health, with people reporting this being more likely to have higher alcohol and drug scores, to hold a transgender female identity, or identify as pansexual or “Other” for their sexual orientation. A smaller number of participants reported other contexts, including sexual encounters, which predominantly consisted of cisgender MSM who use drugs frequently and show higher substance dependence rates.

All of the current study’s findings add support to the idea that substance use within LGBTQ+ people is most strongly influenced by use of alternative substances, and that smoking is most closely linked with psychosocial variables that have been measured. It also adds support for Minority Stress Theory in terms of the different aspects of minority stress and their links with mental health difficulties and experience of social anxiety, as well as supporting the ACEs literature and its link with substance use. However, the lack of significant differences found between sexual orientation groups and gender identity groups does not match up with general prior literature – with possible reasons for this being discussed later in this chapter.

4.4. Limitations

There are several key limitations of the current study to reflect on. Firstly, whilst the overall sample was of an adequate size, the identities that are generally more frequently occurring, e.g. LGB, were represented more than the other categories.

Some groups, such as asexual and both transgender groups, had low numbers. Although Pillai's Trace was used for test interpretation due to its robustness with unbalanced samples, low subgroup observations impact overall generalizability to the wider population (Firestone, 1993). Therefore, although asexuals showed the lowest rates of several substances, and general substance dependence, due to the small number of participants within this category, it is difficult to generalize these results to the UK asexual population.

Having low numbers in subgroups will have also affected the observed power in between-group comparisons. Low power can often result in significance not being achieved in various results, leading to accepting the null hypothesis when this is not true, causing a Type 2 error (Shreffler & Huecker, 2023). The above challenges may have meant certain results not meeting the statistical threshold despite there being a genuine difference between one group and another. A different option could have been to merge more groups together for MANOVA analysis, as this had already been done with Heterosexual and Other groups for sexual orientation, and Other and Agender groups being merged with Non-Binary/Genderqueer for gender. Therefore, asexuals could have also been combined with the "Other" sexual orientation group, and transgender male and female groups could have been amalgamated. This was not undertaken due to the thesis' exploratory nature, and a key aim being to capture distinct experiences of a range of different identities which is currently under-researched, however it is important to be aware of the implications the above issues may have at a statistical level.

Furthermore, the sample comprised of predominantly White participants (85.85%), higher than the overall White UK population rate (81.7%; ONS, 2023). This fits a trend of White over-representation in clinical research compared with their Black and Asian peers (Flores et al, 2021). Holding in mind that ethnic minorities have been found to experience double discrimination relating to holding varying stigmatized identities at once (Balsam et al, 2011), and face discrimination within the LGBTQ+ community, resulting in lower access to resources within this (Ghabrial, 2017), gaining a more diverse sample would have been helpful at increasing the sample's overall representativeness of the UK LGBTQ+ population. Experiences of being LGBTQ+ and belonging to an ethnic minority are likely to shape the way in which non-White individuals in a UK context approach substances, and their reasons for

usage. Therefore, the data collected is likely based on White European norms, so lacks generalizability when considering LGBTQ+ people of colour living in the UK and their experiences with substance use.

In terms of participant recruitment, social media sites were used to advertise the study, however it is possible that the researcher's professional network, who subsequently shared the study with their professional and personal networks, may have resulted in an over-representation of female participants, who made up the largest gender proportion. Whilst efforts were made to achieve a broad sample by posting on LGBTQ+ forums, and utilizing apps with a large transgender and non-binary demographic, it is vital to reflect on how people who are part of LGBTQ+ networks are more likely to be open regarding their sexuality, feel more connected to their identity, as well as others within the community. They may be less likely to belong to an ethnic minority, and may hold lower levels of internalized stigma and identity concealment, but experience greater discrimination and victimization events – which may have been replicated in the sample. This, along with eligibility criteria for the study being holding a LGBTQ+ identity, may have excluded prospective participants who may identify as heterosexual but experience same-sex attraction. Individuals experiencing same-sex attraction but identifying as heterosexual often show higher alcohol use and dependence rates (Rentería et al, 2021), with men holding straight identities but engaging in same-sex behaviour holding greater internalized stigma and identity concealment (Schrimshaw et al, 2013). This may consequently influence their mental health and the way they use substances.

Additionally, social desirability bias is known to be a challenge in substance use research (Latkin et al, 2017), where people are asked to disclose sensitive information including whether they have used drugs that are against the law. In this study, social desirability may have informed the type of people that participated participants– biased towards those who do not use injectable drugs like heroin – or may have resulted in participants who do use these drugs under-reporting their use to gain social approval. Having said this, the survey being anonymized, with no contact details being collected from participants, is likely to have increased disclosure rates of disclosure of stigmatizing information (Murdoch et al, 2014). Individuals may also engage with a study if they feel it is meaningful and related to their past experiences (Stone et al, 2024). Sober participants no longer using

substances due to historical difficulties also engaged in the study – and their own experiences relating to mental health and substance use may have caused a self-selection bias. However, there was no option for people to tick in the questionnaire if they had given up substances, hence this form of sobriety was not accounted for in the study. Participants no longer drinking due to past AUD related to ACEs will have scored low on the AUDIT but high on ACEs, potentially hiding links between substance use and the psychosocial variables, acting as a confounding variable, and influencing the results and overall conclusions.

Furthermore, the study was cross-sectional in nature, thus collected data at one time point. This was chosen due to its speed to conduct, so appropriate given the limited time afforded for recruitment, there also disadvantages to this approach. Cross-sectional studies are not able to imply causation between variables, and are unable to investigate temporal relations between outcomes and risk factors (Wang & Cheng, 2020). Length of the questionnaire was also carefully considered, including bypassing of certain questions if participants disclosed no drug use, and only using part of the RBQ, however the average length taken to complete was around 15 minutes. Although attrition rate was generally low, the survey length may have contributed to drop-out, and in online surveys, later questionnaires are often subject to fatigue effects resulting in a higher likelihood measurement error (Egleston et al, 2011). Whilst participants were given encouraging phrases at the start of later questionnaire and informed they were almost finished, fatigue effects may have informed some people's answers on the Social Anxiety scale and the LGBT Minority Stress Measure, as questionnaire order was not randomized for participants. Additionally, content analysis was performed by identifying frequencies of particular words. This approach is guilty of oversimplifying a person's response as it ignores the notion that the meaning of a word depends significantly on the text surrounding it (Krippendorff, 2004) – something that a qualitative content analysis would have overcome. Having said this, a quantitative content analysis was conducted instead due to the limited time frame of the study and the high number of statistical tests needing to also be analysed and interpreted within this time frame.

4.5. Implications

Regarding implications, the present study sheds light on the clinical psychologists need to be aware of the often comorbidity in alcohol and recreational drug use for LGBTQ+ clients. It is important that not only do they spend time learning about different drugs that individuals using mental health services may use historically or currently and the impacts of these, but also drugs that may be more common in LGBTQ+ populations. As it is vital that LGBTQ+ clients feel safe to share and their identity accepted by their psychologist, cues of LGBTQ+ affirmation and clinician allyship should be demonstrated both in the service waiting rooms and in the consultation space. For example, providing leaflets and posters in waiting areas of specific drugs more widely used within the LGBTQ+ community would be one step in normalizing difficulties with these substances.

Furthermore, during psychological assessment, in line with trauma-informed care principles (Classen & Clark, 2017), psychologists would benefit from normalizing substance use in the context of coping with life difficulties prior to asking about specific substances and if clients use these, as well as asking clients whether they perceive there to be a link between usage of these substances and what they feel is the perceived function for each. Links between use of substances may also identify key triggers for subsequent use of another substance to help apply appropriate strategies to support reduction of each substance simultaneously. A further tool typically used in therapeutic interventions is psychoeducation, which can be a way of promoting patient empowerment in managing varied aspects of a difficulty they are facing (Lukens & McFarlane, 2004). This may involve clinical psychologists discussing ideas pertaining to the Self Medication hypothesis, polyvagal theory (Porges, 2022), and particularly Minority Stress theory (Meyer, 2003) – explicitly naming links between ACEs and drug use, as well as victimization events and both alcohol and drug use. There is supplementary evidence for using this trauma-informed approach for treatment of substance use difficulties, for example this is being incorporated within sexual health and HIV support services in the UK, where clients' substance use and sexual behaviours are being thought about in the context of their historical marginalized societal positions (Caswell et al, 2020), as well as initiatives such as VOICES for females using cannabis, which recognizes the impact of victimization and gender discrimination on development and coping strategies,

and highlights significant improvements in cannabis use up to 9 months later (Tolou-Shams et al, 2021).

Furthermore, there needs to be continued education regarding the negative impact of ACEs and their link with drug use in adulthood. In schools, it is important that teachers are given a space provided by a clinical psychologist to think about how to identify different ACEs, gain further training on how to discuss these experiences with families, as well as schools having a psychological professional that children with recent ACEs can be referred to, working on the basis of “Early Intervention”. This may involve a clinical psychologist providing a contained environment for a child to talk in more detail about their ACE(s) and explore what it meant for them and how it has impacted them. Narrative approaches, which have regularly been found beneficial when working with young people (Bennett, 2008), may support children to develop a ‘survivor’s narrative’ of ACEs. Holding this type of narrative about past traumatic events may require input from a clinical psychologist, but is linked with greater acceptance of substance use difficulties and greater hope for recovery in adulthood (Silverstein et al, 2023). Further education is also needed around lesser known identities, e.g. pansexual and asexual, both within and outside the LGBTQ+ community. This may involve adolescents being given more space to learn about these identities that have had a lower profile historically in an educational setting (possibly using paid Experts by Experience), and more individuals of diverse orientations and identities being shown on mainstream television.

Returning to the principles of trauma-informed care, a key aspect of the work of clinical psychologists is formulation. A large number of psychological difficulties are formulate using cognitive-behavioural frameworks, including social anxiety (Clark & Wells, 1995). Whilst CBT has strong outcomes for improving quality of life and symptomatology, it can also be criticised for ignoring the societal structures that may be informing someone’s distress (Gaudiano, 2008). Given the results of the present study, clinical psychologists may find it beneficial to think with LGBTQ+ clients about how victimization events, rejection anticipation and childhood bullying may play a role in the development of social anxiety, and to build these experiences into a thorough psychological formulation of the individual would help to validate their symptoms in the context of their marginalized identity. Clinical psychologists working in community mental health and substance misuse teams, as well as inpatient

wards, may also wish to facilitate Power Threat Meaning Framework team formulations (Johnstone et al, 2018) to consider with multi-disciplinary professionals the ways in which these different psychosocial factors may overlap with each other to contribute towards psychiatric and substance difficulties for an LGBTQ+ individual. This would also be beneficial in terms of asking LGBTQ+ clients what their substance use means to them, and ways that services can support them.

