


# Biopsychosocial Predictors of Risky Sexual Behaviours Among the Gay Men in the UK
Volume 1 of 2

Dr. Mohammadrasool Yadegarfard

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# Biopsychosocial Predictors of Risky Sexual Behaviours Among the Gay Men in the UK

Volume 1 of 2

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in fulfilment of the requirements for the degree of
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School of Psychology
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University of Bedfordshire
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# Author's Declaration

"I, Mohammadrasool Yadegarfard declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

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- Where I have drawn on or cited the published work of others, this is always clearly attributed;
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
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# Abstract

**Introduction:** The prevalence of human immunodeficiency viruses and sexual transmitted infections is higher among gay men than in any other demographic group. In many cases, the spread of sexual transmitted infections is only due to risky sexual behaviours. Risky sexual behaviour is an ongoing issue that has no absolute answer, the results of studies conducted on risky sexual behaviours just ten years ago might not be in line with the results of studies carried out today. In an attempt to support this, the current researcher tried to answer one main question: why do gay individuals subsequently choose to engage in risky sexual behaviours?

**Methodology:** The researcher conducted three studies in two stages using a multiphase mixed methods research design, consisting of a mixed method in the first stage and a quantitative study in the second stage. In the three studies, a total of 803 gay and heterosexual men participated. The study includes five comparison studies between gay and heterosexual men in two stages.

**Results:** ***Study one (qualitative):*** A qualitative study was conducted in parallel with the quantitative study in stage one .The key themes that emerged as contributing factors to risky sexual behaviours and unsafe sex were: Beliefs and attitude towards RSBs and gay men; Identity and internalized homophobia; childhood experiences, age, substance use; attachment; well-being. From analysing the data, it appeared that all these areas of an individuals' life influence their sexual behaviours. However, most of the factors seemed to be linked and overlapped on each other and identifying one factor without considering other factors was not completely possible. ***Study two (quantitative):*** It was found that the studied criteria predicted RSB only for the heterosexual respondents and did not predict RSB among the gay participants. Nevertheless, among the gay respondents, sexual hyperactivation was found to be predicted by

substance use and loneliness. It is concluded that gay males who experience subjective loneliness, smoke and sniff substances for recreational purposes report higher levels of sexual hyperactivation. However, higher sexual hyperactivation was not found to be a predictor of sexual relationships or RSB per se. ***Study three (quantitative):*** Based on the findings from stage one, the third study was conducted. The third study was included three hypotheses that were partly supported by the results of hypothesis testing. The results showed that there are more similarities between gay and heterosexual men than differences and, the differences that do exist are in individuals' life experiences, which are the results of society's different responses to and treatment of gay and heterosexual men.

**Discussion:** The researcher believes that this current study is unique in its field and the outcomes contributed to the existing knowledge and understanding of RSBs among men. The multiphase mixed method design used in this study gave the researcher a comprehensive view of the subject. It allowed the researcher to measure a number of variables. The TPB was found to be a helpful model for understanding RSBs. The implications of the findings are discussed in the last chapter.

# Acknowledgment

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Mohammadrasool Yadegarfard

# List of Publications

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Yadegarfard, M., Ertubey, C., & Kaviani, H. (in press). Biopsychosocial Predictors of Risky Sexual Behaviour (RSB): The Influence of Drug Use, Attachment Patterns, Well-being, Loneliness, Social Support, and Sexual Hyperactivation on RSB among Gay Males in the UK. *Health, Risk & Society* .

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# Glossary

**Abductive analysis:** is a method of logical inference which begins with observing the subject matter and then analysing those observations with the aim of determining the most relevant and simplified explanation for what was observed.

**Acquired immune deficiency syndrome (AIDS):** is a disease in which Human immunodeficiency viruses infect the immune system and prevent it from protecting the body against life-threatening infections and diseases.

**Analysis of variance:** is the application of a group of statistical models and their associated estimation procedures to identify differences among group means within a sample.

**Biopsychosocial:** refers to an interdisciplinary model which explores how the elements of biology, psychology, and socio-environmental interact. The most common use of this model is in issues related to health, disease and human development.

**British Association for Counselling and Psychotherapy:** is the official name of Britain's professional association for members of the various counselling professions.

**British Association for Sexual Health and HIV:** is the name of the body established in 2003 when the Medical Society for the Study of Venereal Diseases (MSSVD, established in 1922) merged with the Association for Genitourinary Medicine (AGUM, established in 1992)

**Chemsex:** is a term used to describe sexual activity which takes place under the influence of recreational and particularly stimulant drugs, such as methamphetamine or mephedrone. Chemsex often involves multiple individuals engaging in such sexual activity together.

**Child sexual abuse:** is when a child tricked or forced to engage in sexual activities. With young children, they may not realise that they are being abused or that it is wrong because they have been tricked by the perpetrator.

**Child physical abuse:** is when a child is deliberately caused physical distress, pain or injury through abusive practices such as being slapped, punched, kicked, hit with objects, shaken, thrown, bitten, scratched, throttled, burned or poisoned.

**Concurrent triangulation designed:** is a mixed method design that involves both qualitative and quantitative data being collected in the same phase of a study, although the different types of data are analysed separately before being compared and/or combined. This could include, for example, gathering the results from a survey and answers from interviews to be compared. This method is primarily used when one of the methods does not provide a sufficiently detailed answer to the study question and so the second method is applied to confirm, cross-validate or corroborate the findings.

**Distal factors in PTB model:** are the background factors that indicate a risk, such as age and personality type.

**Drive Reduction Theory:** was developed as the first theory for motivation in 1943 by a psychologist named Clark Hull who proposed that that human body is constantly attempting to maintain itself in a balanced state, known as homeostasis. Hull believed that behaviour played a key role in an individual achieving this state of equilibrium. The theory was particularly popular during the 1940s and the 1950s as a means of explaining not only motivation but also learning and behaviour.

**Exponential non-discriminative snowball sampling:** is a method of identifying a sample population for a study through a series of referrals. After an initial subject is recruited, he/she then provides invites other subjects who in turn invite more subjects to join the sample in a "snowball" effect.

**Gay man:** is a male who is attracted sexually, romantically and/or emotionally to other men rather than to women.

**Gender and Sexual diversity therapist (Pink therapist):** are counsellors, psychotherapists or clinical or counselling psychologists who have completed a minimum 2-year diploma-level qualification that enables them to work with clients who identify as Gender and Sexual diversity individuals. In addition to receiving accreditation to engage in this field of work, pink therapists are also members of a recognised professional therapy organisation which has its own code of ethics and complaints procedure.

**Health and Care Professions Council:** is a legal watchdog for health, social work and psychological professions in the United Kingdom.

**Heterosexism:** is the belief that heterosexuality is the only acceptable sexual orientation and discriminating against homosexuals and those of other sexual identities.

**Heterosexual man:** is a male who is attracted sexually, romantically and/or emotionally to women.

**Hierarchical Regression Model**: is a means for determining whether variables under study explain a statistically significant amount of variance in the Dependent Variable under study after all other variables have been taken into account. Rather than being a statistical method, the hierarchical regression model is a framework for model comparison.

**Highly Active Antiretroviral Therapy:** is a form of treatment that prevents the HIV virus from duplicating itself with the aim of reducing the damage it causes to the immune system slowing down the development of AIDS.

**Human immunodeficiency viruses:** are two species of the Lentivirus that can lead to the HIV infection and eventually the acquired immunodeficiency syndrome (AIDS).

**Interview schedule:** is a list of questions used in interviews to draw out information or data to be used for research purposes.

**LGBT**: is an acronym for lesbian, gay, bisexual, and transgender

**LGBT Links Luton:** is a charitable organisation that provides support and advice to the LGBT community, their friends and families in Luton and the surrounding areas.

**Mediation testing:** involves analysing the way in which one variable influences another variable through a mediator variable with the aim of understanding the relationship.

**Multivariate analysis of variance:** is a method applied when there are at least two dependent variables to conduct a comparison of multivariate sample means. In most cases, significance tests involving individual dependent variables are then carried out separately as well.

**NVivo:** is a qualitative data analysis computer software package designed specifically for use by researchers conducting a qualitative study that involves data which are very heavily text-based and/or multimedia.

**Poppers:** is the common street name for alkyl nitrites, which are a group of chemical substances that are inhaled to make anal sex easier by increasing blood flow and relaxing sphincter muscles.

**Post-exposure prophylaxis (PEP):** is the taking of antiretroviral medicines following possible or the risk of exposure to HIV as a means of preventing infection. PEP treatment must commence within 72 hours of the possible exposure to HIV and is only recommended as an emergency measure.

**Pre-exposure prophylaxis:** is medication-based preventive treatment administered to people who have a risk of being exposed to a disease-causing agent, typically a virus. Pre-exposure prophylaxis is most commonly used to refer to the use of antiviral drugs to prevent HIV/AIDS.

**Proximal factors:** are factors that can predict behaviour, either directly or almost directly. Proximal factors include attitude towards behaviour, subjective norms and perceived behavioural control.

**Public Health England:** is an executive agency of the United Kingdom's Department of Health and Social Care. The organisation has the operational autonomy to provide government,

local government, the NHS, Parliament, the private sector and the general public with evidence-based professional, scientific expertise and support.

**Recreational drugs:** describes any drugs taken without prescription for recreational rather than medical purposes. Including both legal and illegal drugs, recreational drugs can be classified into four main groups: analgesics, depressants, stimulants, and hallucinogens.

**Semantic approach:** is a method of conducting thematic analysis by which coding and theme development within the explicit or superficial meanings of the data do not go any deeper than what was said or written by a participant.

**Semi-structured interview:** is a means of collecting qualitative textual data that is particularly focused and which is primarily used in the social sciences.

**Sexual Hyperactivation:** involves expressions of sexual desire that are both intense and apprehensive and which may be the result of the individual's self-doubts about his or her own attractiveness and sexual skills.

**Sexual transmitted diseases:** is the name given to any disease passed from one person to another through unprotected sexual contact or interaction.

**Sexual transmitted infection:** is the name given to any infection passed from one person to another through unprotected sexual contact or interaction.

**Stonewall**: is a charitable organisation established in 1989 and a member of the Equality and Diversity Forum, which is a network of organisations committed to addressing issues of discrimination related to age, disability, gender, race, religion and belief, and sexual orientation.

**Thematic analysis:** is a commonly-used method of analysis in qualitative research that is used to pinpoint, examine, and record patterns of meaning within the collected data.

**Theoretical framework**: is a structure that is designed to hold or support a theory within a research study.

**Treatment as Prevention:** is the name given to methods and programmes used to decrease the risk of HIV transmission through the use of antiretroviral treatment.

**World Health Organization**: is a United Nations agency established in 1948, based in Geneva, Switzerland, and concerned with international public health.

# List of Abbreviations

| Abbreviations | Explanations |
|---|---|
| **ACE** | Adverse Childhood Experiences |
| **AIDS** | Acquired immune deficiency syndrome |
| **ANOVA** | Analysis of variance |
| **ATB** | Attitude towards behaviour |
| **BACP** | British Association for Counselling and Psychotherapy |
| **BASHH** | British Association for Sexual Health and HIV |
| **BPS** | British Psychological Society |
| **G.C.S.E** | The General Certificate of Secondary Education |
| **CPA** | child physical abuse |
| **CSA** | child sexual abuse |
| **DV** | Dependant variable |
| **EMCDDA** | European Monitoring Centre for Drug and Drug Addiction |
| **ESE** | Early Sexual Experience |
| **GLM** | Generalized linear model |
| **HAART** | Highly Active Antiretroviral Therapy |
| **HBM** | Health belief model |
| **HCPC** | Health and Care Professions Council |
| **HIV** | human immunodeficiency viruses |
| **IH** | Internalised Homophobia |
| **IV** | Independent variable |
| **LGB** | Lesbian Gay and Bisexual |

| | |
|---|---|
| **LGBT** | Lesbian Gay Bisexual and Transgender |
| **MANOVA** | Multivariate analysis of variance |
| **MSM** | Men who have sex with men |
| **NHS** | National Health System |
| **NYU** | New York University |
| **PBC** | Perceived Behavioural control |
| **PMT** | Protection motivation theory |
| **PEP** | post-exposure prophylaxis |
| **PreP** | pre-exposure prophylaxis |
| **RSB** | Risky sexual behaviour |
| **SELSA** | Social and Emotional Loneliness Scale for Adults |
| **SCT** | Social Cognitive Theory |
| **SN** | Subjective Norm |
| **SPSS** | Statistical Package for Social Sciences |
| **SSA** | Social Support Appraisal |
| **SSFS** | Sexual System Functioning Scale |
| **STD** | sexual transmitted diseases |
| **STI** | sexual transmitted infection |
| **TasP** | Treatment as Prevention |
| **TPB** | Theory of Planned Behaviour |
| **TRA** | Theory of reasoned action |
| **UCLA** | University of California, Los Angeles |
| **UoB** | University of Bedfordshire |
| **WHO** | World health organization |

# 1. GENERAL INTRODUCTION & STUDY FRAMEWORK

The prevalence of human immunodeficiency viruses (HIV) and sexual transmitted diseases (STDs) is higher among gay men than in any other demographic group (Public Health England, 2016, Public Health England, 2017). In the UK 54% of new HIV cases were diagnosed in gay men and men who have sex with men (Public Health England, 2017). In many cases, the spread of HIV and other STIs is only due to risky sexual behaviours (RSBs), especially unprotected intercourse (e.g. Penner et al., 2019; Dimbuene et al., 2014; NHS 2019). Therefore, the first assumption of this thesis is that changes in sexual behaviours can stop the spread of or prevent the exposure to STIs, such as HIV. In other words, to prevent spread of STIs or reduce exposure to them, individuals need to change their sexual behaviours. So, the question that needs to be addressed is why gay individuals subsequently choose to engage in sexual behaviours that expose them to STIs. This is the type of question that is typically addressed in health psychology. Whereas traditional models, such as the medical model, regard illness as originating from factors such as bacteria, which are beyond the control of the individual, health psychology focuses on the roles of external forces in illness (Marks et al., 2015). Since the mental and physical aspects of illness are considered to be two entirely separate entities, the traditional responsibility for treatment falls exclusively on healthcare professionals (Morrison & Bennett, 2016). Under health psychology, however, mental processes are considered to play a significant role in an individual's health or illness. Indeed, health psychology views the individual as being an active participant rather than a passive recipient in all stages of illness, from the cause to the progression and ultimate outcome (Abraham et al., 2016; Marks et al., 2015).

The second assumption is that there are multiple factors that influence individuals' sexual behaviours, or in this context, risky sexual behaviours. Under the biopsychosocial model, the many factors that contribute to an individual's behaviour are classified into three main categories: biological, psychological and social. For this reason, the biopsychosocial model is regarded by the researcher as the most relevant model to be used in this research for investigating the factors that contribute to risky sexual behaviours among gay men. Research among the general population has shown the influence of biological, psychological, and social factors on risky sexual behaviours (Figure 1). **Biological factors** include early puberty (Baams, 2015); genetics (Zietsch et al , 2010); hyper-sexuality (Kastner & Sellbom, 2012; Winder, 2016); depression (Holmes et al., 2005); substance issues such as the use of alcohol (Standerwick et al, 2007; Connor, et al, 2015) and drugs (Tucker, et al., 2012; Castelo-Branco, et al, 2014; Ritchwood, et al, 2016); age (Sales et al, 2011; Yadegarfard et al, 2013; Kastbom et al, 2015; Janulis et al., 2018); and sexual development (Baams, 2015). **Psychological factors** include personality (Moor et al, 2016; Zietsch et al, 2010); attachment patterns (Arndt, 2007; Dumas-Koylass, 2013); social anxiety (Leary & Dobbins, 1983); stress (Folkman et al, 1992; Jackson, 2014); acculturative stress (Jardin et al., 2016); personal beliefs such as "using a condom is unnatural" or "using a condom decreases pleasure (Flood, 2003; Mizuno, et al., 2007); knowledge about sexual health (Vivancos et al, 2013; Bron et al, 2015); loneliness (Yadegarfard et al 2013; Lansford, et al, 2014); religiosity (Simons et al, 2009; Haglund & Fehring, 2010); well-being (Sanders, 2008); attitudes towards numbers of sexual partners (Yadegarfard et al 2013; Abousselam et al, 2015); and history of sexual abuse in childhood (Holmes et al, 2005). **Social factors** include social isolation (Taylor-Seehafer & Rew, 2000; Yadegarfard et al 2014); peer pressure (Keller et al, 1996; Crockett et al, 2006); family rejection (Yadegarfard et al 2014; Klein & Golub, 2016); communication skills (Arndt, 2007; Edgar et

al, 1992); internet and media such as pornography (Wright & Randall, 2012; Sinkovic et al, 2013; Braithwaite, et al, 2015); and poverty (Madise et al, 2007; Dinkelman et al, 2008).

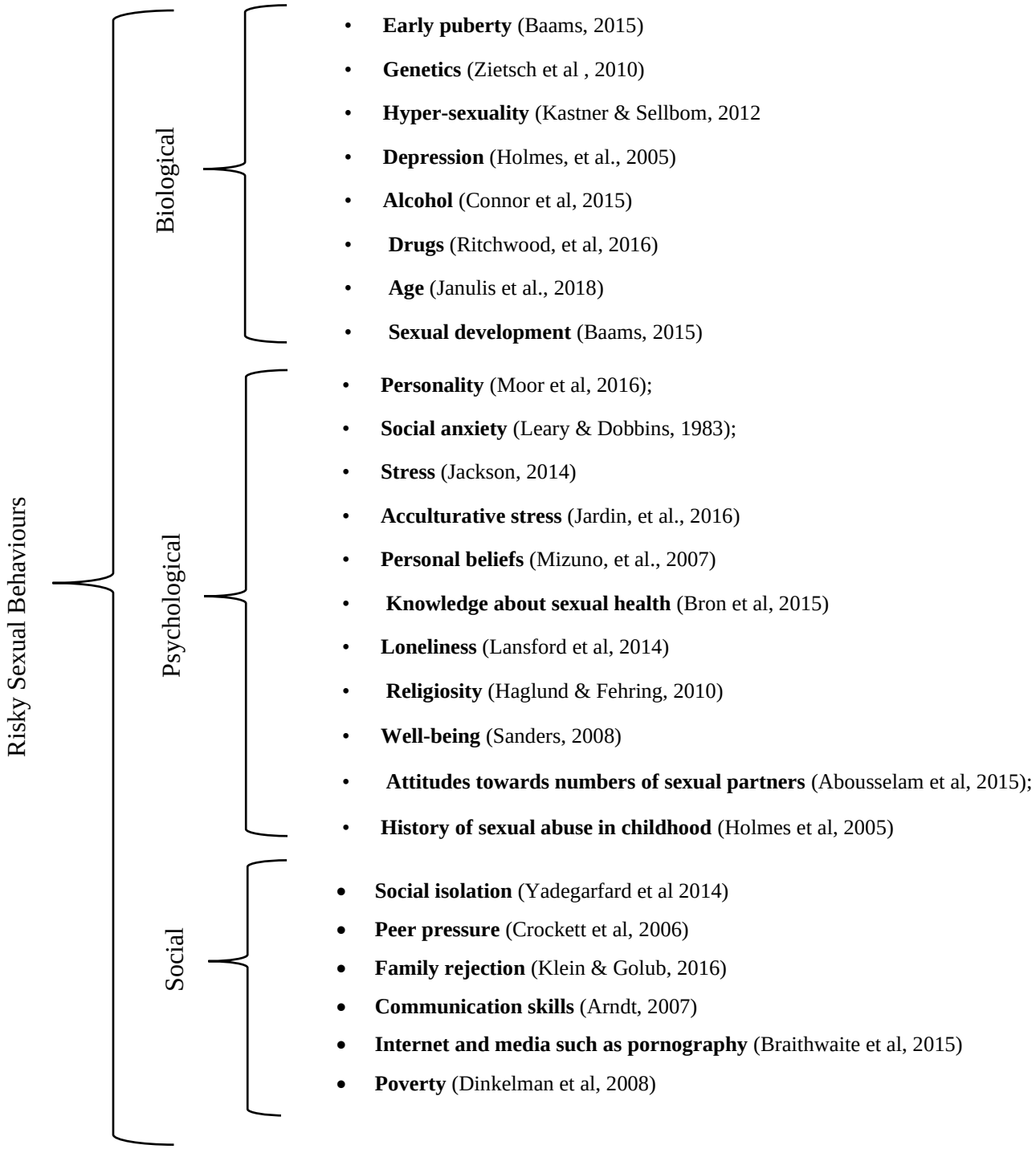


*Figure 1:* Summary of literature on the influence of biopsychosocial factors on risky sexual behaviours

## 1.2. Objective

Positive sexual experiences are associated with general well-being, and thereby contribute to public health more generally (Whipple, 2007). However, sex also entails risk of sexually transmitted infection (STIs), and sexual coercion. The consequences of risky sexual behaviours to both the individual and society can be staggering. One of the main consequences of engaging in risky sexual behaviours is STIs, which include HIV (Everett, 2014). Therefore emotional, medical, and financial costs of these risks highlight the importance of studying sexual behaviours (De Graaf et al., 2011) to promote and increase the sexual health of gay individuals. It was recommended by the researcher in the latest "New STI figures among Gay men and MSM" report published by Public Health England in 2016 that "the new statistics show STI rates are still very high among gay men" (Public Health England, 2016).The report then continued by stating that "we need to do more to raise awareness about STIs and how they can be prevented" (Public Health England, 2016). With this in mind, this current study applies a biopsychosocial model to understand the factors which contribute to risky sexual behaviours and adopts the theory of planned behaviour in order to understand the relationships between the variables.

## 1.3. Sexual behaviours

Sexual behaviour is a major focus of both our private thoughts and our public discussions. Also, sexual feelings are a crucial part of our development and daily functioning. Sexual activity is tied to the satisfaction of our basic needs, and sexual performance is linked to our self-esteem.

Many researchers agree that the desire of humans to mate is innate, and that related sexual behaviours, such as motives, cognitions, and emotions, are defined by differences in

how each individual's sexual behavioural system functions (Birnbaum et al., 2014). In the same way that virtually all living creatures have a natural and often uncontrollable drive to engage in some form of sexual interaction as a means of reproducing, the sexual behavioural system is an evolutionary mainstay of the human development plan. However, it is equally clear that the sexual behavioural system, in humans at least, can be significantly influenced by the attachment system, which is the first social behavioural system experienced by humans (Shaver & Hazan, 1988). The co-operation of these two systems remains vital throughout an individual's life during the many nuances and actions of that individual's romantic relationships (Hazan & Zeifman, 1994). Despite their regular interactions and co-operation, the attachment system and sexual behaviour are governed by separate motivational systems that can be traced back to early human evolution (Fisher et al., 2002). In other words, the processes that control attachment and sexual behaviour are functionally distinct from each other and they are activated by different physiological processes.

From a purely evolutionary perspective, the sole purpose of the sexual behavioural system is reproduction (Wellings, Mitchell, & Collumbien , 2012; Buss & Kenrick, 1998). In simple terms, when an individual feels sexually attracted to another individual, the sexual behavioural system is automatically activated with the aim of gaining sexual access to the desirable partner. The first step of this process would typically involve approaching the desirable partner, followed by the employment of various strategies to win the approval of the partner, and ultimately engage in sexual intercourse (Fisher et al., 2002). In modern humans, winning the approval of the partner is a complex balancing act that involves expressing a sexual interest while remaining sensitive to the signals and responses being given off by the partner (Wellings, Mitchell, & Collumbien , 2012). In order for the sexual system to function effectively and achieve the desired evolutionary effect of reproduction, the separate systems of the two partners must co-ordinate in terms of their mutual desires, which is often achieved

gradually through the development of emotional and physical intimacy (Rubin & Campbell, 2012). When the sexual behaviours of two individuals become coordinated, the two individuals often experience positive feelings such as being desired and the mutual sharing of affection, which have a positive effect on the well-being of both partners (Frost, McClelland, & Dettmann, 2017; Levin, 2007). When the sexual system functions effectively, the quality of the related romantic relationship positively influences emotional and even physical well-being (Frost, McClelland, & Dettmann, 2017; Sprecher & Cate, 2004). The reasons for such negative sexual responses can often be attributed to a history of sexual experiences that may in themselves be unpleasant or which may result in undesired outcomes, such as sexually transmitted diseases (Everett, 2014).

### 1.3.1. Risky sexual behaviours (RSBs)

Understanding and defining risky sexual behaviour is not straight forward. Several definitions and aspects of healthy and unhealthy sexual behaviour can be found in recent literature sources. Some researchers, from a strictly medical point see safe sexual behaviour only in terms of prevention of STIs and unintended pregnancy (e.g. Kane & Wellings, 1999; Krivohlavy, 2003). However, the World Health Organization (WHO) defines sexual health as: *… a state of physical, emotional, mental and social well-being. In relation to sexuality it is not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence* (WHO, 2002, p. 5). In accordance with the WHO definition, the Public Health England (2918) in the guideline for sexual and reproductive health and HIV stated that “poor sexual health” results in psychological consequences such as sexual coercion and abuse, poor educational, social and

economic opportunities, HIV, genital cancers, hepatitis, chronic liver disease and liver cancer and recurrent genital herpes.

Risky sexual behaviours are defined as having unprotected intercourse (oral and/or anal), sex with multiple partners, and sex with high risk partners (i.e., intravenous drug users) (Slaymaker, Walker, Zaba , & Collumbien, 2018). Engaging in one or more of these activities can place a person at increased risk of contracting a sexually transmitted disease, such as HIV/AIDS. Additionally, risk behaviour is defined as when persons who knowingly have an STD participate in unprotected sex, which ultimately endangers both the individual and their partner (Vesely et al., 2004; Harris et al., 2006). Conversely, the definition of safe sex is when two individuals engage in a sexual activity after taking precautions to protect themselves against sexually transmitted diseases, such as HIV/AIDS. Regular test and early diagnosis can also prevent individuals from catching or spreading the virus unknowingly (Public Health England, 2017). According to British Association for Sexual Health and HIV (BASHH) (2019) "Safer sex means having sex with less risk of transmission (catching or passing on) a sexually transmitted infection (STI)". Another consideration of safe sex is that it involves sexual practice that adheres to the guidelines on minimising the potential for the transmission of sexual infections (Dekeke &Sandy, 2014). In another study, Crossley (2004) offered a 'subjective meaning' to the definitions of safe and unsafe sex. Crossley also applied the same subjective meaning to the ways in which gay males perceived and accounted for their own unsafe sexual practices as well as those of other gay men. Crossley's (2004) study identified three key factors contributing to unsafe sex in the gay male population: (1) the protease inhibitor, whereby AIDS was downgraded from a fatal condition to a chronic yet manageable disease; (2) young men's 'complacency', whereby younger gay males were found to be less likely to concern themselves with the fears of the older gay male population having not experienced the AIDS epidemic themselves, and therefore being more likely to engage in unsafe and risky sexual behaviours;

and (3) unsafe sex as an expression of love and intimacy, whereby gay males in long-term and stable relationships were found to be more likely to practice unsafe sex. For this third point, the willingness to engage in unsafe sexual practices is regarded as an expression of love and commitment as part of the transition from a casual to a more serious relationship (Smith, Flowers, & Osbourn, 1997; Adam, Sears, & Schellenberg, 2000; Corbett et al., 2009). It is also said for some gay men, unsafe sexual practice are regarded not as a spur-of-the-moment decision but as a conscious choice made as an act of 'self-expression', 'empowerment' and 'liberation-inspired' (Ashford, 2015), regardless of whether the practitioner is HIV positive or HIV negative. In such cases, the gay male engaging in unprotected anal intercourse takes pride in his conscious and premeditated decision. In such an environment, the efforts of health promoters and educators to continue formulating a sense of 'crisis' among the gay male population and promoting 100% condom use as the only rational option despite the decline in STIs and AIDS-related deaths, is viewed by many within the gay community as unrealistic, oppressive, and even harmful. It also has been argued by some researchers that the very act of telling gay males to practice safe sex might push many of them to rebel and do the exact opposite (e.g. Hughes, 2007; Rofes, 1998). This poses the question of whether urging gay males to use a condom every time they have sex actually increases their conscious determination to practice unprotected sex.

As there are various definitions of risky sexual behaviours, researchers have used different measurements in their studies accordingly (e.g. Wong, et al., 2017; Baams, et al., 2014; Ellis, et al., 2012; Greene, et al., 2000; Millstein & Moscicki, 1995). For the purpose of this thesis the RSB measurements used by this researcher will be introduced in each stage. In the primary stage only condom use inconsistency as the most common RSB was measured; however, in stage two, number of sexual partners was also measured along with condom use inconsistency as RSBs.

### 1.4. Gay Men in the UK

Although being mindful of the general studies can help us to increase our knowledge about the variables of this present study, in order for us to fully understand the rise in risky sexual behaviours and the normative belief among the gay population, it is essential to understand the context of the variables being researched in this study. It is only when we look at the variables of this study in a social and cultural context that they become meaningful. In other words, if we are to gain a complete understanding of the gay population's increasing risky sexual behaviours, it is necessary for us first to understand the culture of the gay community. It is also worth noting that previous researchers have commented on the need to incorporate the history of oppression against homosexuality when studying risky sexual behaviours among the gay men (e.g. Crossley, 2004; Damas et al., 2012).

In the UK, there is no accurate estimation of the gay population; however, in 2010 a survey suggested that almost three-quarters of a million UK adults say they are gay, lesbian or bisexual - equivalent to 1.5% of the population (BBC News UK, 2010). According to the Office for National Statistics (ONS), 480,000 (1%) of the UK population consider themselves gay or lesbian, while 245,000 (0.5% of the population) are bisexual (BBC News UK, 2010). Public Health England (2014) reports that "gay, bisexual and other men who have sex with men (MSM) constitute an estimated 5.5% of the UK male population". Other researchers (Wellings et al., 1994) emphasise the difficulty of providing an accurate estimation of the number of homosexuals and same gender sexual activities in Britain due to the answers provided by individuals being dependent on the context in which the question is posed and the purposes for which the data are collected.

It should be pointed out that the focus of the current thesis is on gay men in the UK, not MSM. Men who have sex with men (MSM) do not all fit neatly into clearly-defined and easily-

identifiable sub-populations (Loue, 2008). First of all, it should be noted that the terms ‘MSM’, ‘gays’ and ‘homosexuals’ are not different descriptions of the same group. While there may be some obvious similarities, these groups each have their own specific behaviours and social identities. While MSM refers to men who engage in sexual activities with other men, it does not define how they identify sexually. Being gay, on the other hand, is more of a cultural identity, and homosexuals are individuals who are romantically/sexually attracted to members of the same sex but do not necessarily engage in intimate relationships (Loue, 2008).. A man who knows he is not heterosexual may classify himself as MSM, gay or homosexual, or even all three. If he is still unsure of his true sexual orientation and cultural identity, he may relate more to one of the newer terms, such as ‘bi-curious’. Rather than a cultural identity, MSM is a behavioural category that was first coined by epidemiologists who were looking to enhance the study of disease risk by applying better analytical concepts than identity-based categories such as straight, bisexual and gay (Young & Meyer, 2005). Although the medical model approach has been utilised in previous studies, the researcher intends to focus the current research on the biopsychosocial factors that influence the behaviours of gay men. In particular, the researcher believes that one of the most important psychological aspects in this respect is identity. The way in which individuals understand and define themselves creates their identity, which influences their social experiences, actions and behaviours. As such, identity-based categories are more appropriate and relevant to the context of the present research. Historically, men who identified themselves as gay have suffered from social exclusion, discrimination and prejudice, all of which has influenced their lives, and ultimately, their behaviour, including their sexual behaviour. As the same is not necessarily true for all MSM, these two categories may be subjected to highly different social and psychological experiences. Official government reports, such as the latest report by PHE on the prevalence of HIV, do not use the term ‘MSM’ and limit their sexual identity categorisations to gay, bisexual, and heterosexual, while even

some sub-cultures do not use or understand the terms ‘MSM’ (e.g. Dowsett, Grierson and McNally, 2003 ). As a result, it did not seem logical to include MSM as a categorisation in the present research. It should also be noted that during the collection of the primary data for this research, 9 of the 400 participants were removed from the sample because they identified themselves as bisexual and the size of this bisexual sample was considered too small for meaningful study. Instead, only the larger groups of gay and heterosexual men were studied in this research.

### 1.4.1. Gay culture

Matsumoto and Juang (2017) observed that a group of people living in an isolated location under certain environmental conditions will adapt by developing survival techniques which contribute to the formulation of a new society. This new society will comprise its own beliefs and code of conduct as it evolves to form a unique culture. One example of this is the gay community, which has established its own behaviours and beliefs, which can be either overt or covert but which define them as a separate group from the wider society around them. History shows us that LGBT communities in the UK have suffered from systematic suppression and discrimination for decades and, in order for them to survive, like any other minorities and isolated groups, they have formed a unique culture which has included developing not particularly healthy coping strategies such as drinking excessively, taking drugs, developing eating disorders, and practicing unprotected sex (Davies & Neal, 2003). These are coping mechanisms that help LGBT communities overcome the fear and stigma they face because of their sexuality (Damas, et al., 2012). Despite the increasing openness and acceptance of this gay culture, it still retains its own distinctive peculiarities that differentiate it from the mainstream culture. In the following section, we will look at Matsumoto and Juang’s (2017)

definition of culture to two main concepts of "environmental condition" and "specific adaptation and techniques" in order to understand British gay culture and their survival mechanisms.

#### *1.4.1.1. Environmental condition and specific adaptation and techniques of the gay community*

Culture is always changing and evolving; it is an ongoing process (Matsumoto & Juang, 2017). From a quick look at LGBT history in the UK, we find that throughout most of British history and right up until recent times, homosexuality was condemned as a sin as well as a criminal offence. In such an environment of persecution, the gay community developed their own survival techniques. Gay individuals found ways of communicating with each other and over time they created their own underground gay community. In the 18th century, Molly House became Britain's first underground gay coffee house, while the first openly gay pub opened in London in 1912. Not supported by any mainstream sector of British society, the early gay community created its own way of living (Norton, 1992). It is hardly surprising in such an oppressive and secretive environment of institutionalised discrimination that the members of Britain's early gay community experienced emotions of fear, anger, rejection, and frustration, leading them to develop a variety of coping strategies. Originally developed as survival techniques, over time these coping strategies became part of as what we know now as "gay culture". It has been posited that all cultures, such as the gay culture in this case, play a role in influencing the fundamental emotional systems of its members as a means of regulating their feelings and emotions to facilitate social compliance (Matsumoto & Juang, 2017).

The issue of Britain's gay population becomes more complex when we consider that certain individuals can find themselves changing their social identity several times a day as they move from one social community to the next through the course of their daily activities

(also see Davies, 2003). Fulfilling multiple social roles, enacting various social norms, and guided by diverse expectations, they alternate regularly between one social group and another. In such an environment of constant flux and change, anxiety can easily develop, especially for those whose roles are not well coordinated and whose relationships are not systematically organised (Thoits, 1983). As already mentioned, Britain's gay culture developed organically from a series of coping mechanism, and it seems that one of its more effective benefits has been in providing the coordination and organisation that enable its members to maintain a sense of order in their lives as they navigate from one social situation to the next and minimize anxiety as a result. The gay culture achieves this by creating an information sharing system that its members can access via their specific gay communities. Shared not only among gay communities but also across generations, this information sharing system empowers members of Britain's gay culture to overcome both physical and psychological hurdles by giving them a sense of belonging, the freedom to pursue happiness and well-being, and genuine meaning in their lives. Nevertheless, it has not all been positive for the gay community in Britain. Homosexuals were institutionally persecuted and subject to oppression on a societal, cultural and religious level until as recently as the late 1960s, when the Gay Liberation movement started to gain prominence. The change in society's attitudes towards sexuality began to shift following the Stonewall riots in the United States during June 1969, which brought about a 'material and symbolic catalyst' for a more radicalised gay and lesbian movement to grow in urban areas (Goves, 2000; Davies & Neal, 2003). Spanning almost two decades from the end of the 1960s until the middle of the 1980s, it was to be a period of increasing freedom and tolerance of sexuality that was described by novelist Andrew Holleran as the 'age of promiscuity' (Holleran. 1997). The promiscuity of the period manifest itself in many ways, including gay men being liberated of the restrictions to sexual pleasure they had previously suffered, as well as gaining the benefits, both psychological and social, of being free to enjoy

multiple forms of sexual pleasure with multiple, often unknown, partners (Crossley, 2004). For some, this promiscuous lifestyle was not just about liberation but a way of overcoming centuries of oppression. Over time, this promiscuity has become adopted by some gay communities as accepted and even normal behaviour, as part of what is now called the "gay culture". The downside of the age of promiscuity, and ultimately the reason for its demise, was the rise and spread of HIV/AIDS. During this period, the promiscuous aspect of the gay culture started to be criticised by an increasing number of the gay community who saw it as a major problem that not only affected the gay community but also brought about a sense of estrangement amongst gay men (Crossley, 2004). In this depressing period of gay history, many gay men, whether HIV positive, HIV negative, or unaware of antibody status, began to experience feelings of 'confusion, dysfunction, impotency, and deep ambivalence about intimacy and sexuality between men' (Goves, 2000; Rofes, 1998). It was not until almost a decade later that the mood of distrust, fear and anger within the gay population changed, following a breakthrough in AIDS treatment. In 1996, a new type of treatment known as Highly Active Antiretroviral Therapy (HAART) was shown to be extremely effective in slowing down the onset of AIDS in people with HIV (NHS, 2011; Cooper & Merigan, 1996). The treatment was made available for free on the NHS in the UK. Now in the 21st century, the HIV crisis may have passed, but still the gay community experiences a higher prevalence of STDs and HIV compared to the heterosexual population. Some professionals refer to this as "the backlash" that has taken the gay community from oppression to liberation, then to the AIDS crisis and oppression again, and finally back to liberation (Crossley, 2004).

In addition, during the last decade. some subcultures, such as 'bug chasing', have come to the attention of both journalists and researchers (Hill, 2003; Hatfield, 2004; Moskowitz & Roloff, 2006). Bug chasers are healthy, HIV-negative gay males who actively seek to become infected with HIV. It is an underground subculture that utilises internet chat rooms to

communicate and interact (Freeman; Hill). While any researcher studying another culture or subculture is prone to the influence of ethnocentrism to some degree, applying one's own cultural norms to the practices and members of other cultures leads to bias and inaccuracies (Calloway-Thomas, Cooper, & Blake, 1999). In the case of bug chasing however, the fact that this subculture promotes the spread of HIV and likely affects those beyond its own small group, therefore, cultural relativism does not apply. The self-destructive act of bug chasing does not appear to be driven by a genuine desire to become HIV-positive, nor do bug chasers seem to believe that HIV is a survivable condition. Similarly, there is no research evidence to suggest that it is a negative reaction to safe sex campaigns or way of taking control of how and when they contract HIV. Instead, bug chasing has been described by Moskowitz and Roloff, (2007) as a symptom of sexual addiction which pushes the individual to expose himself to increasingly riskier sexual behaviours.

It is also important that we stress the use of the plural "communities" when talking about the gay population. Modern Britain has gone from a time when there was no openly gay community to the present in which there are a number of gay communities and sub-communities that include a black gay community, Asian gay community, Jewish gay community, and a Muslim gay community (Weeks, 2016, Brauner 2000). The modern gay population in the UK is not homogeneous and divided by ethnicity, race, religion and nationality, but the members of each community are united through their sexual orientation and have created their own unique sub-culture (Weeks, 2016).

***LGBT and Sex education in the UK.*** For 28 years, from 1988 to 2003, LGBT individuals in the UK were denied the opportunity of being educated on safe sexual practices because of the implementation of section 28 by the Conservative government as part of the Local Government Act of 1988. Under section 28, the local authorities responsible for administering state schools were not allowed to deliberately 'promote homosexuality', 'publish

material with the intention of promoting homosexuality' or 'promote the teaching in any maintained school of the acceptability of homosexuality as a pretended family relationship'.

As an act of legislation, section 28 caused a great deal of controversy. The negativity against LGBT individuals arising from its use of the judgmental description of 'homosexuality as a pretended family relationship' was further extended with references to 'corruption' and 'contagion' by those who supported it. While section 28 prevented the UK's LGBT community from receiving advice on safe sexual practices and generally had a negative effect, it did, however, bring the issue of LGBT rights to the national agenda in the UK.

In terms of its enforcement, section 28 applied only to the local authorities which administered state schools, none of which were ever found to be in breach of its directives while it was in force. It had no jurisdiction over individual schools, school governors or teachers, many of whom were confused about exactly what the act covered due to the lack of government guidelines and definitions. In their 2001 study of secondary school teachers in England and Wales, Warwick, Aggleton, and Douglas found that 44% of teachers were of the opinion that Section 28 had made it difficult for the needs of gay and lesbian pupils to be adequately met. The confusion about what exactly section 28 covered and prevented was expressed by many teachers in follow-up interviews. In particular, the teachers seemed unclear on the difference between 'promoting homosexuality' and merely providing information or support to their students, which inevitably resulted in avoiding the topics altogether, leaving gay and lesbian students with no access to sex and relationship education (SRE). Studies by Epstein, O'Flynn, and Telford (2003) and Buston and Hart (2001) both included responses from teachers who had simply avoided LGBT issues in their sex education classes out of a fear of being accused of flouting section 28 and 'promoting homosexuality'. Another negative result of section 28 was an increase in homophobic bullying. Many secondary schools in England and Wales have a problem with homophobic bullying (Ellis & High, 2004; Epstein, Hewitt,

Leonard, Mauthner, & Watkins, 2003; Hunt & Jensen, 2007; Rivers, 2001; Rivers, & Duncan, 2001; Warwick et al., 2001; Warwick, & Douglas, 2001), often with serious consequences (Warwick, Chase, & Aggleton, 2004). The confusion and fear that section 28 caused among teachers prevented them from getting involved and created an environment in which homophobic bullying could grow relatively unchallenged (Warwick et al., 2001).

### 1.5. Prevalence of HIV/AIDS

The actual prevalence of HIV/AIDS among LGBT individuals is debatable. However, it was reported by Public Health England that "men who have sex with men (MSM) remain the group most affected by HIV with 47 per 1,000 living with the infection. This is equivalent to an estimated 41,000 (37,300-46,000) MSM living with HIV in 2012, of whom 7,300 (18%; 3,700-12,300) were unaware of their infection (18%)" (Public Health England, 2013, p. 4). In 2016 Public Health England reported that: *"approximately 1 in 11 MSM (men who have sex with men) aged 15 to 44 years in London are living with HIV (diagnosed and undiagnosed). The number of MSM living with diagnosed HIV in London has increased by 68% over the past 10 years to 17,572 in 2014, partly a result of much improved life expectancy due to effective treatment. Over 63% of new diagnoses of HIV in London are among MSM. There is evidence of sustained transmission of HIV among MSM in the UK. The numbers of new HIV diagnoses in London are increasing, HIV diagnosed in 2014 representing a 31% rise since 2005" (Public Health England 2016, p.5).*

Nevertheless, data published by Public Health England in 2019 reveal a significant decrease in the number of people in the UK diagnosed with HIV since 2012. The most significant reduction has been recorded by gay and bisexual men (GBM), with rates of new infections plummeting by 71% (PHE, 2020). This represents a significant turnaround as the

rise in testing rates as the start of the decade revealed an upward trend in new HIV diagnoses among the GBM population (Figure 2). The number of new HIV diagnoses among GBM rose from 2,709 in 2009 to 3,165 just five years later before falling dramatically to 1,908 in 2018, representing an overall fall of 30% across the decade and a 40% decrease between 2014 and 2018 (Figure 2). Even more remarkable is the fact that 23% (445) of the 1,908 new HIV diagnoses among GBM in 2018 had already been diagnosed outside the UK.

The significant progress that was made in HIV treatment during the 1990s and 2000s had a positive impact on the lives of those living with the disease, not only by improving their quality of life but also by prolonging their lives considerably. In fact, these benefits were so profound that they completely changed the attitudes of gay and bisexual men towards HIV (Public Health England, 2014). Rather than viewing HIV as a death sentence, many within the gay community began to see HIV as a chronic but manageable disease, much as they would also view diabetes, for example (Public Health England, 2014). This is a question that many health promoter and researcher asked themselves that whether the cure for STIs makes individuals more likely to commit to sexually risky behaviours this question resonates with the another argument about the use of contraception among women which oppositions believe that using contraception removes the fear of unwanted pregnancy and so endorses risky sexual behaviours (Wellings, Mitchell, & Collumbien , 2012).