Thinking about smoking and how LGBTQ+ smokers had the most significant differences from non-smokers in this sample of any substance, implications for smoking cessation services need to be explored. Given the fact that smokers showed not only significantly higher alcohol and drug rates, but also higher rates of victimization events, ACEs and social anxiety, suggests that there needs to be a stronger presence of psychological professionals supporting smokers with these psychosocial factors in smoking cessation teams. This is especially prudent given the plethora of physical health difficulties associated with smoking. This may involve resources dedicated to tackling social anxiety and providing trauma-focussed work in these services, as well as psychologists linking LGBTQ+ smokers with positive networks to provide them with a greater sense of community connectedness and giving them a stronger chance of abstaining. Considering benefits of community connectedness, including having a negative correlation with mental health distress and general minority stress, substance misuse teams may wish to develop more LGBTQ+ support groups, including for those belonging to pansexual, asexual, transgender and non-binary populations, where people can meet others sharing similar identities to them to gain normalization and validation of their minority stress experiences, their intersecting identities, and resulting substance use challenges. LGBTQ+ venues also need to continue to promote their spaces to the full range of orientation and gender groups to reduce feelings of isolation and improve inter-community connection. A continued investment in LGBTQ+ “sober spaces” that allow SM’s to meet together without substances being the predominant focus is also needed to allow connection outside of the “bar” context.

Finally, on a service level, the study’s results suggest it would be helpful for substance misuse services to engage LGBTQ+ individuals in coproduction to ensure they are being inclusive to a wide range of LGBTQ+ clients and not replicating previous minority stress experiences. Additionally, currently those with substance

problems are excluded from accessing psychotherapy from mainstream services until their substance use has been reduced due to a perception they will be unable to engage meaningfully in therapy. However, this does not consider that substances are often, substances are being used excessively to cope with past traumas, and working with LGBTQ+ clients to find healthier alternative coping mechanisms with a specialist substance misuse worker before progressing to trauma-focussed therapy within the same service may be more containing for clients, as well as being more clinically and resource-effective. Being mindful of victimization events being linked to higher levels of alcohol, drug use, and smoking for LGBTQ+ individuals, it is crucial that victims of hate crime and harassment are offered post-incident psychological support and guidance by psychologists stationed within the legal workforce, who could also facilitate linking the police in with LGBTQ+ networks and providing training around trauma-informed care, minority stress and victimization, so that legal systems are creating a safe environment for LGBTQ+ victims and are not contributing to re-traumatisation.

Having said this, all of the above discussed implications are likely to be difficult to implement without further consensus among clinical psychology and wider mental health professionals. The medical model of distress is still the predominant model that services are structured by, and so this may prove a significant barrier to implementing clinical implications from this study.

4.6. Future Research

Several different research avenues would help further advance the study's findings. Firstly, studies gathering more data, particularly with larger samples of asexual and transgender participants, are necessary to further explore the link between the different measured psychosocial variables and substance use for these under-represented categories within the LGBTQ+ population. This would help establish if any significant differences can be found for alcohol, smoking and recreational drug use in larger samples, and how transgender females and males may differ from each other and non-binary and cisgender individuals, as well as continued exploration into how pansexuals, asexuals and those identifying as "Other" may differ from their LGB counterparts. More research collecting data on each subgroup separately and different variables' contribution to alcohol and drug use is also required.

Further research may also wish to build on the impact of ACEs and different minority stress components and which may be most relevant for the different elements of LGBTQ+ populations, as well as the mediating role of personality factors. Longitudinal studies following SM's from their early teenage years are also needed to further ascertain the way in which experiences of minority stress, bullying, and different psychological sequelae all shape the development of substance difficulties for these groups. Studies that use coproduction to ask communities what feels most meaningful and important to research more into will be especially beneficial.

Based on the present study's content analysis, further qualitative research is needed, particularly those that recruit people identifying as pansexual, asexual, or non-binary/other, to appraise both aspects of mental health distress and minority stress that contribute towards substance use on a subjective level for individuals, as well as positive factors that buffer against the detrimental impacts of these.

Within the current study, whilst a large number of different drugs were included to contribute towards the total drug score but also to inform current prevalence rates, the relative impact of the different psychosocial variables on use of different drugs was not looked at. Additionally, there were several drugs, including methamphetamines, mephedrone, and volatile substances, where rates of use were very low. As a large majority of current research looking at specific drugs focuses on cannabis and cocaine as these are the most frequently used – with this study's findings being no exception – it would be helpful for subsequent studies to look more specifically at other drugs and what psychosocial variables contribute towards these compared with the more 'mainstream' cannabis and cocaine use within the LGBTQ+ population.

Finally, research focusing on gathering a more ethnically diverse sample, and looking at similar psychosocial variables including minority stress but among a predominantly non-White sample, will also be highly necessary to identify the factors that may be most important in predicting substance use for SM's living in the UK who belong to ethnically minoritized groups.

4.7. Reflexivity

As discussed previously, the researcher's LGBTQ+ identity and past experiences and beliefs about reasons why LGBTQ+ individuals may use substances shaped the

particular variables that were chosen to explore in the current study. Being a gay male and aware of my own minority stress experiences as well as testimonies of other gay men resulted in me making certain predictions that incidents of both everyday microaggressions and victimization events contribute to rejection anticipation, internalized stigma and a range of different mental health problems including substance misuse. That is, my beliefs about which variables would hold close association with each other stemmed from my own perspective and internal processes. Throughout the research, I have had to consistently hold in mind that my experience will not mirror all gay males' experience, as well as potentially being significantly different from other members of the LGBTQ+ community. Being aware of other sexual orientations often being much less visible in LGBTQ+ spaces, and feeling a sense of injustice regarding this, drove me to open the research to a wide range of sexual orientations and gender groups to promote a message of inclusivity and desire to hear less visible groups' stories and experiences. Before deciding on the specific variables, I ensured to review the evidence base behind the different variables' link with substance use rather than just making assumptions based on my experience. I ensured that the variables that were chosen encompassed those that evidence showed the strongest link with substance use, and a combination of aspects of minority stress that I had personally encountered as well as aspects that I had less exposure to (e.g. identity concealment, as well as Adverse Childhood Experiences). I also made a record of results of the research that surprised me or that were unexpected in my view, to consider on a deeper level why this might be the case. Throughout the recruitment phase of my study, I also continued to monitor demographics of participants completing the questionnaire, which helped me ascertain that initially a large number of female participants were taking part compared with the other gender groups. Engaging in this helped me understand bias, as it allowed me to reflect on the greater number of females in my personal and professional network, likely due to a combination of factors including my LGBTQ+ identity and my work within clinical psychology. I then was able to think about different ways I could recruit a wider range of gender groups and sexual orientations. When writing my results and discussion, I consciously made an effort to check whether there were certain interpretations I was making or discussing in more detail than others, perhaps due to resonating with them more on a personal level. Knowing my own experiences and how they shaped what I wanted to explore helped me

make an active effort at reporting only the most significant results and cover the variables that on an objective level yielded the largest effect sizes within the sample.

4.8. Conclusions

In summary, this study has provided a snapshot of LGBTQ+ substance use within a UK context. Within this sample of 352 individuals, alcohol use has a positive relationship with drug use, whilst also being possibly informed by victimization events and social anxiety. Dependent drinkers used significantly more recreational drugs than low-risk drinkers. Drug use was correlated with alcohol use, but also ACEs, with victimization events, everyday discrimination and mental health problems being possible key factors. Substance dependent individuals showed significantly higher alcohol use and mental health difficulties, with total minority stress, victimization events and social anxiety all potentially playing a role in substance dependence too. Smoking appeared to be the most linked with the psychosocial variables, with smokers presenting with significantly higher alcohol and drug use, as well as significantly greater overall minority stress experience, social anxiety and victimization events – with ACEs again playing a role too. No significant differences in substance use were found between different sexual orientation or gender identity groups – however those identifying as “Other” for their sexual orientation appear to have more difficulties with everyday discrimination and social anxiety than other sexualities, whilst non-binary individuals show heightened mental health scores, and transgender females score the highest on a number of minority stress components. ACEs and everyday discrimination may play a particularly significant role in drug use by lesbians but not gay men. Contexts and reasons for substance use have been explored, with individuals in the sample using substances for mental health management being more likely to identify as pansexual, “Other”, or transgender female. Limitations of the study have been explored, including small sub-category sample sizes, the cross-sectional nature of the study, and ‘sober participants’ acting as a possible confounding variable. However, the study may also have key implications in terms of healthcare provision, psychological formulation and taking a trauma-informed approach to minority stress experiences, and post-victimization events support. Future research should employ longitudinal designs, focus on use of specific drugs that have had low rates within this sample, and gain larger, more

ethnically diverse samples of asexual, “Other”, transgender and non-binary participants.