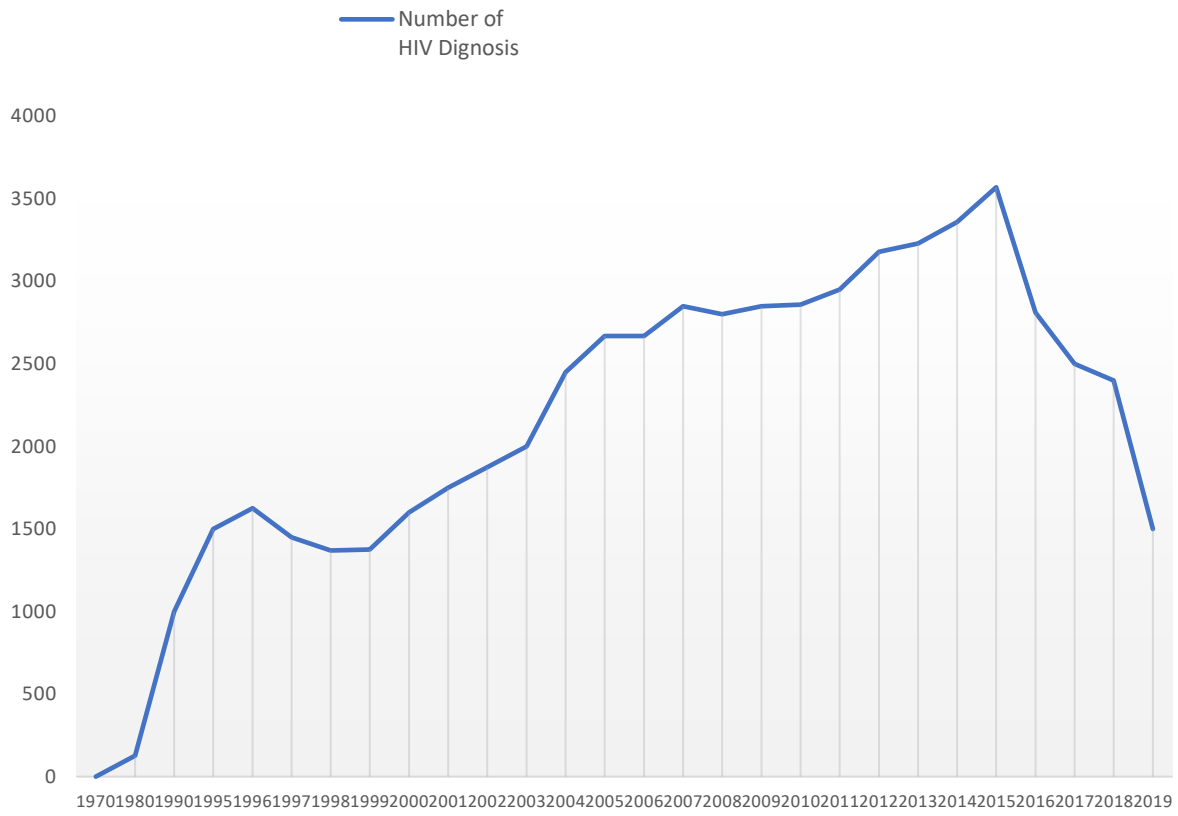


*Figure 2: Number of HIV diagnoses among men who have sex with men (Public Health England)*

As reported by Public Health England and illustrated in Figure 2, the decrease in HIV diagnoses among gay and bisexual men between 2015 and 2017 is the most significant sign of progress in the UK HIV epidemic since effective treatment became widely available two decades ago. This first major decline in HIV diagnoses among gay and bisexual men since the beginning of the HIV epidemic in the 1980s represents proof that the measures taken to reduce HIV in the UK are on the right path (Public Health England, 2017). One of the reasons for this reduction in HIV diagnoses has been attributed to increasing condom use among gay males and a significant increase in the number of males being tested regularly for HIV, especially

those in the highest risk categories (Public Health England, 2017). In addition, there has been a recent diversification of the methods used to prevent the spread of STIs, particularly HIV, medication-based methods becoming more prevalent over the last twenty years (Andrew, et al., 2016). Among the medications used, post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PreP). In its PROUD study, the UK Medical Research Council compared HIV infection rates among gay men on PrEP and non-users. The results showed an 86% fall in new HIV infections among the gay men who used PrEP. There is a strong belief within the sexual health sector that PrEP can be close to 100% effective in preventing HIV infection if it is taken correctly. Research is currently being carried out to determine the demand for PrEP and its effectiveness in reducing HIV infections in England. In October 2017, NHS England began enrolling people onto its PrEP Impact trial, which has since been increased from its initial target of 10,000 to 26,000 places. There are plans to make PrEP available on the NHS in England in 2020. Even though the license of PrEP includes a recommendation that people taking PrEP should also use condoms during sexual activity, one of the main attractions for taking PrEP is its effectiveness in preventing HIV infection (although not other STIs) when a condom is not used. It remains to be seen if one of the downsides of PrEP's success in preventing HIV infection is an increase in other STIs resulting from reduced condom use (Janson et al., 2020). One recent study in Germany revealed an unusually high number of often asymptomatic cases of STIs among MSM, especially those who were using PrEP (Jansen et al., 2020). Since the use of PrEP has the potential to cause more risky sexual behaviour in the form of reduced condom use and subsequently increase instances of STIs among MSM, there is an urgent need to collect systematic data on the prevalence of STIs among MSM so that their STI risk can be calculated, reliable data can be used to define appropriate testing algorithms and determine whether MSM should use PrEP or not, and effective preventive measures can be planned for MSM who use PrEP as well as for all MSM who are at risk of STI. As it is estimated that many

PrEP users will choose not to use condoms, it is essential that psychological support such as counselling and STI screening be made readily available as part of a free and low-threshold programme. The counselling provided to PrEP users should also cover the use of party drugs (Chemsex) (Janson et al., 2020).

## 1.6. Study framework

### 1.6.1. Finding a Relevant Model

Scientists have spent decades attempting to understand, predict and explain human behaviour; however, providing a suitable explanation for all the complexities of human behaviour has proven no easy matter (Ajzen, 1991). For twenty-five years, the "social cognitive approach" has been the favoured method applied in social psychology to explain and predict human behaviour (Conner & Norman, 2015). This method applies the basic assumption that the best way to understand behaviour is to think of it as a function of people's perceptions of reality, as opposed to a function of an objective description of the environment. In other words, any individual is able to make sense of himself/herself and therefore self-regulating by revising their behaviours (Conner & Norman, 2015). Gradually, many different social cognition models were formulated with the aim of understanding and predicting human behaviour in specific behavioural fields (Erdley, et al., 2010). Risky sexual behaviour as a behaviour pattern has been examined from various perspectives and theories, including behavioural models, such as the information-motivation-behavioural model (Ndebele et al., 2012); health belief model (Li, et al., 2016; Mir heydari et al., 2014; Downing-Matibag et al., 2009); theory planned behaviour (Asare, 2015;Turchik, 2012; Hutchinson et al., 2007); reasoned action (Dunn, 2005; Johnston, 2000) and stage of change (Grossman, et al., 2008; Coury-Doiniger et al. 1999). The researcher painstakingly has researched the existing health models in order to find and adopt the most

appropriate theoretical model for the thesis. The following is an overview and evaluation of the most common models used in the study of risky sexual behaviour.

#### *1.6.1.1. Social Cognitive Theory (SCT) (Bandura, 1986)*

Social cognitive theory (SCT) provides an explanation for psychosocial functioning with regard to triadic reciprocal causation (Bandura, 1986). SCT involves internal personal factors (cognitive, affective, and biological events), behavioural patterns, and environmental influences all functioning as interacting determinants creating bi-directional influences on each other (Bandura, 2001). In terms of how an individual's behavioural choices are made, the process begins with his or her thought processes, beliefs, attitudes, intentions and demographic factors such as genetics, experiences, gender, and age. Conversely, the behavioural skill development process, with all its successes and failures, subsequently impacts the individual's beliefs, attitudes, and intentions, leading to possible changes. Aspects of the individual's environment, including both social and physical factors, also have an effect on his or her behaviour (Bandura, 1986). The way in which individuals interpret their environment influences how they then interact with it; how they behave within their environment then has an effect on the environment. The environment and the behaviour of those within it are, therefore, reciprocally linked; in the interactions of everyday life, behaviour is affected by environmental conditions, which leads to the environment being affected by the behaviour it plays a part in causing action /outcome (Bandura, 1986). The reciprocal causation of SCT makes it is possible to alter behaviour by directing therapeutic interventions at either the individual, the behaviour or the environment. Correcting faulty thought patterns, increasing the behavioural skills required to deal with situational demands, or altering negative social conditions are all acceptable strategies for improving psychosocial functioning (Michie, et al., 2019). In this way, modifying and developing behaviour is achieved through adapting the regular interactions between the individual, the behaviour, and the environment. However, each

of the three factor's degree of influence on behavioural change differs according to the activity, the individual, and the circumstance.

***Appraisal****:* Although researchers have chosen the SCT model in a variety of sexual health studies (e.g. McPhee, et al., 2012; Reback, et al., 2015) and it has had some degree of success in identifying behaviour development and behaviour change it is not without its drawbacks. The complex and dynamic nature of SCT make it a difficult model to test because of the way in which it incorporates reciprocal relationships at different stages (Hayden, 2014). Its implication that a change in one construct causes a resultant change in every other construct is particularly problematic in this respect (Conner & Norman, 2015). Biological factors are also overlooked entirely in SCT model (Hayden, 2014), and as the researcher following biopsychosocial model and take into consideration all three factors (biological, psychological, and social), a model such as SCT that does not consider biological factors therefore will not be a suitable model for this research.

#### *1.6.1.2. Health belief model (HBM) (Rosenstock, 1990)*

First developed in the 1950s by a team of social psychologists, the health belief model (HBM) was first utilised as a systematic way of determining health preventive behaviour such as why people chose not to have their chests x-rayed (Conner & Norman, 2015). It has since served as a theoretical framework for predicting and changing health-related behaviour. Rosenstock identified a connection between HBM and the expectancy-value approach, which uses two elements to predict behaviour: 1) the subjective value an individual places on a specific outcome, and 2) the individual's estimate that behaviour is associated with a specific outcome (Rosenstock, 1990**)**. This perspective of the HBM suggests that an individual's avoidance behaviour towards an undesirable health outcome is formulated as a result of his or her subjective thought (value) with regard to the outcome and his or her belief that a particular

action would prevent that outcome (expectancy). The HBM proposes that an individual's health behaviour is influenced by four main perceptions: (1) perceived susceptibility (how great the individual believes the risk is if he or she does nothing to prevent it); (2) the perceived severity of the health threat; (3) the perceived benefit of the recommended activity; and (4) the perceived barriers to the activity (how much the individual believes the benefits of the activity will exceed the associated costs) (Michie, et al., 2019). The likelihood of the individual taking health action can also be associated to specific triggers, which may be internal, such as a particular pain or symptom, or external, such as a health documentary on television.

***Appraisal :*** Researchers have used the HBM model in a variety of sexual health studies, and a positive, albeit somewhat weak, connection has been made between sexual health knowledge or beliefs and sexual health behaviour in some studies (e.g. Li, et al., 2016; Mir heydari et al., 2014; Downing-Matibag et al., 2009, Adih & Alexander,1999; Steers, et al., 1996; Rosenstock et al., 1994), although other studies found no relationship between sexual health beliefs and positive sexual health behaviour (e.g. Winfield & Whaley, 2002 ; Volk & Koopman, 2001; Quine et al., 1998). Due to inconsistently producing significant results, the HBM has received criticism for overlooking the importance of social influences on risky sexual behaviours (Li, et al., 2016) and for assuming that the knowledge individuals had on sexual health risks and preventive measures was accurate (Conner & Norman, 2015), therefore the researcher did not find HBM as a suitable model for the current research.

#### *1.6.1.3. Protection motivation theory (PMT) (Rogers, 1975)*

The protection motivation theory (PMT) bears certain similarities to the HBM but differs in its inclusion of the concept of self-efficacy (Conner & Norman, 2015). The PMT is useful in identifying exercise behaviour determinants, particularly in the context of preventive health measures and has supported health decision-making and action (Michie, et al., 2019).

The model proposes that the intention to engage in a preventive behaviour, such as exercising, is determined by four key factors which fall into two cognitive processes: (1) threat appraisal (an assessment of the risk posed by an unhealthy behaviour) and (2) coping appraisal (an assessment of the factors affecting the likelihood of taking preventive action) Conner & Norman, 2015). The threat appraisal process involves evaluating the factors that increase (intrinsic and extrinsic rewards) or decrease (perceived severity of the threat and the individual's vulnerability to it) the likelihood of the health threat. For example, in appraising the threat posed by risky sexual behaviours, an individual may decide that the effects of that risky behaviour (i.e., unprotected anal sex) are a genuine likelihood and that the results are likely to be severe (i.e., HIV/AIDS). Based on such an appraisal, the individual is more likely to change this sexual behaviour (Michie, et al., 2019). In terms of the coping appraisal process, response efficacy (the confidence placed by the individual in a preventive behaviour, i.e., using condom) and self-efficacy (the confidence placed by the individual in his or her ability to fulfil the preventive behaviour) are the determining factors. In other words, a higher coping appraisal for both response efficacy and self-efficacy increase the likelihood that the individual will adapt his or her health-related behaviour (Abraham, et al., 2016).

***Appraisal*** *:* Although the PMT has received less criticism than the HBM, it is worth pointing out that many of the criticisms of the HBM are also applicable to the PMT (Conner & Norman, 2015; Michie, et al., 2019). Such criticisms include the general assumption of the PMT that everyone processes information in a rational manner, although irrationality is addressed to some extent in its fear component. PMT also fails to consider habitual behaviours (e.g. brushing teeth), social factors (e.g. the behaviours of others) or environmental factors (e.g., opportunities to exercise). Rhodes et al. (2004) also aimed criticism at the PMT for failing to address the ways in which attitudes towards health-related behaviour can change (a problem that also relates to the HBM (Abraham, et al., 2016).

#### *1.6.1.4. Theory of reasoned action (TRA) (Ajzen and Fishbein, 1980*)

TRA was first developed by Ajzen and Fishbein in 1975 (Michie, et al., 2019) and then further refined by the same pair of researchers five years later, the theory of reasoned action (TRA) is one of the most influential social-cognitive models. Originally formulated in response to the weak attitude-behaviour relationship, the TRA assumes that people usually consider the implications of their actions before deciding whether or not to perform a specific behaviour. Building on this assumption that behaviour is volitional, the TRA proposes that an individual's intention to perform a behaviour is the strongest antecedent of that behaviour. Looking further back along the causal chain, these intentions are guided by attitudes toward carrying out the behaviour as well as subjective norms about behavioural performance. An attitude in this context is the positive, negative or neutral result of an individual's appraisal of performing the particular behaviour (Conner & Norman, 2015). Fundamental to the construct of attitude here is the individual's behavioural beliefs regarding the expected outcome of performing the behaviour based on the individual's appraisal of that outcome in terms of its advantages and disadvantages. The definition of subjective norm is an individual's perception that he or she should perform a behaviour as it is what those whose opinion the individual sees as important would expect (Ajzen and Fishbein, 1980). Subjective norm is influenced by the individual's normative beliefs with regard to the probability of receiving approval or disapproval from those who the individual sees as important, not only for his or her behaviour but also for his or her motivation to comply with those expectations. The degree to which these normative beliefs combine and multiply indicate the extent to which individuals want to fit in and be accepted by those whom they consider to be important, which in turn determines the level of their subjective norms. Consequently, the more favourably an individual values a behaviour and the greater the level of support he or she expect to receive for performing that behaviour, the stronger his or her intentions will be to perform that behaviour (Ajzen and Fishbein, 1980). In

the TRA, intention is a mediator explaining the effects of attitudes and subjective norms on behaviour.

The theory and application of TRA have been verified in studies on a variety of health-related behaviours, including eating behaviour condom use, physical exercise, and physical activity (Conner & Norman, 2015). In the field of social psychology, the TRA has confirmed intention to be an important determinant of social behaviour (Sheppard et al., 1988). The meta-analysis conducted by Sheppard et al. (1988) tested the effectiveness of the TRA in predicting intentions and behaviours.

***Appraisal :*** Even though the TRA has been shown to be effective in various studies, it faces serious limitations (see Trafimow, 2009; Conner & Norman, 2015; Sheeran and Orbell, 1998 ) discussing all the limitations is beyond the scope of the current thesis; however, one of the main limitation that is relevant to this thesis is that the model only considers two factors as prediction for behavioural intention, and does not consider any background factors and individuals past experiences, so like the previous models, TRA also has a closed structure that does not allow the researcher to expand the model and add any other relevant variable. Moreover, as the theory of planned behaviour is the extended version of TRA, it is only rational to use the latest version which in the following section will be explained.

#### *1.6.1.5. Theory of planned behaviour (TPB) (Ajzen, 1985)*

Ajzen's (1985) theory of planned behaviour (TPB) was formulated and developed as an extension of Fishbein and Ajzen's (1975) theory of reasoned action (TRA) (Conner & Norman, 2015). Among the most popular psychosocial theoretical models, due in part to the extensive empirical support it offers in a wide variety of behaviours, the TPB considers human behaviour to be voluntary and controlled by behavioural intention (Hardeman et al, 2001). According to the TPB, this behavioural intention is constructed and has three immediate

determinants (or proximal factors): an individual's attitude to the particular behaviour, meaning how positively or negatively the behaviour is evaluated; their subjective norm (SN) in terms of the particular behaviour, meaning how much support to act out the behaviour is perceived as being received from people of importance to the individual; and the individual's perceived behavioural control (PBC) over the behaviour, meaning how easy or difficult performing the behaviour is perceived to be (Abraham, et al., 2016; Michie, et al., 2019). Having been endorsed by numerous studies and its high predictive capacity confirmed by meta-analytic reviews, the TPB has become among the most popular psychosocial models for analysing the relationship between attitudes and sexual behaviour (e.g. Asare, 2015; Turchik, 2012; Martín, Martínez, & Rojas, 201; Hutchinson et al., 2007; Albarracin et al., 2001).

TPB reconsolidate other health models in the area of sexual health and it has been shown to be more effective than the TRA at explaining and predicting sexual behaviour in a variety of studies such as condom use (e.g. Armitage and Conner, 2001; Hagger et al., 2002).

***Appraisal****:* In terms of its limitations, the main argument aimed against the TPB is the limited number of variables used for predicting intention (Armitage & Connor, 2002). Formative research has clearly shown that the TPB does not account for all of the determinants of intentions and behaviour (Armitage and Conner, 2001; Hagger et al., 2002). Consequently, a number of extensions and modifications have been proposed by various researchers (e.g., Conner and Armitage, 1998). Ajzen (1991), who originally developed the TPB, is supportive of modification, particularly the addition of new predictors that are able to add a greater degree of variance to the intentions or behaviour. Accordingly, a number of new constructs have been added into the TPB's framework. In addition, in their review of the TPB's effectiveness at explaining engagement in certain health-related behaviours, Conner and Sparks (2015) were primarily concerned with how the construct of perceived behavioural control performed in predicting intention and behaviour. They found that the construct of perceived behavioural

control greatly enhanced the prediction of behavioural intention and actual behaviour, specifically with regard to smoking and alcohol consumption. However, for other behaviours, including sexual behaviours, they found that while perceived behavioural control added significantly to the prediction of intentions it did not do so for actual behaviour.

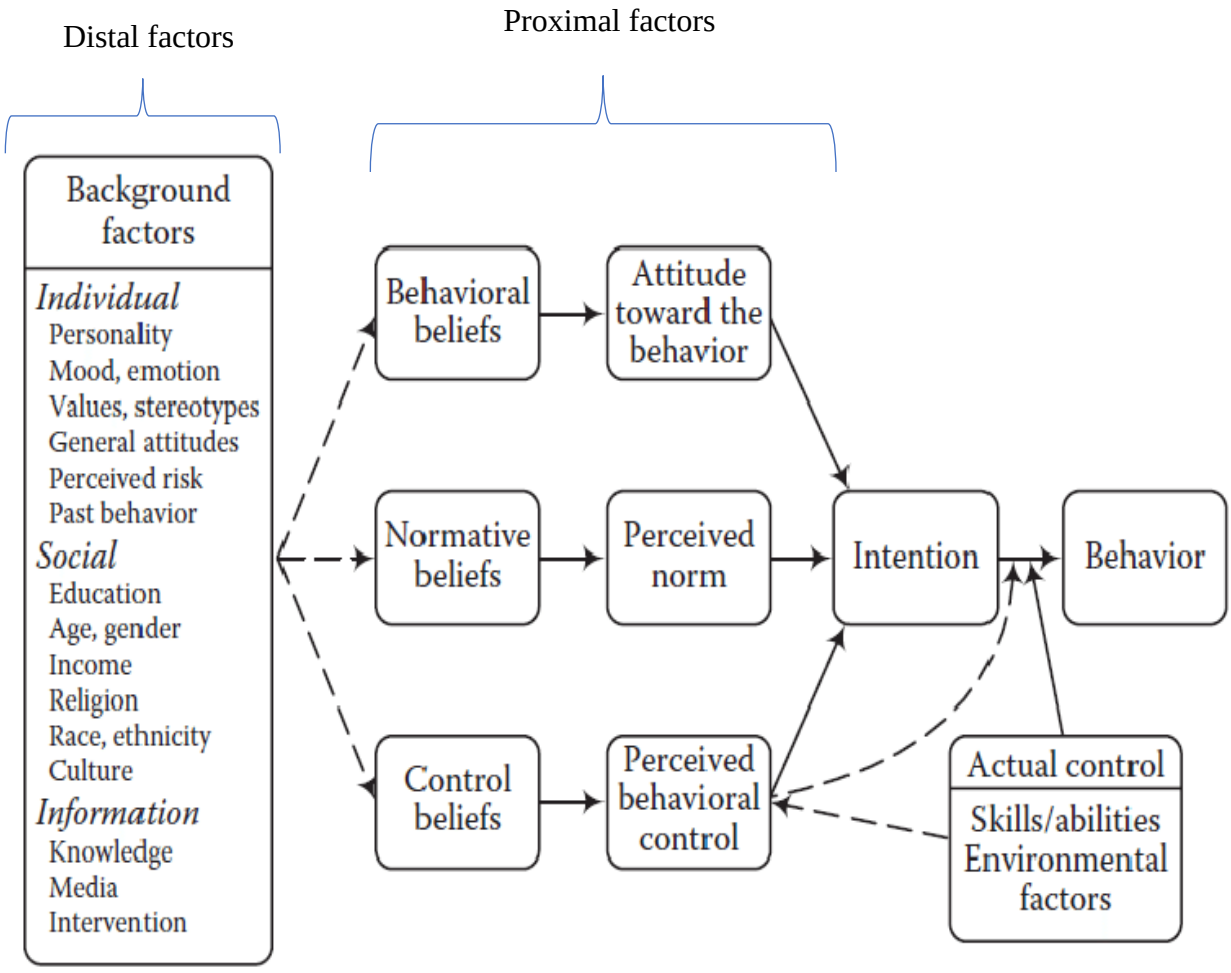


*Figure 3: The theory of planned behaviour (Ajzen, 2017)*

#### *1.6.1.5.1. Why TPB for this thesis*

The reasons for selecting the TPB for the present study were its previous success in examining risky sexual behaviour, and its proven robustness and also TPB reconsolidate other health models in the topic area (e.g. Asare, 2015;Turchik, 2012; Hutchinson et al., 2007). Nevertheless, the present study uses this model in a multiphase mixed-method research design that to the best of the researcher's knowledge it has never been utilised in such a way before. According to Armitage and Christian (2003), the TPB's constructs are well defined and the theory is applicable in a wide range of fields. TPB also provides a useful context in which to investigate why people behave the way they do. Casper (2007) observed that the TPB's usefulness is not only in predicting behaviour but also in providing a behaviour modification plan for behaviour change. Conner and Norman (2015) argued that TPB is the most integrated theory for explaining human social behaviour. Another strength of the TPB is that it also provides a useful conceptual framework for dealing with the complexities of human social behaviour. Having been widely used over the past twenty years, the predicting power of the TPB has been confirmed in behavioural studies on a wide variety of health behaviour topics (e.g. Albarracin, Johnson, Fisbein & Muellerleile, 2001; Fishbein & Ajzen 2010). The reasons for the TPB's success in exploring the determinants of sexual behaviour and condom use are firstly that it takes into account a substantial amount of variance in intention and behaviour and secondly, unlike other models, that it takes the role of social factors (subjective norms) into account for predicting and explaining behaviour (Conner & Sparks, 2015). In the latest diagram developed by Ajzen (2017), he emphasises the importance of the "background factors" (or distal factors). These factors have been shown to account for wider variance in sexual risk intentions and behaviours than could be achieved by the original components of the TPB (e.g., Myklestad & Rise, 2007). Adding extra variables to predict participants' behaviours may improve the effectiveness of the model. By expanding on previous research that has utilised

the TPB to predict sexual risk taking, the current study will go beyond focusing exclusively on condom use to explore alternative aspects of risky sexual behaviour, more specifically how an individual may develop sexual behaviours based on a combination of key biopsychosocial factors that includes but not limited to the individual's attachment pattern, well-being, experience of loneliness, level of social support and drug use.

#### *1.6.1.5.2. How TPB drives this thesis*

In stage one, the TPB is applied exclusively as a descriptive theoretical framework. There are widely understood to be two main types of theoretical models: descriptive and process (Leventhal, Musumeci & Contrada, 2007). Originating in the field of epidemiological research, descriptive models identify problems and determine the direction of future studies, for example, through the identification of behavioural predictors. Process models differ from descriptive models in that they rely on the development of content variables at different levels to achieve their primary objective of explaining how things happen. Although Sutton (2002) argued that the TPB is a descriptive model, Leventhal et al. (2007) countered this argument by observing that intention is not necessarily a link in the causal chain but rather that it may be considered a non-causal predictor or proxy for the enacted behaviour.

Figure 3 illustrates how the TPB's original framework is composed of five constructs: attitude towards behaviour, subjective norm, PBC, behavioural intention, and behaviour. Although Ajzen (1985), the researcher who originally developed the theory, postulates that behaviour is subject to the influence of numerous additional factors (e.g., social, cultural, and personality-based), he suggests that the influence of such distal factors is for the most part mediated by the proximal factors included in the TPB model (Ajzen, 2005). The proximal factors (immediate factors) differ from the distal factors (background factors) *(Figure 3)* in that they are more susceptible to change (Ajzen, 1991). Identifying the proximal determinants of

intention/behaviour can support the prediction of which beliefs may be most significant in changing future behaviours (Ajzen, 2005). However, other researchers posit that understanding specific behaviour requires wider analysis that also considers social, cultural, interpersonal and developmental factors (Leventhal, et al. 2007). Although Ajzen (2005) stressed the important effect of the proximal factors (immediate factors) on intention and subsequent behaviour, he also recognised the influence that distal factors (background factors) have on beliefs and behaviours. Following the Ajzen recommendation regarding background factors and the latest version of TPB model, the current researcher also aims to understand risky sexual behaviours through wider analysis by using a creative mixed method in two stages that is explained in detail in the next section. Nevertheless, stage one helped the researcher to eliminate irrelevant and insignificant variables on RSBs, so the researcher hypothesises that the remaining variables from stage one will have significant predictive relationship with both TPB mediators and RSB.

## 1.7. Research Design

### 1.7.1. Finding the right research design

In this study, it was originally the desire of the researcher to step back from the traditional model of research and develop an unbiased and creative model that could accurately measure the possible contributing factors of risky sexual behaviours. While reviewing previous research, the researcher came across an increasing number of researchers in the field of sexual diversity who recommended moving away from the traditional comparative model of research to study LGBT health in its own right (e.g. Jowett, 2016; Institute of Medicine, 2011; Renn, 2010). In this respect, the qualitative and/or participatory approaches that are more commonly used within health psychology are recommended (e.g. Rohleder & Lyons, 2014). In fact, one

of the main defining characteristics of critical approaches is their tendency to challenge the more common methods applied within mainstream psychology. On the topic of how mainstream health psychology tends to apply the methodological assumptions and practices common in traditional psychology, Chamberlain and Murray (2009) observed that traditional psychology is regarded as a science, adopting an accepted scientific method with the aim of studying individuals and their psychological processes. The fact remains, however, that qualitative research does not lend itself to critical research in the same way that quantitative research does. The researcher believes that a mixed method can help to tackle this challenge. In addition, as the current researcher is also a psychological practitioner, he believes that the fundamental basis on which a mixed method can achieve success is pragmatism, whereby the issue is studied from social and historical contexts rather than through reliance on the method with the research question answered from data collected in a variety of relevant ways (Creswell, 2007). Another benefit of pragmatism is the degree to which it negates the bias on our work and methodology that arise from our personal beliefs, values ad perspectives (Morgan, 2007). The focus on action and reflection also encourages researchers to recognise that he convoluted and complex issues which they study cannot be solved through meticulously technical approaches based on specialised scientific knowledge. Taking place within confusing contexts and complicated by stakeholder conflicts over what constitutes a positive outcome, the unique and often unpredictable nature of such issues make them particularly difficult to study with traditional methods. In light of such confusion, it is up to researcher to determine whether adhering to research-based theories and techniques based in positivism will enable him to solve a very specific set of technical issues with answers that may be of little concern to those being studied, or whether a focus on experience, intuition, and trial and error will lead to answers of greater human interest (Schon, 1983). Taking such a route steers the researcher away from strict methodological rules and personal beliefs to be more adaptable and in tune with the

setting (Miles & Huberman, 1994). After considering all contributing factors, it is the conclusion of the researcher that a mixed method approach provides the flexibility needed to balance scientific theory with the complexity of the issue. Taking such a practical approach will facilitate the unearthing of the very specific knowledge (Sandelowski, 1996) which can ultimately be used for the greatest benefit of those being studied.

#### *1.7.1.1. Mixed Method Research*

Bryman (2014) described a mixed method approach as empirical research based on the gathering and analysis of both qualitative and quantitative types of data, while Burke Johnson et al. (2007p. 123) defined it as:

> *"… the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration."*

According to Creswell and Plano Clark (2018), the mixed method approach gives researchers more chance to overcome each method's weaknesses, utilise their respective strengths, and balance any method biases. Creswell and Plano Clark (2018) also clarified that this approach facilitated better understanding than could be achieved if using either qualitative or quantitative research alone. They observed that qualitative and quantitative data could be integrated effectively provided the researchers collected and analysed both types of data in a sequential and/or simultaneous manner. The mixed method approach also benefits from integration, which strengthens reader confidence in the results and the conclusions of the study (O'Cathain, Murphy, & Nicholl, 2010). Furthermore, mixed method studies make it easier for researchers to generate ideas for future research (O'Cathain et al., 2010). In addition, various

researchers have stated that mixed method research is the only way to have full confidence in a study's findings (Coyle & Williams, 2000) interpretation, and validation (Morse & Chung, 2003). Finally, a mixed method approach creates deeper understanding of the field of study by acknowledging the important contribution of context, recognising both the specific and the general, identifying recurring patterns, and providing insight into variations to generate multidimensional findings that not only cover both magnitude and lived experience, but also achieve neutrality that is balanced by advocacy (Greene, 2008).

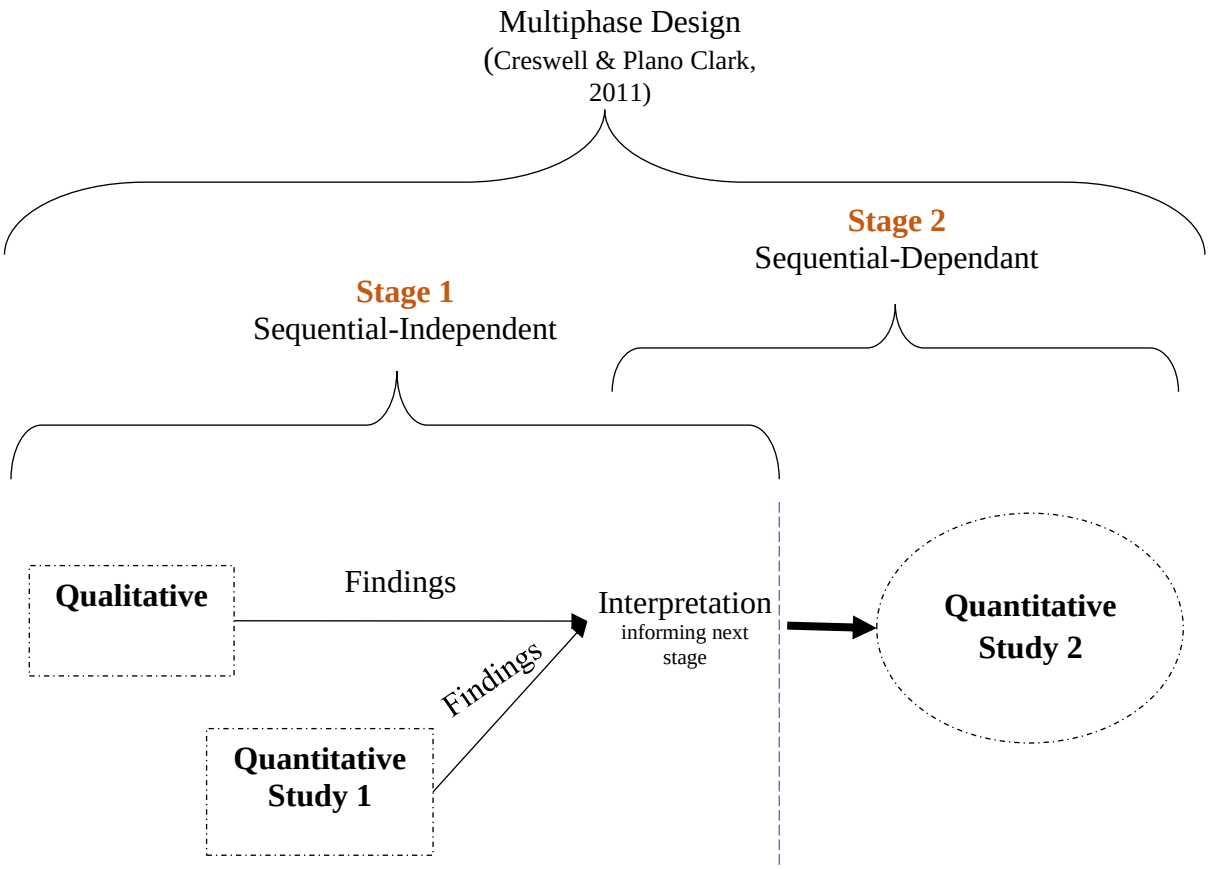


*Figure 4: The thesis research design (adapted from Creswell and Plano Clark, 2011)*

The researcher believes that today we are data-rich on risky sexual behaviours, which can both empower and overwhelm. Researchers often choose their studies' variables based on their own assumptions. They might decide, for instance, that attachment patterns or well-being are important predictors of risky sexual behaviours, but are these the best variables to use? Are there other more important ones to consider? In that respect, the current researcher used a mixed method design to tackle this challenge. According to Schoonenboom and Johnson (2017), the current research is a multiphase (complex) mixed methods design as it includes three studies in two different stages (phases), with the results of the first stage informing the direction of the next study in the second stage (Figure 5).

In this research project, the research applies the guidelines of Schoonenboom and Johnson (2017) for the multiphase mixed method research design.

**Stage 1:** In the first stage, the researcher conducted a sequential-independent mixed method design in which equal priority was given to both the qualitative and the quantitative components. The aim of this design was to collect complimentary yet distinctly different data on the same topic so that it could then be integrated, analysed and interpreted (Bryman, 2014). On the timing dimension, ***Stage 1*** is sequential-independent design. According to Schoonenboom and Johnson (2017), it is sequential-independent, whereas Croswell et al., (2003) call this design Sequential-exploratory. It is sequential because the survey was administered after the qualitative interviews were conducted. However, the analysis of the quantitative and qualitative data was independent; both were analysed independently (Schoonenboom & Johnson, 2017).

***Integration point:*** Many researchers believe that it is first necessary to derive results from separate qualitative and quantitative component studies before those results can be drawn together and interpreted as mixed method data (Morse, 2003). It is said that true mixed method

designs include a purposeful integration of qualitative and quantitative methods (Halcomb & Andrew, 2009). The integration of qualitative and quantitative approaches might occur at any stage throughout a mixed method study (Creswell et al., 2003; Yin, 2006). The current researcher used triangulation protocol to integrate the findings. The integration occurred at the end of Stage 1 in the overall discussion and conclusion section in order to answer the general research question: what factors contribute to risky sexual behaviours? Several techniques have been described for triangulating findings. They require researchers to list the findings from each component of a study on the same page and consider where the findings from each method agree (convergence), offer complementary information on the same issue (complementarity), or appear to contradict each other (discrepancy or dissonance), which will be discussed at the end of Stage 1.

**Stage 2:** The integrated findings of Stage 1 informed the design of quantitative study 2, which according to Schoonenboom and Johnson (2017) is sequential-dependant. The reason for this definition is that, firstly, on the timing dimension, quantitative study 2 was conducted after Stage 1, and secondly, it is dependent because quantitative study 2 was dependant on the results of the studies in Stage 1. The sequential research design is also rational as the TPB is the theoretical framework of the research project; the first stage background factors of TPB will be the focus of the research and the next sequence (Stage 2) proximal factors and their relationship with the background factors. The sequential design is a way of sifting through the data to determine which variables to use for the next stage (Stage 2). It also helps the researcher to confirm, cross-validate, or corroborate findings. Also, Stage 1 provides substantiated and valid data in a short period of time, which is one of the major advantages of a mixed method design. The findings of Stage 1 help the researcher to draw a more comprehensive hypothesis for the next stage, which will be presented in chapter four.

In the following chapters, the methodology and the findings of each study will be presented separately and then the findings from both studies will be integrated for interpretation and discussion.

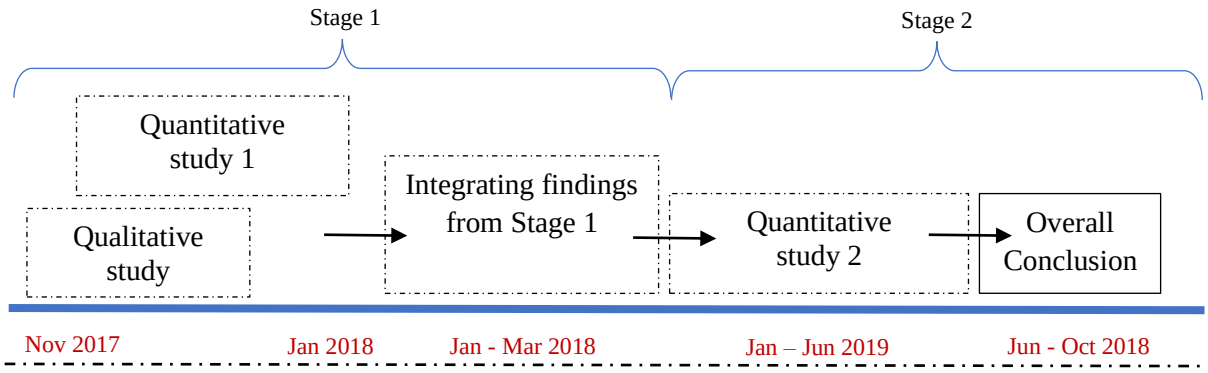


*Figure 5: The thesis timeline (as suggested by Halcomb & Andrew, 2009)*

***Challenges:*** It should also be mentioned that there are certain shortcomings from this method of research even though it enjoys overwhelming support among many researchers. Firstly, the duplicity of the content makes it difficult for a solitary researcher to apply the mixed methodology. This becomes even more of an issue when the researcher has to apply two or more approaches (Bryman, 2014). Another issue with the duplicity of content is that it makes the mixed method of research relatively expensive and time consuming. Furthermore, utilising mixed methods without giving due consideration to the particular assumptions or rules and expectations regarding their conduct can result in those methods becoming corrupted to the extent that that results they generate are open to question. The most obvious example of such assumptions would be in regard to the sampling, although many other possible issues exist. Moreover, it is necessary for the researcher to learn all the relevant methods and approaches that will be used and then know how to mix them appropriately. In addition to having to understand and mix two relatively different methods of research, many researchers find it

difficult to overcome issues relating to conflicting results, quantitative data and a mixed paradigm (Creswell & Plano Clark, 2018).

### 1.7.2. Research novelty

Ever since the subject of risky sexual behaviours (RSB) first came to the attention of science, researchers have applied many different models and formulations to investigate this phenomenon from different angles and perspectives (e.g. Ndebele et al., 2012; Li, et al., 2016; Mir heydari et al., 2014; Asare, 2015; Turchik, 2012; Dunn, 2005; Johnston, 2000; Coury-Doiniger et al., 1999). In its most recent publication, Public Health England recommends that more research is needed in this area to raise awareness (Public Health England, 2016). The researcher also believes that sexual health and sexual behaviours require ongoing attention and research as, hypothetically, the behaviours of individuals change in every generation in response to the influences of social, cultural, and educational factors as well as the latest prevention strategies. As it is an ongoing issue that has no absolute answer, the results of studies conducted on RSBs just ten years ago may be in conflict with the results of studies carried out today. As a result, any government and related health organisation's prevention strategies for sexual health need to be updated regularly and based on current research and studies. As mentioned, previous research has used different models and formulations to gain a better understanding of RSBs in order to predict and prevent their occurrence and the resultant problems. However, the researcher believes that this current study is unique in its field for the following reasons:

1. Unlike the previous research in this field that focused only on one or two factors or looked exclusively at social, psychological or biological factors (e.g. Jones, et al., 2018; Pokhrel, et al., 2018; Okeke & Odelola, 2018; Buckner, et al., 2018; Kugbey, et al., 2018;

Handebo, 2018), the current research explores risky sexual behaviours among gay men through a comprehensive approach that takes into consideration all of the above factors based on a biopsychosocial model.

2. The research also uses a complex mixed method research design, which, to the researcher's knowledge, has never been used for investigating risky sexual behaviours before. The application of this research design helped the researcher to gain more in-depth knowledge about risky sexual behaviours among the gay population.

3. The researcher also uses a sequential-independent design in the first stage of the study in order to discover new variables for the qualitative study and focuses on a variety of variables based on a biopsychosocial model in the quantitative study. Integrated findings from the first stage's qualitative study (only among gay men) and quantitative study (comparison study between gay and heterosexual men in order to tease out variables that are possibly unique to gay men) will be used to form the hypotheses for the second stage quantitative study.

4. Although the theory of planned behaviour (TPB) has been used to investigate risky sexual behaviours before, to the researcher's knowledge, previous research which has applied TPB has only focused on the proximal factors (immediate factors) (e.g. Asare, 2015; Turchik, 2012; Hutchinson et al., 2007). In the current research, TPB is used as a theoretical model to identify the distal factors and to help with understanding and explaining the relationship between the distal factors and also the proximal factors.

5. Previous studies have investigated RSBs in both the general and gay populations with the aim of identifying the factors that contribute to RSBs. However, the majority of those studies have not only failed to use a health model in particular, but have also failed to used any model at all (e.g. Jones, et al., 2018; Pokhrel, et al., 2018; Okeke & Odelola, 2018; Buckner, et al., 2018; Kugbey, et al., 2018; Handebo, 2018), which constitutes a significant limitation of

those studies. For the current study, the researcher applied the TPB model. However, he broke away from the limitations of the traditional model by trying to identify new factors along the process that might help to expand the current TPB model in its analysis of RSBs.

### 1.7.3. Research Questions for Stage 1

**Qualitative study:** A qualitative method with an exploratory design will be utilised in this study with the aim of exploring and gaining an insight into gay individuals' sexual behaviours in general and risky sexual behaviours in particular. A general research question for this study is: why do gay men subsequently choose to engage in risky sexual behaviours (RSBs) despite the well-known risks?

**Quantitative study:** The quantitative study focuses on in-depth exploration of the roles of substance use, well-being, sexual hyperactivation, attachment patterns, social support, and loneliness on risky sexual behaviours among gay men in the UK. More specifically, there are two main questions for the quantitative study in Stage 1 as follows:

Q1: Do gay men report significantly higher levels of substance use, lower levels of well-being, higher scores for insecure attachment patterns, higher levels of lack of social support and loneliness, and higher levels of sexual hyperactivation and risky sexual behaviours than their heterosexual male counterparts?

Q2: Are the reported effects of substance use, well-being, attachment patterns, experience of social support, and loneliness on the reported levels of risky sexual behaviours mediated by the levels of sexual hyperactivation?

## 1.8. Summary

As positive sexual experiences are associated with general well-being, they contribute to public health on a variety of levels. However, sexual activity also entails certain risks, including STIs, the effects of which can have a significant negative impact on both the individuals who are directly affected and society as a whole. Researchers in the latest report published by Public Health England in 2017 observed that the prevalence of HIV and STDs is higher among gay men than in any other demographic group. In the UK 54% of new HIV cases were diagnosed in gay men and MSM. In many cases, the spread of HIV and other STIs is due to risky sexual behaviours (RSBs).

Despite the increasing rates of HIV testing and diagnosis, the new STI prevention techniques such as the promotion of condom use, and the assurance of access to effective STI treatment, the fact is that RSB among gay men and MSM individuals remains an ever-present issue. Therefore, concluded that in the light of the literature, the most important question that needs to be asked is why gay individuals subsequently choose to engage in RSB. In order to fully understand the rise in risky sexual behaviours and the normative belief among the gay men in the UK, it is essential to understand the context of the variables being researched in this study.

Homosexuals were institutionally persecuted and subject to oppression on a societal, cultural and religious level until as recently as the late 1960s, when the Gay Liberation movement started to gain prominence. Spanning almost two decades from the end of the 1960s until the middle of the 1980s, it was to be a period of increasing freedom and tolerance of sexuality which for some manifest itself in gay men being liberated of the restrictions to sexual pleasure they had previously suffered, as well as gaining the benefits, both psychological and social, of being free to enjoy multiple forms of sexual pleasure with multiple, often unknown,

partners. For some, this lifestyle was not just about liberation but a way of overcoming centuries of oppression. Over time, this lifestyle has become adopted by some gay communities considered and even accepted as a normal behaviour, as part of what is now called the "gay culture". The downside of the age of promiscuity, and ultimately the reason for its demise, was the rise and spread of HIV/AIDS. In 1996, a new type of treatment known as Highly Active Antiretroviral Therapy (HAART) was shown to be extremely effective in slowing down the onset of AIDS in people with HIV (NHS, 2011; Cooper & Merigan, 1996). The treatment was made available for free on the NHS in the UK. Now in the 21st century, the HIV crisis may have passed, but still the gay community experiences a higher prevalence of STDs and HIV compared to the heterosexual population. Some professionals refer to this as "the backlash" (Crossley, 2004). With this in mind, this current study applies a biopsychosocial model to understand the factors which contribute to risky sexual behaviours. The current research explores the risky sexual behaviours among the gay men through a comprehensive mixed method research design that takes into consideration factors based on biopsychosocial model. The application of this research design helped the researcher to gain more in-depth knowledge about risky sexual behaviours among the gay population. In the first stage "multiphase mixed method research design" will be used in order to discover new variables in the qualitative study and focusing on a variety of variables based on a biopsychosocial model in the quantitative study. Integrated findings from the first stage, qualitative will be used to form hypotheses for the second stage, quantitative study. For the current study, the researcher applied the TPB model. However, he did not limit himself to the traditional model by trying to identify new factors along the process that might help to expand the current TPB model in its analysis of RSB. Although the theory of planned behaviour (TPB) has been used to investigate risky sexual behaviour before, to the researcher's knowledge, previous research which has applied TPB only focused on the proximal factors (Immediate factors) In the current research, TPB is used

as a theoretical model to identify the distal factors and help to understand and explain the relationship between the distal factors and also proximal factors.

Researchers investigating sexual diversity must be mindful of Heterosexism and heteronormativity within health research and the stigmatisation and social isolation of those who engage in certain sexual behaviours or are affected by STIs. In the past, individuals suffering from STIs have suffered verbal, physical and mental abuse leading to social exclusion and self-loathing. the prevalence (Jowett & Peel, 2012).

# 2. OVERALL METHODOLOGY

In this chapter, the methodology of stage one and stage two will be presented briefly. However, the methodology and the findings of each study will be presented separately, fully and in detail in the following chapters.