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APPENDICES

Appendix A – Ethical Approval Confirmation

UNIVERSITY OF EAST LONDON

School of Psychology

APPLICATION FOR RESEARCH ETHICS APPROVAL

FOR RESEARCH INVOLVING HUMAN PARTICIPANTS

(Updated October 2021)

FOR BSc RESEARCH;

MSc/MA RESEARCH;

PROFESSIONAL DOCTORATE RESEARCH IN CLINICAL, COUNSELLING & EDUCATIONAL PSYCHOLOGY

Section 1 – Guidance on Completing the Application Form

(please read carefully)

1.1	Before completing this application, please familiarise yourself with: ▪ British Psychological Society's Code of Ethics and Conduct ▪ UEL's Code of Practice for Research Ethics ▪ UEL's Research Data Management Policy ▪ UEL's Data Backup Policy
1.2	Email your supervisor the completed application and all attachments as ONE WORD DOCUMENT. Your supervisor will look over your application and provide feedback.
1.3	When your application demonstrates a sound ethical protocol, your supervisor will submit it for review.
1.4	Your supervisor will let you know the outcome of your application. Recruitment and data collection must **NOT** commence until your ethics application has been approved, along with other approvals that may be necessary (see section 7).
1.5	Research in the NHS: ▪ If your research involves patients or service users of the NHS, their relatives or carers, as well as those in receipt of services provided under contract to the NHS, you will need to apply for HRA approval/NHS permission (through IRAS). You DO NOT need to apply to the School of Psychology for ethical clearance. ▪ Useful websites: https://www.myresearchproject.org.uk/Signin.aspx

	https://www.hra.nhs.uk/approvals-amendments/what-approvals-do-i-need/hra-approval/ ▪ If recruitment involves NHS staff via the NHS, an application will need to be submitted to the HRA in order to obtain R&D approval. This is in addition to separate approval via the R&D department of the NHS Trust involved in the research. UEL ethical approval will also be required. ▪ HRA/R&D approval is not required for research when NHS employees are not recruited directly through NHS lines of communication (UEL ethical approval is required). This means that NHS staff can participate in research without HRA approval when a student recruits via their own social/professional networks or through a professional body such as the BPS, for example. ▪ The School strongly discourages BSc and MSc/MA students from designing research that requires HRA approval for research involving the NHS, as this can be a very demanding and lengthy process.
1.6	If you require Disclosure Barring Service (DBS) clearance (see section 6), please request a DBS clearance form from the Hub, complete it fully, and return it to applicantchecks@uel.ac.uk. Once the form has been approved, you will be registered with GBG Online Disclosures and a registration email will be sent to you. Guidance for completing the online form is provided on the GBG website: https://fadv.onlinedisclosures.co.uk/Authentication/Login You may also find the following website to be a useful resource: https://www.gov.uk/government/organisations/disclosure-and-barring-service
1.7	Checklist, the following attachments should be included if appropriate: ▪ Study advertisement ▪ Participant Information Sheet (PIS) ▪ Participant Consent Form ▪ Participant Debrief Sheet ▪ Risk Assessment Form/Country-Specific Risk Assessment Form (see section 5) ▪ Permission from an external organisation (see section 7) ▪ Original and/or pre-existing questionnaire(s) and test(s) you intend to use ▪ Interview guide for qualitative studies ▪ Visual material(s) you intend showing participants

Section 2 – Your Details

2.1	**Your name:**	**Matthew Haywood**
2.2	**Your supervisor's name:**	**Dr John Turner**
2.3	**Name(s) of additional UEL supervisors:**	**Dr Trishna Patel**
		3rd supervisor (if applicable)
2.4	**Title of your programme:**	**Professional Doctorate in Clinical Psychology (DClinPsy)**
2.5	**UEL assignment submission date:**	**24/05/2024**
		Re-sit date (if applicable)

Section 3 – Project Details		
Please give as much detail as necessary for a reviewer to be able to fully understand the nature and purpose of your research.		
3.1	**Study title:** Please note - If your study requires registration, the title inserted here must be the same as that on PhD Manager	**Alcohol and substance use and dependence within the LGBTQ adult population: an exploration of psychological and social factors**
3.2	**Summary of study background and aims (using lay language):**	**There is currently a large body of evidence that supports for the idea that people within the LGBTQ population show higher rates of alcohol and substance use when compared with heterosexual peers. However, the majority of studies are based in the US and group LGBTQ individuals together as one homogenous group, without capturing the unique experiences that each section of the community may face with relation to alcohol and substances. Furthermore, a number of factors such as social anxiety symptoms and adverse childhood experiences and victimisation have been linked with higher rates of substance use and psychological difficulties in adulthood – supported by a wide body of research, as well as key gender differences in the experiences of victimisation. However, the vast majority of research focuses on heteronormative samples and mainly during adolescence, and so it has been identified that there is a current lack of research investigating the degree to which these factors such as social anxiety, childhood bullying, ACEs may predict substance use and dependence within the LGBTQ adult population, who face unique stressors relating to discrimination and belonging to a minority group. Minority Stress Theory acknowledges a number of factors which are likely to change the way LGBTQ+ individuals experience the world, such as perceived stigma and connectedness with the community. These may in turn predict the alcohol and substance use and dependence rates within each part of the LGBTQ+ population. As previous evidence has suggested that engagement in the LGBT community by these individuals moderates the impact of victimisation on certain psychological difficulties, this study would also consider how community engagement affects the way in which lesbians, gay men, bisexual men and women, people of other sexual identities, use alcohol and other**

		substances. In essence, this study aims to investigate the levels of substance use and dependence within the different groups of gay, lesbian, bisexual and other sexual minorities, as well as exploring the extent to which social anxiety, childhood bullying, ACEs, and overall minority stress (including perceived stigma and LGBTQ+ community connectedness predict alcohol/substance use, harmful use and dependence levels within these groups and what the main differences are between the groups.
3.3	**Research question(s):**	**Research questions have been discussed with the thesis supervisor and will include some or all of the following questions.** **ALCOHOL & SUBSTANCE USE** **1.1. In the LGBTQ+ adult population, is there a significant difference between groups for alcohol use levels? 1.2. Do significant group differences also exist for recreational drug use? 1.3. Do higher levels of alcohol and substance use correlate with childhood bullying victimization or adverse childhood experiences?** **ALCOHOL & SUBSTANCE HAZARDOUS USE** **2.1. Are there significant between-group differences in levels of hazardous alcohol usage for LGBTQ+ adults? 2.2. Are there significant between-group differences in levels of hazardous substance use for LGBTQ+ adults? 2.3. To what extent do the variables of social anxiety, childhood bullying, adverse childhood experiences and minority stress predict hazardous alcohol and substance use in the LGBTQ+ adult population? 2.4. Are there particular components of minority stress that serve as bigger predictors of hazardous alcohol and substance use?** **ALCOHOL & SUBSTANCE DEPENDENCE** **3.1. What are the rates of alcohol and substance dependence in LGBTQ+ adults?3.2. Is there a significant difference in levels of alcohol and substance dependence between groups?3.3. What percentage of the variance of alcohol and substance dependence in LGBTQ+ adults is predicted by social anxiety, childhood bullying, ACEs and minority stress? 3.4. Which of these variables is the biggest predictor of alcohol and**

		substance dependence? 4. What are the main contexts and environments for alcohol and drug use for LGBTQ+ adults?
3.4	**Research design:**	**Mixed-methods and cross-sectional(predominantly quantitative using structured questionnaires and using multiple regression and ANOVA/MANOVA tests, with a small qualitative section of the survey with 2 open-ended questions)**
3.5	**Participants:** Include all relevant information including inclusion and exclusion criteria	**Participants will include any adult of 18 years and over who identifies as non-heterosexual. This will include gay, lesbian, bisexual man, bisexual woman, other (such as pansexual, asexual – where the participant will be prompted to write how they identify). The participant does not have to use alcohol or substances in order to take part in the study. Exclusion criteria = anyone under the age of 18 years when completing the study, anyone who identifies as heterosexual/not part of the LGBTQ population. A power analysis conducted on GPower software to calculate sample size for a MANOVA recommends a minimum sample size of 109 participants. Green (1991) also recommends a minimum sample size of N > 104 + M where m is the number of predictor variables, so if there are 6 predictor variables in the model, a minimum sample of 110 is needed. Participants will include any adult of over 18 years who identifies as non-heterosexual. This will include gay, lesbian, bisexual man, bisexual woman, and other sexual orientations (e.g. pansexual, asexual). Participants also identifying as transgender or non-binary will be invited to take part. The participant does not have to use alcohol or substances in order to take part in the study. Exclusion criteria = anyone under 18 years, anyone who does not identify as being part of the LGBTQ+ population, and anyone who self-reports as both heterosexual and cisgender.**
3.6	**Recruitment strategy:** Provide as much detail as possible and include a backup plan if relevant	**Recruitment will be gained through several avenues. The study will be advertised within the university, as well as through online forums related to the LGBTQ population. The study will also be advertised via social media platforms such as LinkedIn and Twitter. In addition, the Prolific (www.prolific.co) participant sourcing software will potentially be used to recruit further participants.**
3.7	**Measures, materials or equipment:**	**Study advertisement, project information sheet, consent form and demographic questionnaire. Alcohol**

	Provide detailed information, e.g., for measures, include scoring instructions, psychometric properties, if freely available, permissions required, etc.	**use will be measured using the AUDIT (World Health Organisation, 2001; see Appendix F). Substance use will be measured using researcher-developed questions (see Appendix G). Substance dependence will be measured with the Severity of Dependence Scale (SDS; Gossop et al, 1997, see Appendix H). Social anxiety symptoms will be measured using the Severity Measure for Social Anxiety – Social Phobia (Adult) (Craske et al, 2013, see Appendix K). Traumatic childhood experiences will be measured with the ACE-Q (Felitti et al, 1998, see Appendix J). Childhood bullying will be assessed via the Retrospective Bullying Questionnaire (Shafer et al, 2004, see Appendix I). Minority stress will be measured with the "LGBT Minority Stress Scale" (Outland, 2016, see Appendix L), which will measure the variables of perceived stigma and LGBTQ+ community engagement/connectedness. The study will finish with a couple of researcher-developed questions asking about the context and reasons for alcohol and substance use (see Appendix M).**
3.8	**Data collection:** Provide information on how data will be collected from the point of consent to debrief	**Data will be collected through an online Qualtrics questionnaire. Participants will click on the link to the study which will take them to an information sheet about the study – which will include a short summary of the study, inclusion/exclusion criteria, timeframe and nature of the questions that will be asked, information about their data, benefits and disadvantages of taking part in the study, and their right to withdraw. They will then need to tick 'agree' to a number of statements to demonstrate they have informed consent to participate before beginning, and provide a 'pin' should the researcher need to identify their data should a participant wish to withdraw. The study will then ask them some demographic information (age, sexual identity, gender identity, ethnicity, religion) as well as asking participants to tick if they have been diagnosed with/experienced different mental health problems in the last year. Then, a number of questionnaires will be included which will ask participants to rate themselves on a series of statements and questions relating to their alcohol and substance use, mental health symptoms, social anxiety symptoms, childhood bullying experiences, ACES, and minority stress. All of these questionnaires will be numerical in nature and collect quantitative data. Each question will need to be**

		answered to ensure full data collection before the participant can move to the next questionnaire. At the end of the study, there will be 2 open ended questions to gain more contextual, qualitative information about alcohol/substance use. The data collection will then be complete, telling them that the study has finished – where they will be taken to a short debrief sheet. The debrief sheet will explain that whilst we are collecting no personal information and each participant will remain entirely anonymous, if they would like to receive a copy of the results when the study finishes, or if they have any questions generally about the study, they will be given the UEL email address of the researcher.	
3.9	**Will you be engaging in deception?**	**YES** ☐	**NO** ☒
	If yes, what will participants be told about the nature of the research, and how/when will you inform them about its real nature?	If you selected yes, please provide more information here	
3.10	**Will participants be reimbursed?**	**YES** ☒	**NO** ☒
	If yes, please detail why it is necessary.	**Through recruitment, most participants will not be reimbursed. It is possible that a minority of participants will be paid for taking part if recruitment is slow and the Prolific platform is then necessary to use.**	
	How much will you offer? Please note - This must be in the form of vouchers, not cash.	**Standard rate of Prolific payment equates to around £1 per 10 minutes of time spent completing survey. Funding for this will come from thesis supervisor's Prolific account.**	
3.11	**Data analysis:**	**The data will be analysed using quantitative statistical analysis relating to the questionnaire data in order to answer the vast majority of research questions. A small qualitative analysis may also take place relating to the open-ended comment section at the end, e.g. content analysis, to identify themes around context of substance use.**	

Section 4 – Confidentiality, Security and Data Retention

It is vital that data are handled carefully, particularly the details about participants. For information in this area, please see the UEL guidance on data protection, and also the UK government guide to data protection regulations.