## 2.1. Stage One

In stage one, a mixed method design was used. Both quantitative and qualitive methods of gathering and studying the data were conducted separately and independently. Using the mixed method research design to collect data from various sources using different methods working in tandem made intuitive sense. Stage one provided substantiated and valid data in a short period of time which is one of the advantages of mixed methods research design.

***The strengths and weaknesses of qualitative research****:* when conducting qualitative research, it is possible to evaluate the subject materials in greater detail. In other words, qualitative research is less concerned with measuring the collected data and instead focuses on identifying the subtleties that can be found within that information (Rohleder & Lyons, 2014). By enhancing the data's level of detail, qualitative research makes it possible to discover deeper insights when the data are analysed. Based on incoming or available data**,** qualitative research frameworks can be more fluid and open up new approaches (Rohleder & Lyons, 2014). For instance, a qualitative research framework is flexible enough to adapt to the quality of information being collected. In the event that the data being gathered is failing to deliver meaningful results, it is possible to simply adapt the research to gather data in a new direction (Leavy, 2017). This overcomes the limitations of being controlled by self-fulfilling perspectives to create new possibilities for finding important information about any subject.

Another positive aspect of qualitative research data is that it is based on human experiences and observations (Leavy, 2017; Creswell & Creswell, 2017). This is important because humans operate on two distinctly different systems. The first involves making detailed and conscious evaluations of all available data before making a decision. It is slow and methodical. The second system operates on a subconscious level, making fast and instinctive decisions. The first human operating system is favoured by many forms of research while the instinctual results of the second system are ignored (Creswell & Creswell, 2017). Qualitative research places importance on gut instinct, and this often leads to better quality data. The complexities of data can also be incorporated into generated conclusions with qualitative research (Creswell, & Plano, 2018; Creswell & Creswell, 2017). While there is a preference for hard facts and statistics in the modern world, especially in scientific research, it is nevertheless important that we do not forget the importance of the human experience. Even a seemingly immutable fact can be analysed, digested and interpreted in a surprising number of ways by different people due to their lifetime of accumulated experiences leading to them seeing the available data from their own distinct perspective. Far from making the fact less valid, these complex variations of perspective and interpretation generate greater depth and, indeed, accuracy when they are collected into a singular database. In this way, everyone benefits (Leavy, 2017). Qualitative research is also an open-ended process (Creswell & Creswell, 2017). A prepared researcher can use the open-ended structures of qualitative research to probe adroitly beneath superficial responses and mine deeper into the participant's emotional sub-level. In this current research, this is an important consideration because risky sexual behaviour (RSB) is often influenced sub-consciously by emotion. In addition, unlike the numerical-based quantitative research, qualitative research also embraces creativity (Leavy, 2017). Analysing data gathered from individual sources is not always easy since social bias leads to some participants subconsciously answering in a way that they believe will be pleasing to others. This very

human need to fit on and please others can stifle individual creativity as well as reducing the accuracy of the data. Through qualitative research, individual creativity can be encouraged by allowing respondents to express themselves truthfully. For the researcher, this leads to the gathering of more accurate data and more predictable outcomes (Creswell, & Plano, 2018). Another important point to consider here is that qualitative research typically requires **smaller sample sizes, cutting both costs and time** (Rohleder & Lyons, 2014)**.** As a result, qualitative research projects can often be completed quickly and on a relatively small budget, yet with total confidence in the quality of the data. In terms of analysis, a qualitative approach makes it possible to establish fine distinctions since the gathered data do not need to be shoehorned into a finite number of classifications. Qualitative analysis enables the ambiguities that are so prevalent in human language to be recognized for what they are (Rohleder & Lyons, 2014).

On the other side of the coin, qualitative research is not without its limitations. The most significant drawback of qualitative research is that it is very specific. In other words, it is not possible to extend the findings of a qualitative study to a wider population with the same degree of confidence as could be achieved in a quantitative research (Rohleder & Lyons, 2014). Unlike in a quantitative study, the findings of qualitative research are not tested to determine whether they are statistically significant or the product of chance (Creswell & Creswell, 2017). Conclusions also need to be carefully hedged since the results of a qualitative study are prone to accusations of unreliability (Creswell, & Plano, 2018). The same research process could be repeated by the same researcher with the same sample on a different day and generate different results (Rohleder & Lyons, 2014)..

***Strengths and weaknesses of quantitative research:*** Quantitative research enables theories about how and why phenomena occur to be validated by providing the means to test hypotheses that have been formulated before the data collection process takes place (Creswell & Creswell, 2017). Another feature of quantitative research is that it enables the collection of

data that can be used to make quantitative predictions (Creswell, & Plano, 2018). The researcher can also eliminate the confusing effect of multiple variables and establish more reliable cause-and-effect relationships with quantitative research. While it has already been mentioned that qualitative research is generally faster, some data collection methods used in quantitative research can also be completed quickly, especially online surveys, while the use of statistical software can also expedite the data analysis phase of the study. Statistical significance is another benefit of quantitative research as the research results are for the most part independent of the researcher. In addition, quantitative research is suitable for studying large numbers of people (Leavy, 2017). One final benefit of quantitative study is that it is generalizable which means that findings from a study conducted on a sample population can be extended to the population at large. Although, the dependability of this extension is not absolute, it is statistically probable (Creswell, & Plano, 2018).

In terms of the limitations of quantitative research, quantitative experiments do not take place in natural settings. Also, when conducting surveys to gather the data, it is necessary to rely on self-reporting by the participants with no direct observations made by the researcher. This places great trust in the participants' honesty, seriousness, memory accuracy, and interest in the research to generate accurate results. There is the potential for questions to have slightly different meanings for different participants, who do not have the opportunity to ask for clarity of any ambiguous questions or explain their choices when they answer (Creswell & Creswell, 2017). A lack of knowledge on how to apply statistical analysis could also have a negative effect on the analytical process and subsequent conclusions Bryman (2014). Size is another factor as it is necessary to study large sample sizes to optimise the accuracy of the analysis, while the reliability of small-scale quantitative studies can be reduced due to the limited amount of data (Denscombe, 2014). These size issues also come into play when aiming to generalise the findings to a wider population.

While both quantitative and qualitative research methods offer their own specific strengths and weaknesses, when they are used together, they can be extremely effective. Therefore, this study adopted a mixed method approach of both qualitative and quantitative methods. The researcher used mixed-method study to gain a more comprehensive perspective of the research variables and to cross-validate the findings. This research was conducted in two stages; stage one includes qualitative study and quantitative study and stage two includes only quantitative study (Figure 4).

### 2.1.1. Qualitative study

The aim of using a qualitative approach in the first stage is fully explained in the previous chapter (see page 32). Nevertheless, the purpose of using the qualitative approach for this study was to have a more in-depth understanding of RSBs based on the participating individuals' subjective experiences, feelings, intention and beliefs.

#### *2.1.1.1. Interview*

A semi-structured interview (Appendix B) was used to gather the qualitative data. An example of an open-ended question included in the interview schedule is: 'would you please tell me about your first sexual relationship?' Open-ended questions like this gave participants an opportunity to express their feelings and thoughts, which offered up much more detail on the research subject. The interview schedule was structured into sex, sexuality and sexual relationships, family background, social life, and health.

#### *2.1.1.2. Sampling, Data Collection and Ethical Consideration*

For this study, this research required a sample of gay men who are UK resident and aged 18 years old and over. Convenience sampling method was used to gather the data. The

researcher benefited from the assistance of relevant organisations, such as universities and LGBT organisations that cater to the needs of gay individuals. The data collection process is explained in detail in chapter three.

The interviews took place in the University of Bedfordshire, Luton Campus and at LGBT Links Luton between November 2017 and January 2018. The locations were arranged with the support of the university's Psychology Department and LGBT Links Luton manager. An audio recorder was used to record the interviews, which were then fully and meticulously transcribed.

Ethic approval was acquired from the University of Bedfordshire's Ethical Committee, which added strength to the study's credibility (Appendix A).

*2.1.1.3. Data analysis*

Thematic analysis (Braun & Clarke, 2013) was used in this study and the researcher also used NVivo, the most recent data analysis software, for analysing the qualitative data. In identifying the themes, the analysis also employed a semantic approach by focusing on the data's most obvious or superficial interpretations (Braun & Clarke, 2013). Data analysis was accomplished through the following statistical treatment: transcription, organisation of the data, familiarisation, coding, themes and verification.

### 2.1.2. Quantitative study 1

This study is based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. The study's predictors are the influence of drug use, well-being, attachment patterns, loneliness, and social support on the mediator of sexual hyperactivation, while the criterion is risky sexual behaviour (RSB). In order to gain a

true understanding of the influence of the predictors on RSB, the design of this study required a control group of heterosexual men to provide base-line measurements of these relationships for comparison purposes. From such a control group, this researcher would then know whether any negative influences of the study's predictors on the criterion were specific to the study's gay sample or common to males in general.

*2.1.2.1. Sampling and recruitment*

For this quantitative study (comparison study), the research requires a sample of gay men but also a group of heterosexual men aged 18 years old and over who live in the UK. Selecting the participants for the comparison study in this way means that the two groups are comparable in terms of age, level of education, social class, knowledge about sexual behaviours, and financial status (dependent on or independent of parents).

In order to gather the data, an online survey was created on the Qualtrics online software; snowball sampling technique was then used to collect the data. The data collection process will be explained in detail in chapter four. Ethic approval was acquired from the University of Bedfordshire's Ethical Committee, which added strength to the study's credibility (Appendix A).

*2.1.2.2. Research Instrumentation*

The quantitative study in stage one was based on the responses of targeted participants to a survey questionnaire designed to tap into the study's primary variables. For the purposes of the study, an eight-part questionnaire in the English language was employed to gather data. *Substance Frequency-of-Use Scale* (Sandell, 2009), *the BBC Well-being* (Kinderman et al, 2011), *the Relationship Questionnaire (RQ)* (Bartholomew et al, 1991), *Revised UCLA Loneliness Scale* (Russell et al, 1980), and *Social Support Appraisals Scale* (Vaux et al., 1986)

were employed to gather the data on the mediator of the *Sexual System Functioning Scale* (Birnbaum et al., 2014), with the criterion of risky sexual behaviour (*Student Sexual Risks Scale)* (DeHart & Birkimer, 1997). Detailed descriptions of the eight parts are presented in chapter four.

*2.1.2.3. Data Analysis*

Following the completion of the data collection process, the researcher encoded the obtained data into the Statistical Package for Social Sciences (SPSSv22) for analysis. Data analysis was accomplished through the application of descriptive statistics, reliability testing, correlation analysis, One-way ANOVA analysis, Inferential statistics and GLM multivariate analysis of variance (MANOVA). Detailed descriptions of the data analysis are presented in chapter four.

## 2.2. Stage Two

Stage one provided substantiated and valid data in a short period of time. Integrated findings from the first stage (quantitative study and qualitative study) helped the researcher to draw a more comprehensive hypothesis for stage two.

### 2.2.1. Quantitative study 2

This study is based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. The study's predictors are the influence of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalised homophobia, and loneliness on the mediator attitudes towards

behaviour, subjective norms and PBC; the criterion is risky sexual behaviour. In order to gain a true understanding of the influence of the predictors on risky sexual behaviours, the design of the study required a control group of heterosexual men to provide base-line measurements of these relationships for comparison purposes. From such a control group, this researcher would then know whether any negative influences of the study's predictors on the criterion were specific to the study's gay sample or common to men in general.

*2.2.1.1 Sampling and recruitment*

For this quantitative study (comparison study), the research requires a sample of gay men but also a group of heterosexual men aged 18 years old and over who live in the UK. Selecting the participants for the comparison study in this way means that the two groups are comparable in terms of age, level of education, social class, and knowledge about sexual behaviours.

Similar to the quantitative study in stage one, the researcher benefited from the snowball sampling method to gather the data. An online survey was created on the Qualtrics online software. The link to the online survey was sent to the universities' and LGBT organisations' social network pages, such as Facebook, Instagram and Twitter. Based on the snowball sampling method, interested people were asked to send the link to other heterosexual and gay men.

*2.2.1.2. Research Instrumentation*

This study was based on the responses of targeted participants to a survey questionnaire designed to identify the study's variables. The study's predictors are the influence of age, substance use *[Substance Frequency-of-Use Scale (Kimber & Sandell (2009)]*, number of sex partners, early sexual experiences*[Early Sexual Experiences Checklist created by (Alderson,*

*Polley, & Ireland, 2014)],* adverse childhood experiences *[Adverse Childhood Experiences Inventory (Finkelhor, et al. 2015)],* internalised homophobia *[Internalized Homophobia Scale (LaPollo, Bond, and Lauby (2014)],* loneliness *[Social and Emotional Loneliness Scale for Adults (DiTommaso and Spinner, (1993) ]* and TPB proximal questionnaire *(Turchik, 2012)];* the criterion is risky sexual behaviour.

*2.2.1.3. Data Analysis*

1. Following the completion of the data collection process, the researcher encoded the obtained data into the Statistical Package for Social Sciences (SPSSv22) for analysis. Data analysis was accomplished through the utilisation of descriptive statistics, reliability testing, correlation analysis, and inferential statistics. Multiple regression analysis, the Barron and Kenny (1986) approach to mediation testing, and hierarchical multiple regression were used to test the hypothesised influence of substance use (drug use, substance sniffing, alcohol drinking and smoking) on both condom use and number of sexual partners, while GLM multivariate analysis of variance (MANOVA) was used to test for differences between the study group of gay individuals and the baseline group of heterosexual men. The Sobel test was used to evaluate the statistical significance of a partial mediation effect and finally for the serial analysis, SPSS macro PROCESS (model 6) was use A detailed descriptions of the data analysis is presented in chapter five.

## 2.3. Ethical aspects of RSBs and STIs research among LGBT population

The stigmatisation and social isolation of those who engage in certain sexual behaviours or are affected by STIs are nothing new. In the past, individuals suffering from STIs have suffered verbal, physical and mental abuse leading to social exclusion and self-loathing. Still

today, the ways in which the human and legal rights of STI patients or participants in STI research are respected varies significantly from country to country.

The ethical framework for sexual health research that is in effect today was developed from the pain and suffering of those affected and abused in the past. For instance, in the 19th century, wet nurses were hired by wealthy families to breastfeed their infants in many Western countries (Sherwood 2010). In some cases, the infant would have syphilis, but this information was withheld from the wet nurse in case it resulted in her rejecting the job. In various doctor-led experiments, the wet nurses were exposed to infection in this way or used as vehicles for the administration of mercury through breast milk, often including highly toxic doses and usually without the wet nurse's knowledge or consent (Sherwood 2010). The reason for mentioning these experiments here is to underline the need for doctor-patient or researcher-participant confidentiality, the right of the patient or participant to receive all relevant and appropriate information, the importance of participant consent, the right to freedom of movement, the right of access to diagnostics and treatment, and the right of adults to engage in consensual sexual activity free from any associated stigma. There remains a lack of global acceptance of these basic rights. The most recent version of the British Psychological Society's (BPS) Code of Human Research Ethics explicitly states that:

*"Researchers will respect the privacy of individuals, and will ensure that individuals are not personally identifiable, except in exceptional circumstances and then only with clear, unambiguous informed consent. They will respect confidentiality and will ensure that information or data collected about individuals are appropriately anonymised and cannot be traced back to them by other parties, even if the participants themselves are not troubled by a potential loss of confidentiality. Where a participant wishes to have their voice heard and their identity linked with this, researchers will endeavour to respect such a wish. (BPS, 2014, P9)"*

Moreover, researchers investigating sexual diversity must also be mindful of the prevalence of heterosexism and heteronormativity within health research (Jowett & Peel, 2012). Historically, heteronormativity prevails within health psychology and health research. Studies investigating matters related to health in the context of couples, for example, tend to restrict their research to heterosexual relationships (Jowett, 2016). In addition, health research often includes the collection of socio-demographic data, but it rarely records participants' sexual identity. Ussher (2009) commented on the 'insidious' practice of assuming heterosexuality when conducting health research and performing clinical interventions as it ignores LGBT individuals completely. There are many ways in which this heteronormativity manifests itself in the context of health research. It begins when researchers fail to include sexual identity in the demographic information gathered from participants, thereby ignoring the existence of any sexuality other than heterosexual. Dating back to the 1970s, homophobia and heterosexism have been found repeatedly within LGBT health research. The antagonism experienced by LGBT individuals during the early studies of sexuality and health included health professionals exhibiting open hostility towards the study's participants and even treating their same sex partners with malice to the extent that they often delayed seeking health care (Stevens, 1992). In line with the increasingly liberal attitudes towards diverse sexuality in the West, the hope is that heterosexism will follow the same trend within healthcare as it has in society as a whole (Peel, 2001). Indeed, there has recently been an increasing focus on identifying and highlighting disparities in the health of LGBT individuals and the general public in many 'mainstream' studies on sexualities and health. In many of these studies, stigma, discrimination and social prejudice have been identified as the underlying causes of this health inequality (Meyer, 2016). Consequently, research on sexualities and health have increasingly favoured a comparative model of research. Epstein (2003) observed that the research agenda has thus become defined by questions whose answers can be measured and quantified.

## 2.4. Summary

In stage one, a mixed method design was used. Both quantitative and qualitive studies of stage one data were conducted sequentially and independently. For the qualitative study in stage one, a semi-structured interview was used to gather the qualitative data. For this study, this research required a sample of gay men who are UK resident and aged 18 years old and over. Thematic analysis was used in this study, for analysing the qualitative data. The quantitative study in stage one was based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. For this quantitative study, the research required a sample of gay men but also a group of heterosexual men aged 18 years old and over who live in the UK.

In stage two, the integrated findings from the first stage (quantitative study and qualitative study) helped the researcher to draw a more comprehensive hypothesis. The quantitative study in this stage was again based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. For this quantitative study, the research again required a sample of gay men but also a group of heterosexual men aged 18 years old and over who live in the UK.

For all three studies the researcher benefited from the assistance of relevant organisations, such as universities and LGBT organisations that cater to the needs of gay individuals. Also, ethic approval was acquired for all three studies from the University of Bedfordshire's Ethical Committee, which added strength to the study's credibility.

# 3. QUALITATIVE STUDY

## Why risky sexual behaviours? An in-depth understanding of risky sexual behaviours based on gay individual's subjective experiences

### 3.1. Introduction

The purpose of this chapter is to explain the methodological approach undertaken to discover the factors that contribute to risky sexual behaviour among gay individuals. This chapter will present the sampling method, data collection process and data analysis. Also, in this chapter, the ethical issues and limitations will be discussed.

***Aim:*** The aim of the qualitative approach in this study was to have a more in-depth understanding of risky sexual behaviours based on individual's subjective experiences, feelings, intention and beliefs.

***Research question:*** Why do gay men choose to engage in risky sexual behaviours (RSBs) despite the well-known risks?

#### 3.1.2. Reflexivity

It is inevitable that the background and experience of a researcher will play a role in determining what the researcher decides to study, how he or she approaches the topic, the methods he or she employs, which findings will be considered most important, and how to frame and communicate the conclusions (Malterud, 2001). Reflexivity is the act of reflecting on the extent to which the researcher influences the research process (Spencer et al. 2003; Yardley, 2000). Malterud (2001) observed that as long as they are mentioned by the researcher, preconceptions cannot be considered to constitute bias. While it is accepted that the researcher's beliefs and assumptions will have some effect on the way in which the data are

collected and analysed in qualitative research, the researcher should ensure that his or her perspective is made clear (Elliott et al. 1999). The various ways in which different researchers choose to set about tackling a topic of research, such as how they decide to gather and analyse their data, can potentially result in different, albeit equally valid, understandings. One train of thought suggests that these different interpretations weaken the reliability of a study's findings, while a second line of thinking suggests that they create a deeper and more developed understanding of complicated subject matter. With this in mind, a personal statement is presented in the following section.

#### *3.1.2.1. Self-reflexivity*

Currently employed full-time by the NHS, I am a psychological practitioner registered with the Health and Care Professions Council (HCPC) and a qualified psychologist registered with the British Association for Counselling and Psychotherapy (BACP). My nine years' experience as a psychologist includes the last five years spent working as a psychological therapist. I am also qualified as a Gender and Sexual diversity therapist (Pink therapist) since 2015.

In terms of my sexual health, I am HIV negative and have never contracted any STIs. However, STIs are a risk that I have been aware of for much of my adult life. It is my opinion that anyone may be exposed to risky sexual behaviours, depending on how their life plays out and how psychological, social and biological factors interact.

My research journey began in 2009 when I was studying for my master's in counselling psychology in Thailand at Assumption University. At that time, I started to feel drawn to the study of sexual diversity, and I have gone on to publish five articles in peer reviewed journals, four of which were on sexual diversity. In my previous research, I focused on how social

factors, particularly social isolation, loneliness, and family rejection, impact the well-being of gay men and transgender women.

I consider myself as an evidence-based psychological practitioner and without doubt a combination of my personal and professional experience and background influenced the direction of my master's studies, which in turn led me to a specific research paradigm.

Additionally, I have come to work with particular social communities through my work experiences. It is my belief that everyone has the right to be heard, regardless of their social status. Equally, everyone should be free to participate in and contribute to society without fear or prejudice. I believe that human experience is a primary source of knowledge and learning.

It was in 2011 that I first developed an interest in risky sexual behaviours. At that time, two of my close friends were diagnosed with HIV and one became very ill in just a few short weeks. Fortunately, he received the right support and was able to pass that make-or-break stage. Nevertheless, I was overwhelmed with feelings of despair, frustration and helplessness. I managed to turn these negative feelings into a positive by using them to influence my later decision to search for answers and solutions through my own studies. One of the primary questions that I felt had to be answered was why people in general, but especially gay men and MSM individuals in particular, continue to participate in unsafe sex despite the well-known risks. Over time, my studies have evolved, and I committed myself to studying risky sexual behaviours among gay men, which has influenced my decision to develop this current study.

Finlay and Gough (2008) observed how, at different times and with different participants, his interviews involved him changing roles to either be funny, critical, professional or defensive, depending on the specific situation. Similarly, I found that I adopted a similar approach of interacting with different participants in different ways in order to make them comfortable with discussing the sensitive subject. While during the interviews it was easy

to build a rapport with some participants, it felt at other times as if the interview was closer to a counselling session, with participants disclosing their feelings and experiences, and seeking reassurance that these were normal or acceptable. I believe that the participants' disclosures were facilitated by my experiences as a psychological therapist, which influenced my 'way of being' in the interviews, allowing me to frame the questions and respond to their answers in a way that made the participants feel able to share their experiences. As an example of this, I found myself reflecting on and paraphrasing the responses, not only the content, but also the emotions or feelings expressed by the participants. While this in itself is not detrimental to the purpose of the study, it was clear, at times, that it facilitated additional emotional disclosure, taking the interview off topic. As a result, I felt the need to reflect on my interviewing style and my 'researcher' identity, paying particular attention to the way in which I phrased questions during the interviews. Even while analysing the data after the interviews, I was mindful of the 'emotional work' of the interview (Rubin and Rubin, 2012). While listening to recordings of the interviews or re-reading the transcripts, some of the emotions which I had supressed during the interviews were 'stirred up', especially with regard to the difficult personal experiences that some of the participants had shared. This was something I had to be aware of as it created within me a sense of connection to some of the participants. It was necessary to remind myself that, in my capacity as a researcher, I could not place greater importance on participants with whom I felt a personal connection at the expense of other participants. During the data analysis process, I made an active effort to be attuned to my own recollections and feelings but without this affecting my ability to focus on the meaning of the accounts as framed by the participants themselves.

### 3.2. Methodology

In this study, the theoretical approach applied is phenomenological. This type of approach was selected as, from an epistemological perspective, it is more relativist yet without being extremely so, such as is the case with social constructivism (Willig, 2013) By applying the phenomenological approach, the aim is to build up a deeper understanding of the individuals participating in this study in terms of their thinking, their feelings and their perceptions towards sexual activity and sexual behaviour, including RSBs. In order to develop a genuine understanding of the experiences shared by the participants, it is necessary for the researcher to see these experiences from the participants' own perspectives, which involves analysing, interpreting and making sense of their accounts. The phenomenological approach enables the researcher to comprehend the reality perceived by the participants (e.g. Willig, 2013) and to understand the extent to which their assumptions about their sexual behaviour influences this reality. Analysing and interpreting the collected data creates a subjective reality (Willig, 2013). A more objective reality comes from the admission of some of this study's participants that they have engaged in anonymous anal sexual intercourse without using a condom. In the context of this study, such actions are objectively categorised as a risky sexual behaviour because they expose those participants to increased risk of contracting a deadly virus such as HIV or bacteria such as syphilis. Even so, understanding why an individual would engage in such behaviour is open to the interpretation of the researcher and therefore a subjective reality. To avoid prejudicing the research, it is essential that the researcher sets aside his own assumptions about sexual behaviour as much as is possible. To ensure that the findings from this research are bias-free, factual and based objectively on the data gathered, a systematic, step-by-step treatment of the data is applied to eliminate the possibility of the participants' intended meanings becoming changed or distorted. The steps followed in this procedure are explained in the following section.

### 3.2.1 Interview

***Method of data collection:*** A semi-structured interview (Appendix B) was used as the method of data collection to gather the qualitative data. The semi-structured interview provided more flexibility for the participants to explain and elaborate their answers, which helped the researcher to gather more information and better understand how the participants perceived and made sense of relationships, sexual behaviour, sex and unsafe sex. It also allowed the participants to answer questions more on their own terms than the standardised and structured interview permits; nevertheless, it provides an effective structure for analysis and interpretation (Smith & Osborn, 2008). It is said that an interview is one of the most effective approaches to studying complicated and sensitive subjects; using this approach gives interviewers the chance to prepare participants before asking any sensitive questions (e.g. risky sexual behaviour; relationship with parents (Kumar, 2011). Semi structured interviews (Appendix B) allow the participants and the interviewer to interact and engage in a dialogue rather than the participants being restricted to answering short and specific questions in a structured format (Smith & Osborn, 2008). Also, although each participant was asked a similar set of questions, the sequence of questions was varied in each interview. An example of an open-ended question included in the interview schedule is 'would you please tell me about your first sexual relationship?' Open ended questions like this gave participants an opportunity to express their feelings and thoughts, which offered up much more detail on the research subject.

The interview schedule was structured into the following six sections which effectively covers biopsychosocial variables:

- Sex, sexuality and sexual relationships
- Family background
- Social life
- Health

### 3.2.2. Sampling, Data collection and Ethical considerations

For this study, this research required a sample of gay males who are UK resident and aged 18 years old and over. ***Convenience sampling method*** was used to gather the data. As gay individuals are not an organised group, the researcher was required to seek the assistance of relevant organisations, such as universities and LGBT organisations that cater to the needs of gay individuals. The researcher then contacted the student union and LGBT organisations with regard to selecting the participants. As the first step in gaining permission from the University of Bedfordshire (UoB), the researcher explained the study's objectives to the directors of the university's student union and received their agreement to help with the study. The same process was followed with the manager of LGBT Links Luton, who also consented to support the researcher. As an additional step, the researcher provided both organisations with a poster outlining the details of the study's purpose and its objectives, with contact details also displayed so that anyone who was interested could take part in this study. Despite this, no one contacted the researcher with regard to taking part in the study after seeing the poster.

Members of staff in LGBT Links Luton contacted twenty of the organisation's service users, but of these, only five expressed an interest in participating in the research. The reason for the low ratio of willing participants was attributed by a member of staff to the sensitive subject matter of the research and the reluctance of the individuals to discuss the topic with a stranger. Therefore, five out of the eight participants were members/service user from LGBT Links Luton, and the remainder were students of the University of Bedfordshire. None of the gay members in the university's student union agreed to participate in the interview; however, the researcher reached some students through the university Facebook page. All participants were sent the informed consent letter before the meeting was arranged, so that by the time they come to the session, they were all aware of the topic, aim and objective of the study. Initially ten participants were recruited to be interviewed; however, two withdrew from taking part due

to the sensitive nature of the study. As can be seen from the *table 1*, the participants differed in their backgrounds, origin and ethnicity, and occupations, which shed more light on the research topic.

The interviews took place in the university of Bedfordshire, Luton Campus and at LGBT Links Luton between November 2017 and January 2018. The locations were arranged with the support of the psychology department and LGBT Links Luton manager. An audio recorder was used to record the interviews, which were then fully and meticulously transcribed.

It is worth noting at this point that neither the participants nor their demographic characteristics were known by the researcher prior to the study. While it was the researcher's intention to study only non-vulnerable adults, since substance use was one of the topics to be covered in the interviews. The researcher, therefore, felt it necessary to include certain safeguards in the event that any participant misused a substance since individuals who participate in in illegal activities, including substance abuse, are classed as being in a vulnerable group. In the ethical guidelines of the British Psychological Society (BPS), and other similar official bodies (e.g. BACP), mention is made of safeguarding those participating in qualitative research interviews against the possibility of being exposed to harmful effects arising from their participation (BPS, 2014) It is therefore recommended that researchers design interview questions which "ensure[s] that the physical, social and psychological well-being of research participants is not adversely affected" (BPS, 2014, p. 2). Despite this, the difficulty in clearly defining, let alone guaranteeing, "well-being" is well understood (Hollway and Jefferson, 2013). Indeed, even the concept of "safeguarding" is far from clear in its definitions or its practice. In the present study, safeguarding the participants involved verbal reassurances from the researcher assuring the participants that they had full access to the support systems that had been purposefully established by LGBT Links Luton and the UoB counselling services in the event that they suffered distress either during or after the interview. In this respect, LGBT Links

Luton offered access to counselling services, including with social workers and Chemsex social workers, while the UoB provided its students with access to its own student counselling services. An initial appraisal identified a participant as potentially the most vulnerable of the participants. He, and some of the others, received additional support before the interview process in the form of consultation with from the social worker, one-to-one psychological therapy, and specific counselling on his drug use and sexual activity from the chemsex social worker.

At the same time, it was also necessary for the researcher to take his own safety into consideration, both physical and emotional. For this reason, places were selected at both the UoB and LGBT Links Luton that were considered safe and comfortable for both the researcher and the participants. On an emotional level, the researcher was aware that the interviews may prove distressing for him, even though he is a trained psychological therapist with experience in conducting interviews. For this reason, it was agreed strategy arranged with the supervisor for the research to have regular supervision sessions as this provided ample opportunity for expressing any concerns the researcher was experiencing regarding the interviews in particular as well as the qualitative research process in general.

In addition, the researcher was fully aware that asking questions about their sexual activities might cause distress for some of the participants. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher was conscious that the participants might not be comfortable answering questions that may be considered too personal. To tackle this issue, the researcher provided sufficient explanation and acknowledgment before the interview. Furthermore, the participants were aware through the informed consent page that they could withdraw their participation at

any time, or they could contact the researcher after the interview if they decided that they did not want their data to be used in the study.

Finally, after presenting the aims and objectives of the research to the UoB ethical committee, their approval was acquired, which added strength to the study's credibility (Appendix A).

### 3.2.3. Participants

| Participant number | Sex/Gender/Sexual orientation | Age | Ethnicity | Relationship status | Employment Status | Education |
|---|---|---|---|---|---|---|
| 1. | Male/Man/ Gay | 22 | White-British | Single | Student | Undergraduate |
| 2. | Male/Man/ Gay | 23 | White-European | Cohabitation | Student Part-time employed | Undergraduate |
| 3. | Male/Man/ Gay | 29 | Asian-British | Single | Self-employed | High school |
| 4. | Male/Man/ Gay | 25 | White-British | Single | Self-employed | High school |
| 5. | Male/Man/ Gay | 30 | Mixed-British | Single | Student Part-time employed | Undergraduate |
| 6. | Male/Man/ Gay | 29 | Asian-British | Single | Full-time employed | High school |
| 7. | Male/Man/ Gay | 32 | White-British | Single | Full-time employed | High school |
| 8. | Male/Man/ Gay | 25 | White-British | Cohabitation | Student Part-time employed | Undergraduate |

*Table 1*: Participants demographic information

- Participant one is a white British male He is third year student at the University of Bedfordshire. He is single and living with his ex-boyfriend. He is full-time student and not working at the moment.
- Participant two is originally from Spain and has been living in the UK for ten years. He is a first-year student, studying part-time and working full-time. He has been in a monogamous relationship with his boyfriend for almost two years. He lives with his partner.
- Participant three is originally from Bangladesh. He has completed high school and recently began working part time. He is currently single and living in a shared house.
- Participant four is white British. He never finished high school and is currently working as a sex worker. He is single and currently living in a hostel.
- Participant five is mixed race British. He is a student at the University of Bedfordshire. He is unemployed at the moment and actively looking for a job. He is also single and actively dating. He lives alone in his own property.
- Participant six is British of Pakistani origin. He has finished high school and is currently self-employed in his family business. He is single and not dating anyone.
- Participant seven is white British. He never finished high school; he is employed, working in a local charity. He is single and not dating. He lives alone in his own property.
- Participant eight is white British. He is a student at the University of Bedfordshire. He is employed and working full time. He has been in a relationship with his partner for more than two years. He lives with his partner.

### 3.2.4. Data analysis

Thematic analysis (Braun & Clarke, 2013) was used as a method for analysing the qualitative data. A major benefit of thematic analysis as the method of data analysis is that it does not, in itself, commit the researcher to a particular epistemological orientation which provides a theoretical freedom (Braun & Clarke, 2013). Data analysis was accomplished through the following statistical treatment process: transcribing, generating codes, searching for themes, reviewing themes, defining and naming themes, and writing the report.

**Step 1. Transcribing:** Once the interviews were completed, the researcher started transcribing the audio records one by one, with a high focus on careful and accurate transcription. Completing the process of transcription helped the researcher to have more understanding of the participants' responses by listening to the interviews repeatedly and extremely carefully. Listening to some of the interviews during the transcription process was very emotional for the researcher, especially concerning some of the participants' traumatic accounts of their adverse childhood experiences, such as sexual abuse and bullying. For example, participant 4 told how he was sexually abused at the age of 9. Indeed, many researchers have pointed out just how emotional it can be for a transcriber working on research interviews when the topic is particularly sensitive. As they are exposed to the often harrowing accounts of the study's participants, the transcribers are vulnerable to "absorbing" the intense nature of those events (Warr 2004). Nevertheless, the researcher was aware that being emotionally sensitive could prejudice his judgment and consequently lead to a misinterpretation of the data. Therefore, to mitigate the emotional exposure of the transcribing process, the researcher took frequent breaks; he also benefited from supervision during this process of the research. The researcher was also fully aware that the accurate organization of the data was imperative to the success of this research. All files (i.e., raw data) were named to

represent the case (i.e., Participant 1) from which the data came, with a unique identifier for the source (e.g., participant code, or type/name of document), and the date on which they were originally created. The researcher used Microsoft Word to log all of the raw data and to detail the team's progress in collecting and converting the raw data to text that could be subsequently analysed in NVivo. For this step of the thematic analysis process, the researcher also familiarised himself with the data. In this respect, the researcher spent time reading and re-reading the data to try and get a sense of what the data say and to understand what the participants are communicating, what it is like to be 'in their shoes', and why they may be responding in this way. At this stage, the researcher also made notes and jotted down his early impressions. The following is one such note as an example:

> *Some participants seem to be more comfortable talking about their sexual life and their opinion about their feeling than others. The ones that are more comfortable also seem to remember their previous sexual partners more distinctively, whereas participants who are not comfortable found it hard to recall and have longer pauses when they are taking about their previous sexual partners.*

**Step 2. Generating Codes:** The next stage was coding the data, for which the researcher used NVivo. The coding process started when the researcher felt confident enough that he was fully aware and familiar with the gathered data. Coding involves labelling the sections, words, phrases, and paragraphs in the texts in order to categorise or organise the text into "chunks" that are alike (Willing, 2013). This could include, for example, sections and paragraphs in which the participants talked about their first experience of a sexual relationship and how they felt about it. In this study, the data were coded through an integrated approach which utilised both deductive and inductive reasoning, meaning that the data were gathered not only from the respondents but also from the theoretical understandings of the researcher (Braun

& Clarke, 2013). In this way, the codes do not come only from the data, which has been an issue levelled against thematic analysis in the past (Braun & Clarke, 2013). For instance, when the participants talked about the quality of their relationships with their parents in their childhood and also the quality of their relationships with them now in their adulthood such as participant 8 described his relationship with his parents, he said: *"I used to think our relationship was good but now I don't know. We talk. We see each other now and then…, but I have no feelings for them anymore. It's like when you emotionally detach from someone"*, the researcher tried to develop an understanding of the participants thoughts, feelings and perceptions in order to understand the participant experience that they had with their parents. According to the guidelines developed by Braun and Clarke (2013), the data were coded and gathered into increasingly abstract groups until a pattern or theme emerges. During the first round of coding, Thirty-nine codes were identified by the researcher (Appendix C). In the next round, the codes were grouped according to the similarity of their content (Appendix D).

**Step 3. Searching for Themes:** The pattern of coding was repeated until only seven main 'themes' remained (Table 2). For the purpose of this study, a theme was the smallest group of codes that was able to express the codes within it in a meaningful way. An example of a theme could be a representation of an underlying concept expressed in some way or to some degree by each code within that group. For instance, a theme such as "belief and attitude" is a representation of a group of codes such as "*gays are different", "gays don't have opportunities"* and *"gays are promiscuous"* in a meaningful way. In this example, the researcher understood that the participants' drive and motives for having more sexual partners are their belief that gay men for instance have less opportunity to meet and have sexual partners than heterosexual men so to compensate for what he believes he is missing, he tries as hard as he can to meet as many people as possible.

**Step 4. Reviewing Themes:** In this stage, the researcher checked and rechecked the transcripts and codes again in order to verify or modify the research question; the main aim of this stage was to understand whether the findings were a true reflection of the participants' perceptions, thoughts and emotions about the subject. Once a set of potential themes was identified, they were reviewed and refined. Some of the themes were found not to be relevant to the research question so they were removed. For instance, the number of siblings that participants had and their birth order seemed to be relevant themes at first, but after reviewing the themes and the research question, they were removed. Instead, the quality of their relationships with their siblings was relevant, and so this was discussed under the attachment theme. In addition, some other themes were combined into broader themes. For instance, while identity and internalised homophobia were two separate themes at the early stage of the theme searching process, when the themes were reviewed later in this step, it was decided that they both could be part of a person's identity and understanding their sense of identity so they could be merged to form a broader theme. On the other hand, some other themes were later divided into separate themes. As an example, substance use in the previous step was part of a broader theme of 'well-being', but in this stage, the researcher decided to separate it as a standalone theme. The researcher made sure that there was clear coherence of data within the themes and equally distinct boundaries between them. As Braun and Clarke (2013) suggested, the researcher reread the entire data set again to capture any data that fit within the themes but which had been omitted in the earlier stages.

**Step 5. Defining and Naming Themes:** Once the researcher had the thematic map, he started to refine the themes. The critical task for the researcher in this stage was to identify the central idea in each theme and provide a name that concisely captures that idea. For instance, there were some subthemes that helped to describe a dimension of a theme. In the early stage of searching for themes, adverse childhood experiences and early sexual experiences were two

separate themes. However, they were later placed together under a broader theme of "childhood experiences" as they both describe different dimensions of childhood experiences. In this stage, in order to check the validity of the data, a member checking strategy was used. Member checking allows the researcher to present the study's findings or conclusions to the participants so that they can comment on whether they believe their perspectives have been accurately portrayed by the researcher (Creswell, 2014). Therefore, the findings of the qualitative data were sent to the original participants in order for them to check whether their viewpoints had been represented correctly and accurately. However, only three of the participants showed interest in this and participated in the post checking. Of those three participants, they all confirmed that the factors mentioned in the findings could or might contribute to risky sexual behaviours among gay men. There were no objections about any of the factors mentioned in the findings.

**Step 6. Writing the Report:** once the themes and their interpretations were fully identified, the researcher started writing up the report, which involved including data extracts that distinctly illustrate the themes as well as a discussion of the decisions that were made during the process of the study. As can be seen in the next section, the researcher followed Braun and Clarke's (2013) guidelines and tried to go beyond simply giving a description of the data to make an argument.

### 3.3. Findings and Discussion

This section firstly presents a brief profile of each of the participants, after which, the main themes, findings and data analysis will be covered. As previously explained Braun and Clarke's (2013) of thematic analysis was used in this study. During the first round of coding, thirty-nine codes were identified by the researcher (Appendix C). In the next round, the codes

were grouped according to the similarity of their content (Appendix D). This pattern was repeated until only seven main 'themes' remained (Table 2). Based on the results of the data analysis, the key themes that emerged as contributing factors to risky sexual behaviours and unsafe sex were: Beliefs and attitude towards RSBs and gay men; Identity and internalized homophobia; Childhood experiences; Age; Substance use; Attachment; Well-being. From analysing the data, it appeared that all these areas of an individuals' life influence their sexual behaviours.

| Code | Sources | References |
|---|---|---|
| **1. Beliefs and Attitude towards RSBs** | 8 | 26 |
| **2. Identity and internalized homophobia** | 8 | 27 |
| **3. Childhood experiences** | 8 | 41 |
| ***3.1. Early sexual experience*** | | |
| ***3.2. Adverse childhood experiences*** | | |
| **4. Age** | 7 | 35 |
| **5. Substance use** | 8 | 14 |
| **6. Attachment patterns** | 8 | 46 |
| **7. Well-being** | 6 | 40 |

*Table 2:* List of identified themes, sources and number of references

### 3.3.1. Beliefs and Attitude towards RSBs and gay men

Some of the participants had various beliefs about gay people and unsafe sexual practice. The participants' general beliefs were mostly over-generalised, stereotypical and negative towards the gay community, while some were even offensive towards other gay

individuals in the community. However, these opinions were considered to be beliefs rather than knowledge as the participants could provide no evidence to back up their claims. It is understood that beliefs differ from knowledge in that a belief is a thought or opinion that has not been corroborated beyond doubt, whereas knowledge is backed by fact, confirming it as true and justified (Armstrong, 2009). It seemed that the participants with more internalized negative attitude towards homosexuality the gay community had more experience of risky sexual behaviours in recent years. Earlier studies have shown how external factors such as negative attitudes towards homosexuality and cross-gender expression and experiences of repression and abuse in the family environment during childhood and religion can all lead to internalised homonegativity (e.g. Walker & Longmire-Avital, 2013; Katz-Wise, Rosario & Tsappis, 2016). Internalised homonegativity can prevent affected individuals from receiving adequate sexual health education, pushing them to explore their attraction to members of the same sex in a covert manner, ultimately increasing the likelihood of engaging in risky sexual behaviours (e.g. Costa, Pereira & Leal, 2013; Berg, Munthe-Kaas & Ross, 2016). When a gay individual is exposed to homonegativity early in life, there is an increased likelihood that it will be internalised and lead to psychological distress while the individual is forming his sexual identity and choosing to come out. The minority stress theory states that one of the coping strategy used by individuals to overcome their distress in this situation is to engage in sexual relationships, which increase the likelihood of practising unsafe sex (e.g. Berg, Weatherburn, Ross & Schmidt, 2015; Ross et al., 2013). A gay male may experience internalised homonegativity throughout the different stages of his life, even after some degree of identity acceptance has been achieved (Quinn et al., 2015). The relationships between internalised homonegativity, low self-esteem and mental health issues, including anxiety and depression, have been clearly established (Antebi-Gruszka & Schrimshaw, 2018).

Four distinctive factors related to the participants' beliefs were identified:

The first factor referred to the stereotypical view that gay people are generally more sexually active or "promiscuous" compared to heterosexual men and that unsafe sex is more "manly". For instance, Participant 4, who is a sex worker and sometimes participates in unsafe sex, believed that:

*"I think gay people are more promiscuous than the straight people"*

*(Participant 4)*

Secondly, two participants believed that gay individuals engage in unprotected sex because it is a dangerous action and it excites them. It seemed that these participants were referring to sensation seeking. Sensation seeking is a human trait that involves a desire to seek out unusual and often complex experiences in the pursuit of feelings of excitement and intensity, even if it involves physical, social, legal, or financial risks (Zuckerman, 2007). Participant 1 specified that, for him, this belief was influenced by the people he sees and meets at the pubs and gay bars he visits, and that it is not necessarily the case for every gay individual.

*"I think gay men like the danger side of it…it is like they get excited of the risk and danger that action brings to them."*

*(Participant 1)*

Thirdly it was believed that because families and society do not have the same expectations from gay individuals as they have from heterosexual men, such as the expectation of a relationship, marriage and having children, it means that sex becomes just an "object" (an activity only for pleasure, not for any other purposes) for gay people. Participant 7 tried to explain why he believes that sex is an object for gay individuals as follows:

*"When you're a heterosexual male, you've got your life with time* constraints *... there's expectations when you're straight per se... However, when you're gay, those pressures are taken away. Then sex becomes an object."*

*(Participant 7)*

Finally, the obstacles, difficulties and reduced opportunities that gay people have in finding a partner for a long-term relationship compared to heterosexual men lead them to have more casual sex than heterosexual people. Participant 8 believed that finding someone for a relationship is more difficult for gay individuals compared to heterosexual men. He explained that:

*"Straight guys don't have that problem that we have... I'm gay and single and want to date other gay people. Where can I go? I have to either use some of this app crap like Grindr or Hornet or go to the gay bars or clubs at night. There is no other way. ... we gay men don't have as many opportunities as straight guys have."*

*(Participant 8)*

On a cognitive level, all of the participants had almost the same understanding and attitude towards risky sexual behaviour, safe sex and unsafe sex. Four elements were mentioned as part of safe sexual behaviour and safe sex: safe place and environment, knowledge of a partner's STD status, not being under the influence of drugs or alcohol, and using protection. Perhaps somewhat surprisingly, none of the participants considered the number of sexual partners to be related to risky behaviour. However, the WHO and other models of sexual health consider a high number of sexual partners as one of the main factors of risky sexual behaviour (Slaymaker, et al., 2004). Despite this viewpoint, it is understood that having multiple sexual partners does not necessarily mean that such individuals engage in unprotected sex. Nevertheless, numerous researches have elucidated that individuals do not demonstrate a

consistent pattern of sexual behaviour when they have multiple sexual partners (Ashenhurst, et al., 2017), which means that an individual with multiple partners is more likely to engage in unsafe sex compared to someone who only has sex with a single partner. Studies using the quantitative methodology have shown that the number of sexual partners is correlated with age, in that younger adults and adolescents are more likely to have multiple sexual partners compared to older adults (Johanston, et al., 2016; Hans, 2008).