If a Research Data Management Plan (RDMP) has been completed and reviewed, information from this document can be inserted here.			
4.1	**Will the participants be anonymised at source?**	**YES** ☒	**NO** ☐
	If yes, please provide details of how the data will be anonymised.	**The questionnaire will be entirely anonymous, with no identifying information being collected.**	
4.2	**Are participants' responses anonymised or are an anonymised sample?**	**YES** ☐X	**NO** ☐
	If yes, please provide details of how data will be anonymised (e.g., all identifying information will be removed during transcription, pseudonyms used, etc.).	**The sample will be entirely anonymous. Participants are not asked for any identifying information in the questionnaire. All other information collected about individuals will be non-identifying and broad demographic questions, such as age/sexual identity/gender identity/ethnicity. Participants will be asked to enter a pin such as a memorable word and told to remember this should they wish to contact the researcher to withdraw their data.**	
4.3	**How will you ensure participant details will be kept confidential?**	**Participant details will not be disclosed other than demographic information related to the study. All data will be stored securely as per detailed in section 4.4. Each participant that takes part will be given a participant number. Should any participant email the researcher, this email contact will be kept on the researcher's password-protected email account for documentation.**	
4.4	**How will data be securely stored and backed up during the research?** Please include details of how you will manage access, sharing and security	**Data will be stored securely on the researcher's UEL OneDrive, on a personal laptop which is password-protected and locked in the researcher's home address.**	
4.5	**Who will have access to the data and in what form?** (e.g., raw data, anonymised data)	**The researcher will have full access to the raw data. This will also be shared with the research supervisor for supervision purposes, and possibly with the secondary research supervisor if necessary. No one else shall have access to the data.**	
4.6	**Which data are of long-term value and will be retained?** (e.g., anonymised interview transcripts, anonymised databases)	**The anonymised dataset – demographic information, quantitative and qualitative responses on the survey, is of long-term value and so will be reviewed when the study finishes and possibly retained.**	
4.7	**What is the long-term retention plan for this data?**	Anonymised research data will be securely stored on the research supervisor's UEL's password-protected OneDrive account for a period of 5 years, and then appraised to be either destroyed or retained for a longer period. Should the research supervisor leave UEL, the data will be	

		transferred through to the secondary research supervisor's OneDrive account.	
4.8	**Will anonymised data be made available for use in future research by other researchers?**	**YES** ☐	**NO** ☒
	If yes, have participants been informed of this?	**YES** ☐	**NO** ☐
4.9	**Will personal contact details be retained to contact participants in the future for other research studies?**	**YES** ☐	**NO** ☒
	If yes, have participants been informed of this?	**YES** ☐	**NO** ☐

Section 5 – Risk Assessment

If you have serious concerns about the safety of a participant, or others, during the course of your research please speak with your supervisor as soon as possible. If there is any unexpected occurrence while you are collecting your data (e.g., a participant or the researcher injures themselves), please report this to your supervisor as soon as possible.

5.1	**Are there any potential physical or psychological risks to participants related to taking part?** (e.g., potential adverse effects, pain, discomfort, emotional distress, intrusion, etc.)	**YES** ☒	**NO** ☐
	If yes, what are these, and how will they be minimised?	Questionnaires will be asking about mental health symptoms, drug and alcohol use, and previous adverse experiences that may bring up difficult feelings for a participant. The participant information sheet will be clear about the types of questions that will be asked, and potential benefits and harms of taking part so that the participant can make an informed decision about this. One harm discussed will be possible emotional distress from completing the questionnaire. However, both in the information sheet and debrief section of the study, participants will be signposted to mental health and crisis resources, such as MIND, Samaritans and Mental Health Foundation, as well as alcohol and drug support services such as Drinkline and FRANK(Talk-to-Frank) if they feel distressed following the questionnaire or if they would like further support with their substance use or mental health. An additional question at the end of the study asking participants to rate the degree to which they found filling out the survey distressing or upsetting may also be included.	

5.2	**Are there any potential physical or psychological risks to you as a researcher?**	**YES** ☒	**NO** ☐	
	If yes, what are these, and how will they be minimised?	**There is no clear physical or psychological risk to the researcher from the study. However, the researcher's online identity needs to be considered and therefore any communication from participants about the study will be through official channels, i.e. UEL email.**		
5.3	**If you answered yes to either 5.1 and/or 5.2, you will need to complete and include a General Risk Assessment (GRA) form (signed by your supervisor). Please confirm that you have attached a GRA form as an appendix:**	**YES** ☒		
5.4	**If necessary, have appropriate support services been identified in material provided to participants?**	**YES** ☒	**NO** ☐	**N/A** ☐
5.5	**Does the research take place outside the UEL campus?**	**YES** ☒	**NO** ☐	
	If yes, where?	**Research will take place online.**		
5.6	**Does the research take place outside the UK?**	**YES** ☐	**NO** ☒	
	If yes, where?	**Research will take place online.**		
	If yes, in addition to the General Risk Assessment form, a Country-Specific Risk Assessment form must also be completed and included (available in the Ethics folder in the Psychology Noticeboard). Please confirm a Country-Specific Risk Assessment form has been attached as an appendix. Please note - A Country-Specific Risk Assessment form is not needed if the research is online only (e.g., Qualtrics survey), regardless of the location of the researcher or the participants.	**YES** ☐		
5.7	**Additional guidance:** ▪ For assistance in completing the risk assessment, please use the AIG Travel Guard website to ascertain risk levels. Click on 'sign in' and then 'register here' using policy # 0015865161. Please also consult the Foreign Office travel advice website for further guidance.			

	▪ For on campus students, once the ethics application has been approved by a reviewer, all risk assessments for research abroad must then be signed by the Director of Impact and Innovation, Professor Ian Tucker (who may escalate it up to the Vice Chancellor). ▪ For distance learning students conducting research abroad in the country where they currently reside, a risk assessment must also be carried out. To minimise risk, it is recommended that such students only conduct data collection online. If the project is deemed low risk, then it is not necessary for the risk assessment to be signed by the Director of Impact and Innovation. However, if not deemed low risk, it must be signed by the Director of Impact and Innovation (or potentially the Vice Chancellor). ▪ Undergraduate and M-level students are not explicitly prohibited from conducting research abroad. However, it is discouraged because of the inexperience of the students and the time constraints they have to complete their degree.

Section 6 – Disclosure and Barring Service (DBS) Clearance

6.1	**Does your research involve working with children (aged 16 or under) or vulnerable adults (*see below for definition)?** If yes, you will require Disclosure Barring Service (DBS) or equivalent (for those residing in countries outside of the UK) clearance to conduct the research project	**YES** ☐	**NO** ☒
	* You are required to have DBS or equivalent clearance if your participant group involves: (1) Children and young people who are 16 years of age or under, or (2) 'Vulnerable' people aged 16 and over with particular psychiatric diagnoses, cognitive difficulties, receiving domestic care, in nursing homes, in palliative care, living in institutions or sheltered accommodation, or involved in the criminal justice system, for example. Vulnerable people are understood to be persons who are not necessarily able to freely consent to participating in your research, or who may find it difficult to withhold consent. If in doubt about the extent of the vulnerability of your intended participant group, speak with your supervisor. Methods that maximise the understanding and ability of vulnerable people to give consent should be used whenever possible.		
6.2	**Do you have DBS or equivalent (for those residing in countries outside of the UK) clearance to conduct the research project?**	**YES** X☐	**NO** ☐
6.3	**Is your DBS or equivalent (for those residing in countries outside of the**	**YES** X☐	**NO** ☐

	UK) clearance valid for the duration of the research project?		
6.4	**If you have current DBS clearance, please provide your DBS certificate number:**	Please enter your DBS certificate number	
	If residing outside of the UK, please detail the type of clearance and/or provide certificate number.	Please provide details of the type of clearance, including any identification information such as a certificate number	
6.5	**Additional guidance:** ▪ If participants are aged 16 or under, you will need two separate information sheets, consent forms, and debrief forms (one for the participant, and one for their parent/guardian). ▪ For younger participants, their information sheets, consent form, and debrief form need to be written in age-appropriate language.		

Section 7 – Other Permissions

7.1	**Does the research involve other organisations (e.g., a school, charity, workplace, local authority, care home, etc.)?**	**YES** ☐	**NO** ☒
	If yes, please provide their details.	Please provide details of organisation	
	If yes, written permission is needed from such organisations (i.e., if they are helping you with recruitment and/or data collection, if you are collecting data on their premises, or if you are using any material owned by the institution/organisation). Please confirm that you have attached written permission as an appendix.	**YES** ☐	
7.2	**Additional guidance:** ▪ Before the research commences, once your ethics application has been approved, please ensure that you provide the organisation with a copy of the final, approved ethics application or approval letter. Please then prepare a version of the consent form for the organisation themselves to sign. You can adapt it by replacing words such as 'my' or 'I' with 'our organisation' or with the title of the organisation. This organisational consent form must be signed before the research can commence. ▪ If the organisation has their own ethics committee and review process, a SREC application and approval is still required. Ethics approval from SREC can be gained before approval from another research ethics committee is obtained. However, recruitment and data collection are NOT to commence until your research has been approved by the School and other ethics committee/s.		