Only two participants mentioned the number of sex partners they have in a week and month. The remainder used only general phrases like "a lot" to report the quantity. In spite of the generalisations of some responses, it was clear that the number of sex partners of the participants in this study was particularly varied and seemed to be related to their beliefs regarding sexual relationships in general, to the quality of their relationships with their partners, or to their relationship status. As an example, the majority of the participants who were single mentioned that they were active in practicing casual sex. For instance, Participant 1 reported:

*"I have sexual relationships a lot lately, maybe because I am newly single."*

*(Participant 1)*

Nevertheless, the participants' levels of knowledge with regard to safe sexual practice was not necessarily related to their actual practice of safe or unsafe sex; for instance, although Participant 4 had a reasonably good understanding of safe and unsafe sex, he said that he sometimes had unprotected sex when under the influence of drugs.

Although all of the participants considered sex without a condom to be unsafe sex, most of them reported that if they know their sexual partner's STD status and it is negative, they would have sex without a condom and still consider it to be safe sex. One participant said that:

*"I had unsafe sex with my boyfriend after I knew about his health condition."*

*(Participant 1)*

Participant 8 reported that he is in a monogamous relationship and lives with his partner. They have unprotected sex as they have both been tested a year ago. However, he mentioned that he sometimes goes to gay saunas secretly and has casual sex.

*"With my partner, we don't use condoms because we've both done the test and we both know our status. But when I have my "casual" sex, I definitely use a condom."*

*(Participant 8).*

Trust has been considered by some researchers (e.g. Fernández-Dávila & Zaragoza, 2011; Halperin, 2009) as a probable risk factor in the sexual behaviour of men who have sex with men. It is suggested that unprotected sex might not be spontaneous as other research shows but rather based upon familiarity; it is said that individuals' concerns related to STIs usually decrease as relationships become more stable and long-term (Zablotska et al. 2011; Rhodes & Cusick, 2000).

### 3.3.2. Identity and Internalized Homophobia

The participants' sexual identities were found to be categorised into four stages. The first stage was identifying themselves as gay, while the second stage was accepting their own sexuality. The third stage was coming out and the fourth stage was finally being accepted and either supported or rejected. Participants who had accepted their sexual identity as gay in their adolescence, who were also supported and accepted by their parents and family members as a gay individual reported less casual sex and fewer sexual relationships. In contrast, participants who had experienced any adversity regarding their sexuality or who had never come out to

their parents as gay reported more frequent casual sex. Participant 7 recalled that when he was sixteen, he came out to his mother and that his mother had always been supportive throughout his life. He is currently single and looking for a relationship. On the other hand, internalising homophobia was the main reason that Participant 8 could not accept himself as a gay man. For him, realising that he was gay and accepting it were two different matters. He mentioned that he came from a religious family, and for his family, same sex relations are considered a sin and they condemn homosexuality altogether. He still does not fully accept himself as a gay man and he explains why.

> *"I always was (gay) ... but I have to say, realising and accepting are two completely different stories. You can realise that you are gay but not accept yourself, which I think is my case."*
>
> *(Participant 8)*

These internalised negative feelings and thoughts about being homosexual are referred to as 'internalised homophobia', a condition that is reported to be associated with risky sexual behaviour (Mansergh, et al., 2015). Herek (2004) defines internalized homophobia as a further characterized by an intrapsychic conflict between experiences of same-sex affection or desire and feeling a need to be heterosexual. This internal conflict causes stress and anxiety in the individuals which might lead them to use sex as a strategy to cope with the stress and anxiety they experience in a heterosexist society (e.g., Johanston, et al., 2017; Saleh, et al., 2016; Choudhury, et al., 2015; Yadegarfard, et al., 2014; Glick & Golden, 2014; Kapadia, et al., 2013; Majumdar, 2006).

### 3.3.3. Childhood experiences

***Early sexual experience:*** It was found that one participant whose first sexual experience had been in his early adolescence (age 12) reported relatively more frequent casual sex and a higher number of partners. It is common for individuals to engage in sexual intercourse before their adulthood (Anderson, 2012); however, engaging in sexual intercourse in early adolescence is rather uncommon and research shows that it is associated with substance use, suicidal ideation, aggression (Epstein & Spirito, 2010) and risky sexual behaviour later in adulthood.

Most of the participants remembered their first intimate relationship, which typically took place when they were teenagers. However, the majority of them mentioned that it was not a pleasant memory. Only Participant 2 reported that his first relationship was with his current partner and that they are still together. Two participants remembered their first relationship and how the trust between them and their partner broke down. They both said that after their first relationship, they entered into an open relationship, which ended after a few months. They are both recently single and have casual sex. The first sexual relationships, along with the relationships with parents and family, were found to be significant factors which formed and influenced the participants' beliefs and perceptions towards intimacy and sexual relationships.

A clear example of how a first intimate relationship can shape and form one's perceptions towards all relationships of an intimate nature can be seen in Participant 4's narrative. He explained how his first relationship had influenced his personality, going some way to define who he is and what he thinks and believes about emotional intimacy and sexual relationships.

> *"My first love, I was 15 and the guy was 19…I was with him for days, but later I realised that he was messing with me and had done a lot of damage. He'd actually*

*got to the point that he got bored with me and I was vulnerable. He would ask me to go out and bring someone back; so he put me in the whole sex working and all that. And I swore that, you know what, no more relationships, no more letting people in, you know, just business ... and I've kind of got that into my head now, that don't get attached to people, just do to people what they did to me, just use them and discard them. It is really bad but it's become part of me from a very young age."*

*(Participant 4)*

On the other hand, Participant 8 remembered that his first relationship was very difficult, and it ended because his partner cheated on him. He has been in a relationship for two years now and currently lives with his partner. However, he mentioned that he secretly engages in casual sexual relationships with other gay people.

*"I had a few unsuccessful relationships in the past. The big one was about 10 years ago. That completely crashed me down. My first partner cheated on me. He went with someone I knew."*

*(Participant 8)*

***Adverse childhood experiences:*** Adverse childhood experiences were another factor that affected some of the participants' sexual behaviours. This was manifest in the form of bullying from their siblings, their school mates and other children in their neighbourhood. Participants who had experienced any adversity in general or more specifically regarding their sexuality reported more frequent casual sex. For instance, in recalling how he was bullied at school, Participant 6 who is 29 years old and single and not dating stated:

*"Because I was a bit feminine, people used to laugh at me…I was bullied at school and sometimes I had to fight back with two or three kids after school; (a few times) I got beaten up badly."*

*(Participant 6)*

Such adverse childhood experiences were shown to be associated with risky sexual behaviour (Littleton, Grills, & Drum, 2014; Niehaus, Jackson, & Davies, 2010) and substance use (Scheidell, et al., 2017; Maniglio, 2011).

### 3.3.4. Age

Age was one of the most frequent factors mentioned by the participants. Age seemed to be related to the participants' use of drugs and practice of safe or unsafe sex, and in some cases, their number of sex partners. The majority of the participants mentioned that, when they were younger, they engaged in unprotected sex, but as they got older, they became more cautious about STIs. Only Participant 4 mentioned that he still sometimes has unprotected sex. Each participant had his own reason for why he had engaged in unsafe sex when he was younger. For instance, Participant 8, who recalled that when he was younger he had "a lot of unsafe sex", explained:

*"I used to go to night clubs three times a week and get drunk and take someone home. You know when you are young, drunk and dumb, you won't even bother to think about a condom; I had a lot of unsafe sex... I was diagnosed with syphilis and gonorrhoea."*

*(Participant 8)*

It is also shown that the number of sexual partners is correlated with age, in that younger adults and adolescents are more likely to have multiple sexual partners compared to older adults (Johanston, et al., 2016 ;Hans, 2008).

Participants who had sexual experiences at an earlier age reported having more casual sex partners in their adulthood. All the participants had some form of sexual contact and activity in their teenage years. Participant 4 was an exception as he reported that he was sexually abused at a very young age, and then when he was eleven years old, he had his first relationship, which led him to work in the sex industry. He is twenty-five years old now and a sex worker.

> *"I was sexually abused at a very young age (9 years old). I was in foster care and children's homes and when I was aged 11, I ran away. I was going to a relationship with someone that was much older. They got me into sex working."*
>
> *(Participant 4)*

The adverse childhood experiences reported by the participants, such as sexual abuse, were shown to be associated with risky sexual behaviour (Littleton, Grills, & Drum, 2014; Niehaus, Jackson, & Davies, 2010) and substance use (Scheidell, et al., 2017; Maniglio, 2011). It is said that although it is common for individuals to engage in sexual intercourse before their adulthood (Anderson, 2012), engaging in sexual intercourse in early adolescence is rather uncommon and research shows that it is associated with substance use, suicidal ideation, aggression (Epstein & Spirito, 2010) and risky sexual behaviour later in adulthood.

### 3.3.5. Substance use

The participants' reporting of substance use was rather varied. Only Participant 4 reported that he uses drugs regularly and not necessarily just before sex. The majority of the

participants reported that they had at least one experience of drug use when they were younger, especially in their teenage years. These findings reveal that the prevalence of drug use in general and for sex in particular was not high among the participants in this study, with only one out if eight participants (12.5%) using drugs regularly. The reported drug use from this study might not be aligned with other researches, especially from metropolitan areas, such as London. Research shows that the prevalence of chemsex (using drugs for sex) is higher in London than in other places in the UK (Bourne, et al., 2015). This can be attributed to the simple fact that London has a bigger gay community, which in turn means that meeting new sexual partners is easier, drugs are more available and accessible, and chemsex is consequently more common compared to smaller cities and towns.

The type of drug used was also varied. However, marijuana (weed, joints) was the most common drug mentioned by the participants. Two participants reported that they used (sniffed) alkyl nitrites (poppers) before sex but neither of them was sure whether it was classified as a drug or not. Alcohol was reported as the most common substance used by participants before sex; however, its use was not necessarily related to unsafe sex.

> *"When I have casual sex with someone that I don't know, I stress out, and drink helps me to be more relaxed and enjoy more. I like to drink alcohol before sex but still it depends."*
>
> *(Participant 5)*

### 3.3.6. Attachment patterns

Only one participant (Participant 3) reported that he had only ever had a good relationship with his father, while the rest either did not know their fathers or did not have a close relationship with them. However, the majority of the participants reported a close

relationship with their mothers. People who had secure attachment to their parents and who had come out as gay to at least one parent and received family support reported fewer casual sexual relationships and less unsafe sex. For instance, Participant 2, who is in a monogamous relationship, reported that he has a close relationship with his mother. On the other hand, Participant 8, who comes from a religious family, seemed to have an insecure, most likely ambivalent attachment. He had never had a close relationship with either of his parents from a very early age and had never come out to them as a gay man. He mentioned that he is in a monogamous relationship but secretly still has casual sex. He also reported that he has always been emotionally distant from his family and never been close to his parents.

> *"I used to think our relationship was good but now I don't know. We talk. We see each other now and then, but from my side, it might sound very obnoxious, but I have no feelings for them anymore. It's like when you emotionally detach from someone"*
>
> *(Participant 8)*

It is believed that attachment styles have an impact on a wide variety of interpersonal behaviours, including those of a sexual nature (Feeney & Noller, 1990; Feeney & Raphael, 1992; Shaver and Hazan (1988). For instance, it is shown that insecure attachment is strongly linked with hypersexual behaviour (sexual addiction, sexual impulsivity) (Gilliland, Star, Hansen, & Carpenter, 2015). Specifically, those who develop attachments of a fearful and preoccupied nature are less motivated to follow safe sexual practices (Young, 2013). Those who develop secure attachments, free from anxiety and avoidance, are found to be less prone to participating in concurrent relationships, more likely to use condoms, and more inclined to develop stable relationships in which sexual activity remains within the context of romantic intimacy (Brennan & Shaver, 1998; Cooper et al., 1998). Conversely, those who experience

attachment avoidance tend to be more open to casual sex, loveless sex and risky behaviour (Lemelin, et al., 2014; Cook, et al., 2016). Other research, however, has shown the link between attachment avoidance and unprotected sex to be inconsistent (Cooper et al., 1998; Gentzler & Kerns, 2004).

### 3.3.7. Well-being

The participants reported highly varied levels of well-being. It was also observed that their psychical and psychological well-being only appeared to be related to their individual sexual desire but not to their practice of safe or unsafe sex. For instance, Participant 2 reported that he was not very sexual because of his physical health. Participant 4 reported that he suffers from both physical and psychological problems such as personality disorder and bipolar disorder. He is sexually very active and reported having 12 sexual partners per week. However, Participant 3 reported that he suffered from depression and during that time, his sexual desire disappeared.

*"I'd been diagnosed with depression, and I was on anti-depressants for 9 months and my sexual desire completely disappeared for a couple of months."*

*(Participant 3)*

Limited research has been carried out regarding the relationship between well-being and risky sexual behaviour, especially among the gay population; however, a study conducted by Sanders (2008) revealed that well-being and risky sexual behaviour were closely related. In their study of men who have sex with men (MSM), Wilson et al (2014) reported that a higher than average well-being correlated with a lower probability of risky sexual behaviour. In their qualitative study of women living with HIV/AIDS, Teti, et al (2010) identified a relationship between poor psychological well-being and risky sexual behaviour. Also, poor mental health

status among adolescents has also been linked to risky sexual behaviors (Tsutsumi, Izutsu, & Toshihiko, 2012).

Although loneliness appears to be a common theme in the participants' statements, only three of them directly mentioned it. It seems that it is not loneliness per se but a fear of loneliness that drives individuals to engage in more casual sex and, in some circumstances, risky sexual behaviour such as unprotected sex. For instance, Participant 1 reported that he has moved to Manchester recently because of his partner. However, after a few months, they broke up. Even so, he said that they still live together. He mentioned he feels lonely in Manchester as he does not have many friends, although he has "a lot" of sex lately.

> *"Sometimes I feel a bit lonely … So not having many friends to go out with kinda affected me."*
>
> *(Participant 1)*

The relationship between loneliness and risky sexual behaviour is explained in Hull's Drive Reduction Theory (1943), which posits that when an individual is deprived of a basic need, that individual will develop feelings of discomfort, stress and anxiety, which will influence the individual's sexual behaviours. Although there appears to be limited studies focusing specifically on the influence of loneliness on the gay male population, a qualitative study conducted by Saleh et al., (2016) among African American MSM revealed potential interconnections between the quality of personal relationships such as social loneliness and their sexual risk-related behaviours. In addition, in another qualitative study done by Fernández-Dávila (2009) among MSM discovered that feelings of loneliness and isolation puts them into a state of low self-esteem and into taking risks in an attempt to connect to others through sex. Also, Yadegarfard et al (2014) has shown that social loneliness is a strong predictor of RSBs among male to female transgender. In addition, it has been shown that higher

levels of loneliness are strongly associated with frequency of sexual risk behaviour (Hubach, et al., 2015; Munoz-Laboy, Hirsch, & Quispe-Lazaro, 2009). There is an increased risk of alcohol and drug abuse, engaging in sex with multiple partners, engaging in anonymous sex, and the subsequent exposure to HIV infection among gay males who wish to overcome their loneliness but who lack the necessary adaptive social and coping skills (Torres, 2005). It is also common for gay men who are romantically lonely and are not able to enter into regular relationships or arrange dates to adopt less healthy sexual practices, such as visiting public places which are known to be gay cruising areas, including bathhouses, public bathrooms, beaches, and parks, for the purpose of engaging in risky and often anonymous sexual activities (e.g. Barro´n-Limo´n, et al, 2012; Tang, et al., 2013; Semple, et al., 2004). Such practices specially expose younger gay men to certain risks that include abuse by older males and increased risk of STIs (Robertson & Monsen, 2001). Conversely, in a study conducted by Ekstrand and Coates (1990), loneliness and risky sexual behaviour were found not to have a significant relationship.

### 3.3.8. Limitations of the study

There are a number of limitations related to this study. The data in this study were based on interviews that relied on the participants' narratives, which leaves a possibility of bias, particularly with regard to sensitive subjects, such as sexual relationships in general and risky sexual activities in particular. It has been pointed out by Gullette and Lyons (2006) that participants often make mistakes, mainly when recalling their sexual activities and reporting condom use. In addition, as risky sexual behaviour is a sensitive subject, it might lead participant to "subject bias", which happens when participants change their answer to align with the interviewer's expectations or to please the interviewer with their answers. This can

happen for instance when the participants specifically like or dislike the interviewer (Gibbs, 2012).

As the qualitative research is very subjective and the researcher's personality and experience might have affected the validity and reliability of the research (Creswell, 2014), it is important to mention that the researcher is fully aware of his own possible biases and preconceptions due to his few years of practice as a psychological therapist with LGBT individuals and LGBT organisations and also his previous research experience in this field, especially among gay men and male to female transgender individuals. Nevertheless, the researcher is hoping that his awareness of his potential biases helped him to prevent any influence on his judgment during the coding process and the drawing of conclusions. Moreover, in this study, the participants were not aware of the sexual orientation of the researcher. As a result, answering questions about risky sexual behaviour would likely have been awkward and somewhat formal. In other words, they are likely to have felt 'forced' to answer questions about what a sensitive subject is and thus used terminology that they would not normally use in less formal settings, such as when talking with friends or partners. This creates a limitation for the study as the answers would not be entirely natural and lacking in openness and spontaneity.

In addition, as the sampling technique for the qualitative study was convenient sampling, neither the participants nor their demographic characteristics were known by the researcher prior to the study. In the qualitative study, the participants' age range was very narrow. The sample consisted of individuals in their 20s and 30s with a mean age of 27 years old. The researcher believes that this narrow age range is one of the limitations of this study and had some impact on the data analysis. As was explained in Chapter one, individuals' adverse life experiences have a negative impact on their sexual behaviour. Therefore, as individuals from different generations have different life experiences in a society that changes over time, hypothetically speaking, their sexual behaviours will be also different. With this in

mind, perhaps if the sample had included older participants who were, for instance, in their 50s or 60s, there would have been a different outcome in the analysis, as this older generation would have had different life experiences compared with the current participants. For instance, older gay men have lived through more negative experiences, such as systematic discrimination, stigmatisation, marginalisation, rejection, and the outbreak of the HIV/AIDS global epidemic in the 80s. As a result, their sexual behaviours would likely differ from those of this study's younger participants who in their early 20th century have experienced legalised homosexuality, gay marriage and sex education in school.

In addition, during the process of analysing the data, the researcher made the realisation that some of the questions he had asked the participants during the interviews might be too direct to the variables that the researcher already had in mind. As a result, the researcher suspected that this line of questioning might influence the reliability and validity of the study, which can consequently be considered as one of the limitations of the study.

### 3.3.9. Conclusions

One of the strengths of this study was that the participants were ethno-racially very diverse. Modern Britain has gone from a time when there was no openly gay community to the present in which there are a number of LGBT communities and sub-communities that include a black gay community, an Asian gay community, a Jewish gay community, and a Muslim gay community (Weeks, 2016, Brauner 2000). The modern gay population in the UK is not homogeneous and divided by ethnicity, race, religion and nationality, but the members of each community are united through their sexual orientation and have created their own unique sub-culture (Weeks, 2016).

As could be seen in the participants' statements, most of the factors were linked and overlapped each other; for instance, identity was related to family acceptance, social connection, drug use and consequently sexual behaviour. Therefore, identifying one factor without considering other factors was not completely possible. In other words, there is a set of factors that contribute to RSB and one factor alone might not be necessarily influential. For example, in this study, attachment patterns along with other factors, such as family support and acceptance towards the participant's sexuality, the participant's positive experience of his first intimate relationship, and having an effective social network, all combine to create a positive influence on the individual's sexual behaviours. Therefore, it can be concluded that an individual who did not have any adverse experiences during childhood, such as abuse; who enjoyed significant family support and acceptance towards his sexuality; who had a positive experience of his first intimate relationship; who had an effective social network; and who was in good physical and mental health with no issues of substance misuse was highly unlikely to engage in risky sexual behaviours, such as unprotected sex and multiple sexual partners. The outcomes of this study contribute to the existing literature in this field and place emphasis on biopsychosocial factors (biological, psychological and social factors) as significant determinants of sexual behaviours.

### 3.4. Summary

A series of semi-structured interviews was conducted to collect the qualitative data that would form the backbone of this study. The interview schedule was structured into the following six sections which effectively covers biopsychosocial variables: sex, sexuality and sexual relationships; family background; social life and social network; relationships; health (psychological and physical); and substance use.

This research required a sample of gay men who are UK resident and aged 18 years old or over. As gay individuals are a difficult-to-find group, the researcher benefited from the assistance of LGBT organisations that cater to the needs of gay individuals. Transcripts of the interview of 8 gay men who were ethno-racially diverse were subjected to analysis using Thematic analysis. In identifying the themes, the analysis also employed a semantic approach by focusing on the data's most obvious or superficial interpretations. Based on the results of the data analysis, the key themes that emerged as contributing factors to risky sexual behaviours were: Beliefs and attitude towards RSBs and gay men; identity and internalized homophobia; Childhood experiences (early sexual experience and adverse childhood experiences); age; substance use; attachment; and well-being. After analysing the data, it appeared that all of these areas of individuals' lives influence their sexual behaviours. It was concluded that an individual who did not have any adverse experiences during childhood; who enjoyed significant family support and acceptance towards his sexuality; who had a positive experience of his first intimate relationship; who had an effective social network; and who was in good physical and mental health with no issues of substance misuse was highly unlikely to engage in risky sexual behaviours, such as unprotected sex and multiple sexual partners. The outcomes of this study contribute to the existing literature in this field and place emphasis on biopsychosocial factors as significant determinants of sexual behaviours.

# 4. QUANTITATIVE STUDY 1

## Biopsychosocial Predictors of Risky Sexual Behaviours: The Influence of Drug Use, Attachment patterns, Well-being, Loneliness, Social support, and Sexual Hyperactivation on Risky Sexual Behaviours among Gay and Heterosexual Men in the UK

### 4.1. Introduction

This study's hypotheses are based on two preliminary assumptions.

**Assumption 1:** As explained in chapter one, there are multi-factors (biopsychosocial factors) that influence one's sexual behaviour (page 2). ***Exclusion and inclusion criteria:*** According to Field (2013), a research can begin with an observation which the observation can be "anecdotal" (subjective) or could be based on some existing data. With this in mind, the variables of this quantitative study have been selected based on the existing data (see figure 1) which helped the researcher to generate some explanations and to write the research hypothesis. The quantitative study aims to research the influence of three biopsychosocial dimensions on risky sexual behaviours among gay men in the United Kingdom: biological factors (substance use), psychological factors (adult attachment patterns, loneliness, well-being and sexual system functioning) and social factors (lack of social support). The selected variables are the most often mentioned significant variables from previous sexual health studies; some of the current study's variables have been tested by the researcher in his previous research and all other variables have been tested and measured in other studies and their validity is backed up by strong evidence. However, as explained this current study benefits from a creative research design that pulls all these variables together in a comprehensive model. For instance, social support and loneliness had significant predictive relationships with risky sexual behaviour among male to female transgender individuals (Yadegarfard, et al., 2014). Consequently, the

researcher also used these factors in the current study as they provide strong evidence that is backed up by findings of the previous research. In addition, previous studies also have found some significant relationships between this study's chosen variables and risky sexual behaviours. For instance, attachment patterns are one of the main variables that have been shown to have a significant predictive relationship with risky sexual behaviours in both general and gay populations. (e.g. Cooper et al., 1998; Gentzler & Kerns, 2004). Furthermore, from the initial observations and existing data the researcher identified that some of the variables measured in the previous studies were only significant in a limited number of studies and were not found to be significant on other studies. This included variables such as religion (e.g. Oduntan, 2014; Ilesanmi , Ige , & Alele, 2014). As a result, there was no compelling evidence to support the inclusion of such variables in the current research. Also, throughout the selecting process the researcher realized that some of the variables mentioned in previous studies could be combined into one measurement. For instance, stress, anxiety and depression could be combined as part of well-being measurement (see page 122) and family support and friend support were both included as part of social support (see page 124). In this way, the researcher did not need to measure each of the factors separately. The researcher was fully aware that the scope of the current study does not allow him to measure every possible variable as it would make the outcome to have lack of degree of freedom and thus over-fitting (Field, 2013). It also might make the study too complicated to interpret and understand, which completely contradicts the aim and objective of the study.