University of East London

Section 8 – Declarations		
8.1	**Declaration by student. I confirm that I have discussed the ethics and feasibility of this research proposal with my supervisor:**	**YES** ☒
8.2	**Student's name:** (Typed name acts as a signature)	**Matthew Haywood**
8.3	**Student's number:**	**2195517**
8.4	**Date:**	**27/06/2023**
Supervisor's declaration of support is given upon their electronic submission of the application		

Appendix B – Ethical Approval Confirmation

School of Psychology Ethics Committee

NOTICE OF ETHICS REVIEW DECISION LETTER

For research involving human participants

BSc/MSc/MA/Professional Doctorates in Clinical, Counselling and Educational Psychology

Reviewer: Please complete sections in **blue** | **Student:** Please complete/read sections in **orange**

Details	
Reviewer:	**Irina Anderson**
Supervisor:	**John Turner**
Student:	**Matthew Haywood**
Course:	**Prof Doc Clinical Psychology**
Title of proposed study:	Please type title of proposed study

Checklist (Optional)	YES	NO	N/A
Concerns regarding study aims (e.g., ethically/morally questionable, unsuitable topic area for level of study, etc.)	☐	☐	☐
Detailed account of participants, including inclusion and exclusion criteria	☐	☐	☐
Concerns regarding participants/target sample	☐	☐	☐
Detailed account of recruitment strategy	☐	☐	☐
Concerns regarding recruitment strategy	☐	☐	☐
All relevant study materials attached (e.g., freely available questionnaires, interview schedules, tests, etc.)	☐	☐	☐
Study materials (e.g., questionnaires, tests, etc.) are appropriate for target sample	☐	☐	☐

Clear and detailed outline of data collection	☐	☐	☐
Data collection appropriate for target sample	☐	☐	☐
If deception being used, rationale provided, and appropriate steps followed to communicate study aims at a later point	☐	☐	☐
If data collection is not anonymous, appropriate steps taken at later stages to ensure participant anonymity (e.g., data analysis, dissemination, etc.) – anonymisation, pseudonymisation	☐	☐	☐
Concerns regarding data storage (e.g., location, type of data, etc.)	☐	☐	☐
Concerns regarding data sharing (e.g., who will have access and how)	☐	☐	☐
Concerns regarding data retention (e.g., unspecified length of time, unclear why data will be retained/who will have access/where stored)	☐	☐	☐
If required, General Risk Assessment form attached	☐	☐	☐
Any physical/psychological risks/burdens to participants have been sufficiently considered and appropriate attempts will be made to minimise	☐	☐	☐
Any physical/psychological risks to the researcher have been sufficiently considered and appropriate attempts will be made to minimise	☐	☐	☐
If required, Country-Specific Risk Assessment form attached	☐	☐	☐
If required, a DBS or equivalent certificate number/information provided	☐	☐	☐
If required, permissions from recruiting organisations attached (e.g., school, charity organisation, etc.)	☐	☐	☐
All relevant information included in the participant information sheet (PIS)	☐	☐	☐
Information in the PIS is study specific	☐	☐	☐
Language used in the PIS is appropriate for the target audience	☐	☐	☐
All issues specific to the study are covered in the consent form	☐	☐	☐
Language used in the consent form is appropriate for the target audience	☐	☐	☐
All necessary information included in the participant debrief sheet	☐	☐	☐
Language used in the debrief sheet is appropriate for the target audience	☐	☐	☐
Study advertisement included	☐	☐	☐
Content of study advertisement is appropriate (e.g., researcher's personal contact details are not shared, appropriate language/visual material used, etc.)	☐	☐	☐

Decision options	
APPROVED	Ethics approval for the above-named research study has been granted from the date of approval (see end of this notice), to the date it is submitted for assessment.
APPROVED - BUT MINOR AMENDMENTS ARE REQUIRED BEFORE THE RESEARCH COMMENCES	In this circumstance, the student must confirm with their supervisor that all minor amendments have been made **before** the research commences. Students are to do this by filling in the confirmation box at the end of this form once all amendments have been attended to and emailing a copy of

	this decision notice to the supervisor. The supervisor will then forward the student's confirmation to the School for its records. **Minor amendments guidance:** typically involve clarifying/amending information presented to participants (e.g., in the PIS, instructions), further detailing of how data will be securely handled/stored, and/or ensuring consistency in information presented across materials.
NOT APPROVED - MAJOR AMENDMENTS AND RE-SUBMISSION REQUIRED	In this circumstance, a revised ethics application **must** be submitted and approved **before** any research takes place. The revised application will be reviewed by the same reviewer. If in doubt, students should ask their supervisor for support in revising their ethics application. **Major amendments guidance:** typically insufficient information has been provided, insufficient consideration given to several key aspects, there are serious concerns regarding any aspect of the project, and/or serious concerns in the candidate's ability to ethically, safely and sensitively execute the study.

Decision on the above-named proposed research study	
Please indicate the decision:	Please select your decision

Minor amendments
Please clearly detail the amendments the student is required to make
This is not really a minor amendment but the final question in the open-ended questions x2 at the end of the questionnaires is quite wide and may garner some inappropriate/'oversharing' responses (which, of course, may be exactly what you want anyway), without a steer for the participants. Participants may benefit from an explanation, in brackets, of the kind of thing that you may wish them to consider, e.g., 'on Saturday nights after a night out'. This point is entirely optional for the researchers to consider, who may wish to think about it and dispense with it immediately.

Major amendments
Please clearly detail the amendments the student is required to make

Assessment of risk to researcher		
Has an adequate risk assessment been offered in the application form?	**YES** ☒	**NO** ☐
	If no, please request resubmission with an **adequate risk assessment.**	
If the proposed research could expose the researcher to any kind of emotional, physical or health and safety hazard, please rate the degree of risk:		
HIGH	Please **do not approve a high-risk** application. Travel to countries/provinces/areas deemed to be high risk should not be permitted and an application not be approved on this basis. If unsure, please refer to the Chair of Ethics.	☐
MEDIUM	Approve but include appropriate recommendations in the below box.	☐
LOW	Approve and if necessary, include any recommendations in the below box.	☒
Reviewer recommendations in relation to risk (if any):	Please insert any recommendations	

Reviewer's signature	
Reviewer: (Typed name to act as signature)	Irina Anderson

Date:	**20/07/2023**
This reviewer has assessed the ethics application for the named research study on behalf of the School of Psychology Ethics Committee	

Appendix C – Participant Information Sheet (PIS)

Version:1

Date:02/06/2023

PARTICIPANT INFORMATION SHEET

ALCOHOL AND SUBSTANCE USE WITHIN THE LGBTQ+ COMMUNITY

Contact person: Matthew Haywood (Trainee Clinical Psychologist)

Email: u2195517@uel.ac.uk

You are being invited to participate in a research study. Before you decide whether to take part or not, please carefully read through the following information which outlines what your participation would involve. Feel free to talk with others about the study (e.g., friends, family, etc.) before making your decision. If anything is unclear or you have any questions, please do not hesitate to contact me on the above email.

Who am I?

My name is Matthew Haywood. I am a postgraduate doctoral student in the School of Psychology at the University of East London (UEL) and am studying for a Doctorate in Clinical Psychology. As part of my studies, I am conducting the research that you are being invited to participate in.

What is the purpose of the research?

I am conducting research into the way in which alcohol and recreational substances are used within the LGBTQ+ community. This study is looking at the way in which people's experiences – both past and present – as well as experiences of discrimination, may influence the way in which they use substances, as well as the possible differences between different sections of the LGBTQ+ population. It is hoped that findings from this study will help further our understanding of alcohol and drug use for LGBTQ+ people, as well as factors that may make people more likely to use substances in a harmful or dependent way. This study also hopes to learn more about how to support LGBTQ+ people who use substances, including in clinical psychology settings and current policies.

Why have I been invited to take part?

To address the study aims, I am inviting anybody who identifies as being part of the LGBTQ+ community to take part in my research. If you are 18 years or over, and identify as non-heterosexual or non-cisgender, you are eligible to take part in the study.

It is entirely up to you whether you take part or not, participation is voluntary.

What will I be asked to do if I agree to take part?

If you agree to participate you will be asked to complete an online survey. This will begin with some questions about some demographic information about yourself, such as gender identity and sexual orientation. You will also be asked to record any mental health problems you have either been diagnosed with or experienced in the last year. Following this, you will be asked to complete several questionnaires – asking you about alcohol and substance use, how you feel in social settings, your previous experiences in childhood, and some of your current experiences related to being LGBTQ+. Answering all of the questions will take approximately 15-20 minutes to complete.

Can I change my mind?

Yes, you can change your mind at any time and withdraw without explanation, disadvantage or consequence. If you would like to withdraw from the study whilst taking part, you can do so by closing the survey and your data will not be kept. If you withdraw, your data will not be used as part of the research.

Separately, you may also request to withdraw your data even after you have participated data, provided that this request is made before the 1st March 2024 (after which point the data analysis will begin, and withdrawal will not be possible).

When you give consent to take part in this study, you will be asked to provide a unique pin code. Please make a note or take a screenshot of this, as you will need it if you decide to withdraw from the study. If you do wish to withdraw, please email u2195517@uel.ac.uk with your unique pin code and request to withdraw.

Are there any benefits to taking part?

- Whilst unfortunately you will not receive renumeration for taking part, you will be helping contribute towards expanding the knowledge and evidence base around substance use within the LGBTQ+ population. This may have implications for healthcare practice and clinical psychology settings, and you sharing your experience will be greatly appreciated.

Are there any disadvantages to taking part?

- This questionnaire involves answering questions about alcohol and drug use, as well as mental health difficulties, experiences in childhood, and current stressful events. Some of these questions may be difficult to answer and/or cause distress. Please note that taking part in this study is entirely voluntary, and so if you would rather not answer questions of this nature, feel free to close the survey.

- The following support organizations for mental health and substance use will be referred to here and again at the end of the study:
  Organisations offering education and support on mental health related difficulties
- MIND – www.mind.org.uk
- Mental Health Foundation – www.mentalhealth.org.uk
- Samaritans – www.samaritans.org
- Switchboard LGBT+ Helpline – 0800 0119 100 & www.switchboard.lgbt
  Organisations offering support for alcohol and substance difficulties
- Drinkline – 0300 123 1100 (weekdays 9am-8pm, weekends 11am-4pm)
- Antidote (LGBTQ+ alcohol support) – www.londonfriend.org.uk/antidote/
- Talk to FRANK – www.talktofrank.com

How will the information I provide be kept secure and confidential?

- All data collected from your responses will be completely anonymous, and your privacy and safety will be respected at all times. You will not be asked to provide any personal information that could identify you. You will not be identified by the data collected, on any written material resulting from the data collected, or in any write-up of the research.
- In line with General Data Protection Regulations, all research data will be stored securely in a password-protected database on the researcher's secure OneDrive which requires multi-factor authentication to gain access. This will be accessed via a password-protected laptop stored in locked premises solely by the researcher.
- During the study, only the researcher and the research supervisor will have access to the anonymized data. The data will be shared to the research supervisor via secure links on the UEL email system. Once the study has been completed and data has been analysed, examiners will also see the anonymized data.
- At the end of the study, there are two open-ended questions for you to tell us more about your alcohol and/or substance use. If any names of people or places are mentioned in this section, these will be pseudonymized (renamed) in order to preserve confidentiality.
- Following the study being completed, the anonymized data will be retained for a period of 5 years on the research supervisor's UEL OneDrive system.

For the purposes of data protection, the University of East London is the Data Controller for the personal information processed as part of this research project. The University processes this information under the 'public task' condition contained in the General Data Protection Regulation (GDPR). Where the University processes particularly sensitive data (known as 'special category data' in the GDPR), it does so because the processing is necessary for archiving purposes in the public interest, or scientific and historical research purposes or statistical purposes. The University will ensure that the personal data it processes is held securely and processed in accordance with the GDPR and the Data Protection Act 2018. For more information about how the University processes

personal data please see www.uel.ac.uk/about/about-uel/governance/information-assurance/data-protection

What will happen to the results of the research?

The research will be written up as a thesis and submitted for assessment. The thesis will be publicly available on UEL's online Repository. Findings will also be disseminated to a range of audiences (e.g., academics, clinicians, public, etc.) through journal articles, conference presentations, talks, magazine articles, and/or blogs. In all material produced, your identity will remain anonymous, in that, it will not be possible to identify you personally – as only general demographic information will be collected about you.

If you would like to receive a summary of the research findings once the study has been completed, you will need to request this by emailing the researcher: u2195517@uel.ac.uk.

Anonymised research data will be securely stored by Professor John Turner for a maximum of 5 years, following which all data will be deleted.

Who has reviewed the research?

My research has been approved by the School of Psychology Ethics Committee. This means that the Committee's evaluation of this ethics application has been guided by the standards of research ethics set by the British Psychological Society.

Who can I contact if I have any questions/concerns?

If you would like further information about my research or have any questions or concerns, please do not hesitate to contact me.

Matthew Haywood – u2195517@uel.ac.uk

If you have any questions or concerns about how the research has been conducted, please contact my research supervisor Professor John Turner, School of Psychology, University of East London, Water Lane, London E15 4LZ,

Email: J.J.D.Turner@uel.ac.uk

or

Chair of School Ethics Committee: Dr Trishna Patel, School of Psychology, University of East London, Water Lane, London E15 4LZ.

(Email: t.patel@uel.ac.uk)

Thank you for taking the time to read this information sheet

Appendix D – Participant Consent form

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

ALCOHOL AND SUBSTANCE USE WITHIN THE LGBTQ+ COMMUNITY
Contact person: Matthew Haywood
Email: u2195517@uel.ac.uk

I have the read the information sheet relating to the above research study and have been given a copy to keep. The nature and purposes of the research have been explained to me, and I have had the opportunity to discuss the details and ask questions about this information. I understand what is being proposed and the procedures in which I will be involved have been explained to me.

I understand that my involvement in this study, and particular data from this research, will remain strictly confidential. Only the researcher(s) involved in the study will have access to identifying data. It has been explained to me what will happen once the research study has been completed.

I hereby freely and fully consent to participate in the study which has been fully explained to me. Having given this consent I understand that I have the right to withdraw from the study at any time without disadvantage to myself and without being obliged to give any reason. I also understand that should I withdraw the researcher reserves the right to use my anonymous data after analysis of the data has begun.

Q3 Participant pin (a memorable name, date, code - that should not be your initials, birthday etc.)

_____

CONSENT Please state if you consent to take part in the study.

- ○ I consent (1)
- ○ I do not consent (2)

Skip To: End of Survey If Please state if you consent to take part in the study. = I do not consent

End of Block: Information Sheet

Appendix E – Study Advertisement

CALLING ALL LGBTQ+ PARTICIPANTS!

ALCOHOL AND SUBSTANCE USE WITHIN THE LGBTQ+ COMMUNITY

As part of my doctoral studies, I am researching the alcohol and substance use patterns of people who identify as LGBTQ+, as well as their life experiences.

CAN I TAKE PART?

You can take part in the study if you:

- Identify as LGBTQ+
- Are 18 or above
- Live in the UK

WHAT WILL HAPPEN?

- Anonymous survey
- Covering alcohol and substance use, plus life experiences
- 15-20 minutes

WHY SHOULD I TAKE PART?

- Contribute to understanding alcohol and substance use in the community!
- Help shape future LGBTQ+ support!
- Have your voice heard!

HOW CAN I TAKE PART?

- simply scan the QR code!

OR

- visit the link: https://uelpsych.eu.qualtrics.com/jfe/form/SV_6xLebFIbJGZbKYe

WHO AM I?

- Matthew Haywood, Trainee Clinical Psychologist at UEL
- Any questions? Email me at u2195517@uel.ac.uk

University of East London

This study has received ethical approval from UEL Psychology School of Ethics Committee.

Appendix F - Participant Debrief sheet

PARTICIPANT DEBRIEF SHEET

ALCOHOL AND SUBSTANCE USE WITHIN THE LGBTQ+ COMMUNITY

Thank you very much for participating in my research study on alcohol and substance use within the LGBTQ+ community. This document offers information that may be relevant in light of you having now taken part. If you have accessed the survey through Prolific, your completion code is **C13KBCMU**.

How will my data be managed?

The University of East London is the Data Controller for the personal information processed as part of this research project. The University will ensure that the personal data it processes is held securely and processed in accordance with the GDPR and the Data Protection Act 2018. More detailed information is available in the Participant Information Sheet, which you received when you agreed to take part in the research.

What will happen to the results of the research?

The research will be written up as a thesis and submitted for assessment. The thesis will be publicly available on UEL's online Repository. Findings will also be disseminated to a range of audiences (e.g., academics, clinicians, public, etc.) through journal articles, conference presentations, talks, magazine articles, and/or blogs. In all material produced, your identity will remain anonymous, in that, it will not be possible to identify you personally – as only general demographic information will be collected about you.

If you would like to receive a summary of the research findings once the study has been completed, you will need to request this by emailing the researcher: u2195517@uel.ac.uk.

Anonymised research data will be securely stored by Professor John Turner for a maximum of 3 years, following which all data will be deleted.

What if I have been adversely affected by taking part?

It is not anticipated that you will have been adversely affected by taking part in the research, and all reasonable steps have been taken to minimise distress or harm of any kind.

Nevertheless, it is possible that your participation – or its after-effects – may have been challenging, distressing or uncomfortable in some way. If you have been affected in any of those ways, you may find the following resources/services helpful in relation to obtaining information and support:

Organisations offering education and support on mental health related difficulties

- MIND – www.mind.org.uk
- Mental Health Foundation – www.mentalhealth.org.uk
- Samaritans – www.samaritans.org
- Switchboard LGBT+ - 0800 0119 100 or www.switchboard.lgbt

Organisations offering support for alcohol and substance difficulties

- Drinkline – 0300 123 1100 (weekdays 9am-8pm, weekends 11am-4pm)
- Antidote (LGBTQ+ alcohol support) – www.londonfriend.org.uk/antidote/
- Talk to FRANK – www.talktofrank.com

Who can I contact if I have any questions/concerns?

If you would like further information about my research or have any questions or concerns, please do not hesitate to contact me.

Matthew Haywood – u2195517@uel.ac.uk.

If you have any questions or concerns about how the research has been conducted, please contact my research supervisor Professor John Turner, School of Psychology, University of East London, Water Lane, London E15 4LZ,
Email: J.J.D.Turner@uel.ac.uk.

or

Chair of School Ethics Committee: Dr Trishna Patel, School of Psychology, University of East London, Water Lane, London E15 4LZ,
Email: t.patel@uel.ac.uk.

Thank you for taking part in my study.

Appendix G – Demographic & Health questions and general substance use questions

Start of Block: Block 1

DEM To start with, we have a few demographic questions and some questions about your use of different types of substances.

D1 Please state your age *(please use a 2 digit number only)*

D2 How would you describe your gender identity?

- ○ Male (1)
- ○ Female (2)
- ○ Transgender Male (3)
- ○ Transgender Female (4)
- ○ Non-binary/genderqueer (5)
- ○ Agender (6)
- ○ Other (7) _____

D3 How would you describe your sexual orientation?

- ○ Gay man (1)
- ○ Lesbian (2)
- ○ Bisexual man (3)
- ○ Bisexual woman (4)
- ○ Pansexual (5)
- ○ Asexual (6)
- ○ Heterosexual (7)
- ○ Other (8) _____

D4 How would you describe your ethnicity?

D5 How would you describe your relationship status?

- ○ Single (1)
- ○ Long-term relationship (2)
- ○ Married (3)
- ○ Engaged (4)
- ○ Divorced (5)
- ○ Separated (6)
- ○ Widowed (7)
- ○ Dating (8)
- ○ Civil partnership (9)

D6 Please tick if you have been diagnosed with, or experienced, in the last 12 months:

- ☐ Depression (1)
- ☐ Anxiety (2)
- ☐ Trauma/PTSD (3)
- ☐ OCD (4)
- ☐ Bipolar disorder (5)
- ☐ Psychosis (6)
- ☐ Personality disorder (7)
- ☐ Eating disorder (8)
- ☐ N/A (9)
- ☐ Other mental health difficulty (10)

_____

D7 Please state, if you feel comfortable, if you have any physical health or neurodevelopmental conditions:

_____

SUB1 Do you smoke tobacco?

- ○ No (1)
- ○ Yes (2)

Display This Question:

If Do you smoke tobacco? = Yes

SUB2 On average, how many cigarettes do you smoke a day?

_____

SUB3 Do you vape/use e-cigarettes?

- ○ No (1)
- ○ Yes (2)

Display This Question:

If Do you vape/use e-cigarettes? = Yes

SUB4 How many times per day do you vape?

_____

SUB5 Do you drink alcohol?

- ○ Yes (1)
- ○ No (2)

Display This Question:

If Do you drink alcohol? = Yes

SUB6 On average, how many units of alcohol do you drink per week?

_____

End of Block: Block 1

Appendix H – AUDIT questionnaire

AUDIT Intro Please answer the following questions about your alcohol drinking patterns.

AUDIT1 1) How often do you have a drink containing alcohol?

- ○ Never (1)
- ○ Monthly or less (2)
- ○ 2-4 times per month (3)
- ○ 2-3 times per week (4)
- ○ 4 or more times per week (5)

Skip To: AUDIT9 If 1) How often do you have a drink containing alcohol? = Never

---

AUDIT2 2) How many drinks containing alcohol do you have on a typical day that you are drinking?

- ○ 1 or 2 (1)
- ○ 3 or 4 (2)
- ○ 5 or 6 (3)
- ○ 7 to 9 (4)
- ○ 10 or more (5)

AUDIT3 3) How often do you have 5 or more drinks on one occasion?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT4 4) How often during the last year have you found that you were not able to stop drinking once you had started?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT5 5) How often during the last year have you failed to do what was normally expected of you because of drinking?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT6 6) How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT7 7) How often during the last year have you had a feeling of guilt or remorse after drinking?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT8 8) How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- ○ Never (1)
- ○ Less than monthly (2)
- ○ Monthly (3)
- ○ Weekly (4)
- ○ Daily or almost daily (5)

AUDIT9 9) Have you, or someone else, been injured as a result of your drinking?

- ○ No (1)
- ○ Yes, but not in the last year (2)
- ○ Yes, during the last year (3)

AUDIT10 10) Has a relative, a friend, a doctor, or another health worker been concerned about your drinking or suggested you cut down?

- ○ No (1)
- ○ Yes, but not in the last year (2)
- ○ Yes, during the last year (3)

End of Block: Block 2

Appendix I – Drug Questionnaire

Start of Block: Block 3

DRUGS Intro The next questions are about your use of recreational drugs.

DRUGS1 Please tick the box for any recreational drug that you have used:

	Never (1)	Less than once per year (2)	Yearly (3)	2-4 times per year (4)	Monthly (5)	2-3 times per month (6)	Weekly (7)	Daily or almost daily (8)
Cannabis (weed) (1)	○	○	○	○	○	○	○	○
Cocaine (2)	○	○	○	○	○	○	○	○
Amphetamines/Speed (3)	○	○	○	○	○	○	○	○
Poppers (4)	○	○	○	○	○	○	○	○
Ecstasy/MDMA (5)	○	○	○	○	○	○	○	○
Ketamine (6)	○	○	○	○	○	○	○	○
Heroin (7)	○	○	○	○	○	○	○	○
LSD (8)	○	○	○	○	○	○	○	○
Magic mushrooms (9)	○	○	○	○	○	○	○	○
Mephedrone (10)	○	○	○	○	○	○	○	○
Methamphetamines/crystal meth (11)	○	○	○	○	○	○	○	○
Volatile substances, e.g. glue (12)	○	○	○	○	○	○	○	○

Skip To: End of Block If Please tick the box for any recreational drug that you have used: [Never] (Count) = 12

DRUGS2 Have you used any recreational drugs in the last 12 months?

- ○ Yes (1)
- ○ No (2)

Skip To: End of Block If Have you used any recreational drugs in the last 12 months? = No

Appendix J – Severity of Dependence scale (SDS)

DRUGS3 Please think of the drug that you have used most frequently over the last 12 months and state the name of this drug:

_____

SDS1 1) Did you ever think your use of this drug was out of control?

- ○ Never/almost never (1)
- ○ Sometimes (2)
- ○ Often (3)
- ○ Always (4)

SDS2 2) Did the prospect of missing a shot/snort/smoke make you very anxious or worried?

- ○ Never/almost never (1)
- ○ Sometimes (2)
- ○ Often (3)
- ○ Always (4)

SDS3 3) How much did you worry about your use of the drug?

- ○ Not at all (1)
- ○ A little (2)
- ○ Often (3)
- ○ Always/nearly always (4)

SDS4 4) Did you wish you could stop?

- ○ Never/almost never (1)
- ○ Sometimes (2)
- ○ Often (3)
- ○ Always (4)

SDS5 5) How difficult would you find it to stop or go without the drug?

- ○ Not difficult at all (1)
- ○ Quite difficult (2)
- ○ Very difficult (3)
- ○ Impossible (4)

End of Block: Block 3

Appendix K – Retrospective Bullying Questionnaire (RBQ)

Start of Block: Block 4

RBQ Intro The following questions are about bullying. Bullying is intentional hurtful behavior. It can be physical or psychological. It is often repeated and characterized by an inequality of power so that it is difficult for the victim to defend him/her/their self.

RBQ1 Please think back to your school days. You may have seen some bullying at school, and you may have been involved in some way. (Tick the choice which best describes your own experiences at school)

- ○ I was not involved at all, and never saw it happen (1)
- ○ I was not involved at all, but I saw it happen sometimes (2)
- ○ I would sometimes join in bullying others (3)
- ○ I would sometimes get bullied by others (4)
- ○ At various times, I was both a bully and a victim (5)

RBQ2 Part 1. Primary School
Did you have a happy time at primary school?

- ○ Liked a lot (1)
- ○ Liked a bit (2)
- ○ Neutral (3)
- ○ Disliked (4)
- ○ Detested (5)

RBQ3 Did you have a happy time at home with your family while in primary school?

- ○ Liked a lot (1)
- ○ Liked a bit (2)
- ○ Neutral (3)
- ○ Disliked (4)
- ○ Detested (5)

RBQ4 Were you physically bullied at primary school?

- ☐ Yes, Hit/punched (1)
- ☐ Yes, Stolen from (2)
- ☐ No (3)

Skip To: RBQ7 If Were you physically bullied at primary school? = No

RBQ5 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ6 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Extremely serious (5)

RBQ7 Were you verbally bullied at primary school?

- ☐ Yes, called names (1)
- ☐ Yes, threatened (2)
- ☐ No (3)

Skip To: RBQ10 If Were you verbally bullied at primary school? = No

RBQ8 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ9 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Very serious (5)

RBQ10 Were you indirectly bullied at primary school?

- ☐ Yes, had lies told about me (1)
- ☐ Yes, excluded by others (2)
- ☐ No (3)

Skip To: RBQ13 If Were you indirectly bullied at primary school? = No

RBQ11 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ12 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Extremely serious (5)

RBQ13 How long did the bullying attacks usually last?

- ○ I wasn't bullied (1)
- ○ Just a few days (2)
- ○ Weeks (3)
- ○ Months (4)
- ○ A year or more (5)

RBQ14 Part 2. Secondary School
Did you have a happy time at secondary school?

- ○ Liked a lot (1)
- ○ Liked a bit (2)
- ○ Neutral (3)
- ○ Disliked (4)
- ○ Detested (5)

RBQ15 Did you have a happy time at home with your family while at secondary school?

- ○ Liked a lot (1)
- ○ Liked a bit (2)
- ○ Neutral (3)
- ○ Disliked (4)
- ○ Detested (5)

RBQ16 Were you physically bullied at secondary school?

- ☐ Yes, hit/punched (1)
- ☐ Yes, stolen from (2)
- ☐ No (3)

Skip To: RBQ19 If Were you physically bullied at secondary school? = No

RBQ17 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ18 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Very serious (5)

RBQ19 Were you verbally bullied at secondary school?

- ☐ Yes, called names (1)
- ☐ Yes, threatened (2)
- ☐ No (3)

Skip To: RBQ22 If Were you verbally bullied at secondary school? = No

RBQ20 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ21 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Very serious (5)

RBQ22 Were you indirectly bullied at secondary school?

- ☐ Yes, had lies told about me (1)
- ☐ Yes, excluded by others (2)
- ☐ No (3)

Skip To: RBQ25 If Were you indirectly bullied at secondary school? = No

RBQ23 How often did this happen?

- ○ Never (1)
- ○ Rarely (2)
- ○ Sometimes (3)
- ○ Frequently (4)
- ○ Constantly (5)

RBQ24 How serious did you consider these bullying attacks to be?

- ○ I wasn't bullied (1)
- ○ Not at all serious (2)
- ○ Only a bit serious (3)
- ○ Quite serious (4)
- ○ Very serious (5)

RBQ25 How long did the bullying attacks usually last?

- ○ I wasn't bullied (1)
- ○ Just a few days (2)
- ○ Weeks (3)
- ○ Months (4)
- ○ A year or more (5)

End of Block: Block 4

Appendix L – ACE-Q questionnaire

Start of Block: Block 5

ACE-Q Thank you for all your responses so far. The next questions are about your general childhood experiences. While you were growing up, during your first 18 years of life:

	Yes (1)	No (2)
Did a parent or other adult in the household often swear at you/insult you/put you down or humiliate you? OR act in a way that made you afraid that you might be physically hurt? (1)	○	○
Did a parent or other adult in the household often push/grab/slap or throw something at you? OR ever hit you so hard that you had marks or were injured? (2)	○	○
Did an adult or person at least 5 years older than you ever touch/fondle you or have you touch their body in a sexual way? OR try to or actually have oral, anal, or vaginal sex with you? (3)	○	○
Did you often feel that noone in your family loved you or thought you were important/special? OR your family didn't look out for each other, feel close to each other or support each other? (4)	○	○
Did you often feel that you didn't have enough to eat, had to wear dirty clothes, and had noone to protect you? OR your parents were too drunk or high to take care of you or take you to the doctor if you needed? (5)	○	○
Were your parents ever separated or divorced? (6)	○	○
Was your mother/stepmother often pushed/grabbed/slapped or had something thrown at her? OR sometimes or often kicked/bitten/hit with a fist/hit with something hard? OR ever repeatedly hit over for at least a few minutes or threatened with a gun or knife? (7)	○	○
Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? (8)	○	○
Was a household member depressed or mentally ill or did a household member attempt suicide? (9)	○	○

Did a household member go to prison? (10)	○	○

End of Block: Block 5

Appendix M – Severity Measure for Social Anxiety Disorder (Social Phobia) – Adult

Start of Block: Block 6

SA Intro The following questions ask about thoughts, feelings and behaviours that you may have had about *social situations.* Usual social situations include: public speaking, speaking in meetings, attending social events or parties, introducing yourselves to others, having conversations, giving and receiving compliments, making requests of others, and eating and writing in public.

During the past 7 days, have you:

SA1 Felt moments of sudden terror, fear or fright in social situations?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Half of the time (3)
- ○ Most of the time (4)
- ○ All of the time (5)

SA2 Felt anxious, worried or nervous about social situations?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Half of the time (3)
- ○ Most of the time (4)
- ○ All of the time (5)

SA3 Had thoughts of being rejected, humiliated, embarrassed, ridiculed or offending others?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Half of the time (3)
- ○ Most of the time (6)
- ○ All of the time (7)

SA4 Felt a racing heart, sweaty, trouble breathing, faint, or shaky in social situations?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Half of the time (3)
- ○ Most of the time (4)
- ○ All of the time (5)

SA5 Felt tense muscles, felt on edge or restless, or had trouble relaxing in social situations?

- ○ Never (1)
- ○ Occasionally (2)
- ○ Half of the time (3)
- ○ Most of the time (4)
- ○ All of the time (5)

SA6 Avoided, or did not approach/enter social situations?

- Never (1)
- Occasionally (2)
- Half of the time (3)
- Most of the time (4)
- All of the time (5)

SA7 Left social situations early or participated only minimally (e.g. said little, avoided eye contact)?

- Never (1)
- Occasionally (2)
- Half of the time (3)
- Most of the time (4)
- All of the time (5)

SA8 Spent a lot of time preparing what to say or how to act in social situations?

- Never (1)
- Occasionally (2)
- Half of the time (3)
- Most of the time (4)
- All of the time (5)

SA9 Distracted myself to avoid thinking about social situations?

- Never (1)
- Occasionally (2)
- Half of the time (3)
- Most of the time (4)
- All of the time (5)

SA10 Needed help to cope with social situations (e.g. alcohol or medications, superstitious objects)?

- Never (1)
- Occasionally (2)
- Half of the time (3)
- Most of the time (4)
- All of the time (5)

End of Block: Block 6

Appendix N - LGBT Minority Stress Measure

Start of Block: Block 7

LGBT1 You've nearly reached the end of the questionnaire now. Please read each statement carefully, and then indicate how frequently the situation described occurs in your life:

1) I avoid telling people about certain things in my life that might imply I am LGBTQ+. (1)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
2) I avoid talking about my romantic life because I do not want others to know I am LGBTQ+. (2)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
3) I do not bring a date to social events because I do not want others to know I am LGBTQ+. (3)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
4) I limit what I share on social media, or who can see it, because I do not want others to know I am LGBTQ+. (4)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
5) I am expected to educate non-LGBTQ+ people about LGBTQ+ issues. (5)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
6) People have re-labeled my identity, or referred to me by a name/pronouns that are different than how I identify myself. (6)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)

7) When in an organization or activity that is sorted by gender, I feel out of place because I am LGBTQ+. (7)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
8) I have been accused of being too defensive or politically correct when talking about LGBTQ+ issues with someone who is not LGBTQ+. (8)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
9) When I meet someone new, I worry that they secretly do not like me because I am LGBTQ+. (9)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
10) I brace myself to be treated disrespectfully because I am LGBTQ+. (10)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
11) I expect that others will not accept me because I am LGBTQ+. (11)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
12) I worry about what will happen if people find out I am LGBTQ+. (12)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)

13) I have been excluded from an organization (e.g. a religious group, sports team, etc.) because I am LGBTQ+. (13)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
14) I have been pressured to receive unnecessary services or been denied service, by a healthcare professional because I am LGBTQ+. (14)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
15) I have received poor service at a business because I am LGBTQ+. (15)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
16) I have been treated unfairly by supervisors or teachers because I am LGBTQ+. (16)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
17) I have been verbally harassed or called names because I am LGBTQ+. (17)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
18) Others have threatened to harm me because I am LGBTQ+. (18)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)
19) I have been bullied by others because I am LGBTQ+. (19)	○ Never happens (1)	○ Happens a little bit (2)	○ Happens sometimes (3)	○ Happens a lot (4)	○ Happens all of the time (5)

LGBT2 Please read each statement carefully, and then indicate how much you agree or disagree with the statement:

20) If I was offered the chance to be someone who is not LGBTQ+, I would accept the opportunity. (1)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)
21) I wish I wasn't LGBTQ+. (2)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)
22) I envy people who are not LGBTQ+. (3)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)
23) I feel that I could find information and pamphlets on LGBTQ+ issues. (4)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)
24) I feel that I could find professional services for LGBTQ+ issues if I needed to. (5)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)
25) I feel that I could find a public space that is supportive of LGBTQ+ activities. (6)	○ Strongly disagree (1)	○ Disagree (2)	○ Neither agree nor disagree (3)	○ Agree (4)	○ Strongly agree (5)

Page Break

Appendix O – Breakdown of lifetime and frequent drug use rates by sexual orientation and gender identity groups

Lifetime Use	*Gay*	*Lesbian*	*Bisexual Man*	*Bisexual Woman*	*Pansexual*	*Asexual*	*Other*
Cannabis	55.7	59.3	51.4	69.3	69.0	38.5	73.0
Cocaine	42.9	24.1	25.7	35.6	28.6	0.0	27.0
Amphetamines	18.6	11.1	22.9	12.9	21.4	0.0	21.6
Poppers	57.1	18.5	40.0	14.9	21.4	7.7	37.8
Ecstasy/MDMA	35.7	11.1	28.6	27.7	28.6	7.7	29.7
Ketamine	18.6	11.1	25.7	17.8	16.7	7.7	27.0
Heroin	0.0	0.0	0.0	1.0	2.4	0.0	0.0
LSD	5.7	11.1	20.0	15.8	16.7	0.0	18.9
Magic mushrooms	15.7	18.5	22.9	13.9	26.2	7.7	32.4
Mephedrone	5.7	3.7	8.6	0.0	7.1	0.0	8.1

Crystal Meth	10.0	0.0	2.9	1.0	7.1	0.0	0.0
Volatile substances	2.9	5.6	2.9	0.0	7.1	0.0	0.0
Frequent Use							
Cannabis	20.0	16.7	25.7	18.8	16.7	7.7	32.4
Cocaine	4.3	0.0	5.7	7.9	7.1	0.0	0.0
Amphetamines	0.0	0.0	5.7	2.0	4.8	0.0	2.7
Poppers	15.7	3.7	11.4	2.0	4.8	7.7	2.7
Ecstasy/MDMA	1.4	0.0	8.6	2.0	9.5	7.7	0.0
Ketamine	1.4	1.9	2.9	4.0	4.8	7.7	2.7
Heroin	0.0	0.0	0.0	1.0	0.0	0.0	0.0
LSD	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Magic mushrooms	0.0	0.0	2.9	0.0	9.5	0.0	0.0
Mephedrone	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crystal Meth	2.9	0.0	2.9	0.0	0.0	0.0	0.0
Volatile substances	0.0	0.0	2.9	0.0	0.0	0.0	0.0

Lifetime Use	*Male*	*Female*	*Trans Male*	*Trans Female*	*Non-Binary/Other*
Cannabis	56.1	62.7	70.0	83.3	68.5
Cocaine	38.3	29.0	10.0	25.0	29.6
Amphetamines	22.4	11.8	20.0	16.7	16.7
Poppers	51.4	14.8	30.0	16.7	33.3
Ecstasy/MDMA	35.6	21.9	0.0	25.0	27.8
Ketamine	22.4	13.6	10.0	16.7	25.9
Heroin	0.0	1.2	0.0	0.0	0.0
LSD	12.2	11.2	10.0	25.0	20.4
Magic mushrooms	19.6	15.4	10.0	33.3	27.8
Mephedrone	7.5	2.4	0.0	0.0	5.6
Crystal Meth	9.4	1.2	0.0	0.0	0.0
Volatile substances	3.7	1.8	0.0	0.0	3.7
Frequent Use					
Cannabis	23.4	13.6	40.0	33.3	27.8
Cocaine	5.6	3.6	0.0	8.3	5.6
Amphetamines	1.9	0.6	0.0	8.3	5.6
Poppers	15.9	1.2	10.0	16.7	3.7
Ecstasy/MDMA	6.5	1.2	0.0	0.0	3.7
Ketamine	3.7	1.2	0.0	16.7	5.6
Heroin	0.0	0.6	0.0	0.0	0.0
LSD	0.0	0.6	0.0	0.0	0.0
Magic mushrooms	2.8	0.0	0.0	8.3	1.9
Mephedrone	0.0	0.0	0.0	0.0	0.0
Crystal Meth	2.8	0.0	0.0	0.0	0.0
Volatile substances	0.9	0.0	0.0	0.0	0.0

Appendix P – Spearman's Rank-Order Correlation coefficients

Variable	M.H.	AUDIT	DR.	ACE-Q	C.B.	S.A.	M.S. total	I.C.	E.D.	R.A.	D.E.	V.E.	I.S.	C.C.
M.H.	1	.053	.149*	.387**	.300**	.505**	.266**	.046	.239**	.214**	.206**	.242**	.077	-.126*
AUDIT		1	.382**	.044	.000	.114*	.069	-.009	.052	.041	.038	.150*	.082	-.060
DR.			1	.240**	.078	.055	.110*	-.067	.128*	.075	.069	.163*	.018	.080
ACE-Q				1	.272**	.320**	.218**	.036	.243**	.182**	.248**	.230**	.019	-.037
C.B.					1	.312**	.262**	.052	.166*	.227**	.226**	.302**	-.025	-.049

S.A.	1	.402**	.153*	.383**	.334**	.248**	.296**	.135*	-.233**
Total M.S.		1	.626**	.686**	.830**	.587**	.606**	.499**	-.339**
I.C.			1	.191*	.497**	.168*	.117*	.338**	-.123*
E.D.				1	.553**	.453**	.522**	.082	-.149*
R.A.					1	.479**	.529**	.314**	-.097
D.E.						1	.595**	.184**	-.156*
V.E.							1	.139*	-.088
I.S.								1	-.175*
C.C.									1

Note: *=p < .05, ** = p < .001, M.H. = mental health score, DR. = drug score, C.B. = childhood bullying score, M.S. score = Minority stress total score, I.C. = identity concealment, E.D. = everyday discrimination, R.A. = rejection anticipation, D.E. = discrimination events, V.E. = victimization events, I.S. = internalized stigma, C.C. = community connectedness.