In addition, on a more practical level, as the researcher did not have any fund for this study, he had to select variable that are not expensive to measure especially when compared to some of the biological factors that have an influence on risky sexual behaviours. For instance, the expenses of measuring an individual's hormone levels or conducting a genetic variation test are beyond the scope of this current study. Moreover, measuring these variables is not

complicated. To measure the variables, the researcher could use standard, reliable and valid questionnaires that could be easily distributed among a larger population for gathering more data. In contrast, measuring an individual's level of alcohol or drug use through hair strand drug tests or blood tests is complicated, time consuming and beyond the scope of this current research. Also, measuring these factors is less time consuming. They can easily be measured and distributed through online surveys. Time was one of the main elements for the researcher to consider. As he was utilising a mixed method and conducting three studies in two stages, the researcher needed to eliminate those variables (such as individual's hormone levels and conducting a genetic variation) that required more time to measure.

**Assumption 2:** There is no direct relationship between the study's IVs (loneliness, social support, attachment patterns, well-being) and its DV (risky sexual behaviours [RSBs]). In other words, any correlation between the IVs and DV involves an intervening variable or mediator. The IVs change a factor in individuals, and that factor subsequently leads individuals to engage in RSBs. Here in this research, it is assumed that the IVs increase the individual's efforts at attracting a mate and continued strong desire to engage in sexual intercourse (sexual hyperactivation), which consequently leads these individuals to engage not only in more sexual relationships but also in sexual relationships that expose them to STIs. For instance, when factor A (attachment pattern) predicts factor B (sexual hyperactivation) and factor B predicts C (condom use inconsistency), it is then possible to hypothesise that C and B have an indirect relationship when B is the mediator. Accordingly, the main question here is how sexual hyperactivation can be a mediator between IVs and RSBs. In this section, a brief description of this relationship will be provided.

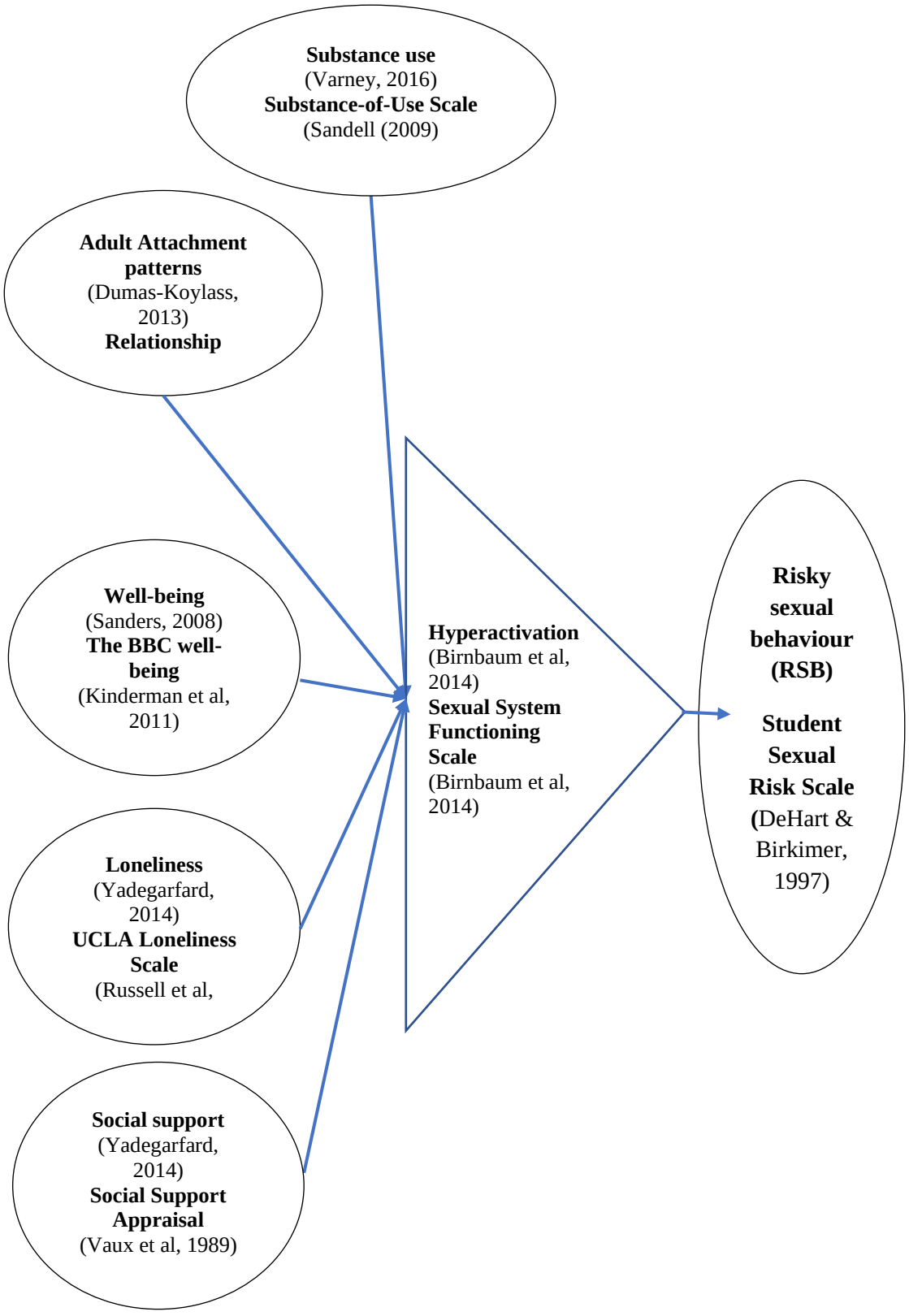


*Figure 6:* A hypothetical model indicating the indirect influence of substance use, adult attachment patterns, well-being, loneliness, social support on risky sexual behaviour via the mediator hyperactivation

### 4.1.1. Risky Sexual Behaviours (RSBs)

With regard to RSBs, as explained previously (see page 6) it is simply not possible to provide a completely unbiased definition. However, for the purpose of this research, contraception inconsistency, the definitions most commonly accepted in related literature, was measured. 'Contraception inconsistency' is a term used to describe one of the primary indicators of RSB (Pflieger et al, 2013, Scott, et al, 2014). Repeatedly failing to use contraceptives during sexual activity is RSB (Scott, et al, 2014; Simons, et al, 2013). There is a greater risk of STIs among those who do not use condoms during sex, even among those who only use them occasionally (Pflieger et al, 2013). 'Availability beliefs' is a term that describes the degree of confidence individuals have that they will be able to find condoms to use when they have sex, while an individual's ability to use a condom correctly is referred to as 'technical skills'. 'Impulse control' describes the degree to which an individual believes he will be able to control his own sexual urges and use a condom when he is in a risky sexual behaviour situation, while 'negotiation beliefs' is the confidence an individual has to insist that a sexual partner agrees to using a condom, regardless of whether it is the partner's preference for engaging in unprotected sex. Coyle, et al (1999) identified a connection between control beliefs and condom use, with an individual's application of these beliefs having a significant effect on whether or not they will use condoms effectively and thereby reduce their risk. The application of these control beliefs, however, must be consistent, as allowing even occasional lapses results in inconsistent condom usage, which in turn increases the level of RSB and its associated dangers. The reasons for inconsistent condom usage are largely social, psychological and demographic (Pfileger et al, 2013). To measure condom use inconsistency, the Student Sexual Risks Scale (DeHart & Birkimer, 1997) was used in this research (see page 126).

***RSBs and Sexual Hyperactivation***. The hyperactivation of the sexual system involves first of all increasing the individual's efforts at attracting a mate and secondly continuing to

have a strong desire to engage in sexual intercourse. At the same time, however, these intense desires are also accompanied by worry and fear relating to sexual rejection and performance failure. In addition, the chronic, intrusive worries associated with sexual hyperactivation are believed to lead to a decreased ability to regulate emotions (Mikulincer & Shaver, 2012, 2016). Therefore, the worry and fear are associated with a range of maladaptive sexual processes, as well as a person being unable to achieve satisfaction from a sexual relationship, which can lead to unsafe sexual activities, including multiple partners over a short period of time. For instance, a study of men conducted by Szepsenwol and Mikulincer (2010) showed that men with high levels of sexual hyperactivation revealed decreased standards for short-term romantic partners, thereby promoting sexual variety. Sexual hyperactivation is also positively associated with sexual desire (Birnbaumet al., 2014) and with affect-regulation motives (i.e., using sex to cope with distress, and to reduce relational insecurities,). Moreover, the outcome of a study carried out by Efrati and Mikulincer (2018) revealed that the study's participants reported that the level of compulsive sexual behaviour in all of the study's subscales (lack of behavioural control, thoughts on unwanted consequences, negative effects, and effect regulation) was associated with high sexual hyperactivation. Consistent with these theoretical depictions of hyperactivation, empirical research reveals that sexual hyperactivation is associated with premature ejaculation, sexual coercion, an increased number of sexual partners, as well as less sexual self-esteem and low sexual satisfaction (Birnbaumet al., 2014; Szepsenwol, Mizrahi & Birnbaum, 2015). Sexual hyperactivation is positively associated with relationship-oriented sexual motives, in other words, using sex to maintain a relationship, to enhance emotional intimacy, to experience the power of a partner, and to value and nurture a partner (Birnbaumet al., 2014). It has also been shown to be positively associated with self-serving sexual motives, such as an individual using sex to affirm one's self, to gain in social reputation, to enhance one's power, and to feel valued by a partner.

### 4.1.2. Biological Factors

Compare to the psychological factors and social factors that contribute to risky sexual behaviours, limited research has been carried out regarding the influence of biological factors on risky sexual behaviours. However, as previously mentioned, research shows that early puberty (Baams, 2015); genetics (Zietsch et al, 2010); hyper-sexuality (Kastner & Sellbom, 2012; Winder, 2016); depression (Holmes, Foa, & Sammel, 2005); substance issues such as the use of alcohol (Standerwick et al, 2007; Connor, et al, 2015) and drugs (Tucker, et al., 2012; Castelo-Branco, et al, 2014; Ritchwood, et al, 2016); and sexual development (Baams, 2015) all have strong relationships with risky sexual behaviours. In this present study, the researcher will focus on substance misuse. Many previous studies on the influence of substance misuse on the sexual behaviours of both the general and LGBT population have shown that drug and alcohol use affect the perceived behavioural control and judgment of individuals when engaging in sexual activities. Based on these consistent findings, it is predicted that it is highly unlikely that an individual who misuses substances would use a condom when participating in sexual activities.

#### *4.1.2.1. Substance abuse*

A significant ratio of LGB individuals of all ages are likely to use drugs, with 35% of this population having admitted to using a drug during the previous month in the study conducted by Varney (2016) in the UK. In the same study, LGB individuals were found to be 7 times more likely to be using a recreational drug than the general population, with between 4-13% being classified in the clinical misuse category. In terms of alcohol use, a high ratio of individuals of all ages, genders and sexual orientations from the LGB community in Varney's study (2016) engaged in binge drinking. Males in particular were classed as binge drinkers with 34% of the males in the LGB group being classified in this category (Varney, 2016).

Many members of the gay population use alcohol and drugs to overcome the pain of rejection, isolation, and discrimination (Wolitski, Stall, & Valdiserri, 2008). Minority stress theory explains "that stigma, prejudice, and discrimination create a hostile and stressful social environment that causes mental health problems" (Meyer, 2013, p. 3), so accordingly the feelings of worry, stigma and victimization that a member of a sexual minority may experience can bring about elevated levels of psychological distress, which can manifest itself as depression and anxiety (Meyer, 2013). In such an environment, many gay males view the clubs, bars, pubs, saunas, etc. that comprise the 'gay scene' as a form of culturally endorsed escapism away from the psychological distress they regularly experience. In contrast, it is shown that the likelihood of substance abuse and sexual risk reduces considerably when gay individuals receive love and acceptance through the support of family, peers, and the community (Bockting, 2008).

To facilitate the escape from the self-awareness of social and sexual norms, many gay males turn to drugs. Serving as it does as a key means of meeting other gay males, the 'gay scene' is viewed as an integral part of the lives of many gay males (Haldeman, 2010; McKirnan, Ostrow, & Hope, 1996). Within the gay scene, prejudices disappear, and gay sexuality is not only accepted but actively celebrated (Crowe & George, 1989). The term 'chemsex' has entered the vernacular in the UK as a descriptive title for the act of enhancing the sexual experience with drugs (Glynn, et al., 2018). A chemsex session would usually involve multiple partners over an extended period in a private setting, such as a residence, sauna, or back room of a nightclub (Bourne et al., 2015). Chemsex is appealing to many for its ability to enhance the sexual experience by removing inhibitions and increasing staying power (Weatherburn, et al., 2017). As its popularity rises, chemsex has become a growing concern among the relevant health services in the UK (Measham et al., 2011). One recent study confirmed the close link between Chemsex and risky sexual behaviours, including group sex and a high number of new

sexual partners (Sewel, et al., 2017). The same study also revealed the relationship between chemsex and previous STIs as well as the use of PEP (Post-exposure prophylaxis), which is a form of treatment that is used to prevent HIV infection after an individual has recently been exposed to the virus (Sewel, et al., 2017).

Over time, the concept of chemsex has become a normal part of life among many members of the gay community (Ahmed, et al., 2016). According to the theory of planned behaviour (TPB), this is the subjective norm. A qualitative study on the subject found that gay and bisexual men in England regarded the use of drugs and alcohol as common practice as well as a key aspect of socialising among certain communities and groups (Keogh et al., 2009). It is outlined in the social norms approach of Berkowitz (2004), the false perceptions that individuals may have regarding the thoughts and actions of other members in their social groups can result in an overestimation of certain behaviours, the so-called "false consensus effect", which creates a false sense of justification among these individuals for engaging in these behaviours themselves. As previously explained, the members of a gay community may develop a specific behaviour as a strategy for coping with a current issue, such as anxiety or stress. With continued use, the behaviour evolves over time to become an integral aspect of the group culture. Similarly, the act of gay males using drugs may have begun as a strategy for enhancing the sexual experience, but over time it has evolved into part of the culture. Although the use of drugs in a sexual context by gay men is certainly nothing new the advent of chemsex has brought about major changes, not only in the enhancement of the experience but also in the proportion of the population participating in this growing trend (Toates, 2014).

A side-effect of this substance abuse is a lowering of inhibitions and an increased exposure to sexual risk situations. One of the drugs most commonly used to enhance the sexual experience of men who have sex with men (MSM) is methamphetamine, which has also been shown to reduce the intention to practice safe sex (Parks & Kennedy, 2004; Vu, et al., 2016).

The side effects of methamphetamine that make the use of a condom less practical include increased difficulty in achieving a full or partial erection (Galloway, et al., 1996). Delayed ejaculation is another side effect and Galloway and colleagues (1996) observed that the practice of engaging in rougher and more prolonged sex while under the influence of methamphetamine can lead to increased bleeding and abrasions. It could also be that the psychological effects of methamphetamine inhibit the user's desire to engage in safe sex (Semple, Patterson, & Grant, 2004).

***Substance use and sexual hyperactivation***. Euphoria and heightened awareness combined with increased sensory stimulation are just some of the ways that sex becomes more pleasurable for individuals on drugs such as methamphetamine and cocaine. Additionally, individuals on drugs often have increased energy and confidence coupled with a heightened sex drive, making them more likely to engage in sexual activity. Individuals on such drugs reported having longer sex and orgasms that were more intense. In addition, individuals who used methamphetamine claimed that it boosted their sexual drive and performance and encouraged them to experiment sexually (Semple et al., 2004; Vu, et al., 2016). These 'positive' effects encourage some gay men to use drugs more regularly while having sex, which consequently increases their efforts to have more sex and results in them continuing to have a strong desire to engage in sexual intercourse (sexual hyperactivation).

### 4.1.3. Psychological Factors

It is pointed out by British HIV Association that "psychological considerations are of key importance in several issues including conception and HIV in sexual behaviours to reduce HIV transmission and sexual functioning" (Fakoya, et al., 2008). However, identifying the psychological factors which contribute to risky sexual behaviour is no easy task, as evidenced by and due in no small part to the many contrasting theories that have contributed to the

understanding of mental conditions. While psychodynamic, cognitive, and behavioural factors all have a part to play, a detailed description of all the relevant psychological elements is beyond the scope of this current research. Therefore, this study will focus only on attachment patterns and well-being as psychological predictors for risky sexual behaviours among gay individuals.

#### *4.1.3.1. Attachment Patterns*

It has been proposed by researchers that Bowlby's attachment theory may provide a useful framework through which to explore the interpersonal nature of risky sexual behaviours (Feeney & Raphael, 1992). The attachment theory posits that one's experience within close interpersonal relationships throughout the course of the lifespan gives rise to cognitive representations of others, as well as of the self in relation to others (Bowlby, 1973). These models guide and organise the behaviour, effects, and cognition in intimate relationships. Bartholomew and Horowitz (1991) described four prototypical adult attachment styles representing the four combinations possible from the positive and negative models of the self and others: secure, dismissing, preoccupied, and fearful. Secure individuals have positive models of both the self and others, while fearful individuals have negative models of both. Preoccupied individuals have positive models of others and negative models of self, while dismissing individuals have the reverse pattern.

A significant number of studies have been carried out to investigate the relationship between attachment styles in childhood and relationship patterns in adults. Many results indicate a correlation between these two, indicating that the attachment patterns experienced during childhood shape the types of relationships engaged in as adults. Ainsworth and colleagues (1978) identified four attachment patterns in childhood: secure, anxious/resistant, avoidant, or disorganized/disoriented. These have been found to have four parallels in adult

relationships: secure, clingy, casual, and uninterested. From this, Bartholomew (1990) developed a four-category model of attachment: secure, dismissing, fearful, and preoccupied. Bartholomew (1990) then used this model to categorise adult relationships into two types of attachment: positivity of representations of the self and positivity of representation of others. It has since been suggested that identifying an individual's category of adult relationship is a good indicator of other factors in the individual's adult life, including quality of life, specifically in two key areas: the internal psychological (emotional and effective) domain and the external socio-cultural (behavioural) domain.

It is believed that these attachment styles have an impact on a wide variety of interpersonal behaviours, including those of a sexual nature (Feeney & Noller, 1990; Feeney & Raphael, 1992; Shaver and Hazan, 1988). Moreover, Ajzen's theory of planned behaviour states that an individual's attitude towards a behaviour is affected by the relevant background factors (Ajzen, 2005). Therefore, it follows that attachment style as a background factor can influence an individual's attitude and intention to engage in risky sexual behaviour. It is widely accepted among researchers that humans have an innate desire to mate and that each individual's sexual behaviours, including their motives, perceptions, and emotions, are determined by the different ways in which their sexual behavioural system functions (Birnbaum et al., 2014). Just as practically every living creature is driven by an innate and often uncontrollable urge to engage in sexual intercourse for the purpose of procreation, the sexual behavioural system of humans is hard-wired into all of us and not reliant on external triggers or processes of socialization. At the same time, however, there is sufficient evidence to show that the human sexual behavioural system is subject the influence of the very first social behavioural system that an individual ever experiences, namely the attachment system (Shaver and Hazan, 1988). Throughout an individual's life, in all the tiny details and accumulated memories of every sexual encounter and romantic relationship, the interaction between these

two systems remains vital (Hazan & Zeifman, 1994). Even though these two systems interact with each other closely, they are controlled by separate motivational systems with their roots in the early evolution of humans (Fisher et al., 2002). To expand, attachment and sexual behaviour are governed by processes which are functionally distinct from each other and which are controlled by different physiological processes.

Shaver and Hazan (1988) proposed that adult attachment may be related to the nature (e.g., duration, exclusivity) of individuals' sexual relationships and their motivations for seeking these relationships. Other studies show that there are additional variables that might hypothetically lead to attachment/sexual-behaviour connections, such as the ability to insist on safer-sex practices (assertiveness) (Sample, 2011; Biello, et al., 2010; Feeney, et al., 1999); openness and disclosure (Li, et al., 2017; Brown, et al., 2017; Mikulincer & Nachshon, 199l); relationship commitment ( Olmstead, et al., 2013; Vanderdrift, Lehmiller, & Kelly, 2012; Feeney & Noller, 1990); sexual coercion (Gilore, et al., 2014; Song, Ji, & Agardh, 2014; Sarwer, et al., 1993); mutual care giving (Collins & Feeney, 2000); level of intimacy preference for casual sex versus intimacy ( Ciesla, Roberts, & Hewitt, 2004; Brennan, Clark, & Shaver, 1998); and interpersonal power (Dworkin, et al., 2017 ;Bartholomew & Horowitz, 1991).

It has also been shown that attachment anxiety is a predictor of an individual's sexual beliefs, condom usage habits, and probability of engaging in unprotected sex with risky partners. Those who develop secure attachments, free from anxiety and avoidance, are found to be less prone to participating in concurrent relationships, more likely to use condoms, and more inclined to develop stable relationships in which sexual activity remains within the context of romantic intimacy (Brennan & Shaver, 1998; Cooper et al., 1998). Conversely, those who experience attachment avoidance tend to be more open to casual sex and loveless sex and risky behaviour (Lemelin, et al., 2014; Cook, et al., 2016) , but other research has shown that there has been inconsistent linked between attachment avoidance and unprotected sex (Cooper

et al., 1998; Gentzler & Kerns, 2004). There also exists a correlation between attachment anxiety and attitude to condoms, which when combined with a low self-efficacy in terms of insisting on condom usage significantly diminishes the individual's likelihood of engaging in protected sexual activities (Bogaert & Sadava, 2002; Tracy et al., 2003). Some studies suggest that risky sexual behaviour, including exposure to STIs, should be influenced by both attachment avoidance and anxiety (e.g. Mohammadalipoor, Rostami, & Ghaemmaghami, 2010 ;Lemelin, et al., 2014), although each appears to relate to a different aspect of sexual risk. While both avoidance and anxiety are linked to multiple partnerships, anxiety is also related to risky partnerships and unprotected sex. As all of these aspects of risky sexual behaviour are also related to increased risk of STIs, it is fair to conclude that both anxiety and avoidance also relate to STIs (Tracy et al., 2003).

***Attachment style and sexual hyperactivation***. It is shown that insecure attachment is strongly linked with hypersexual behaviour (sexual addiction, sexual impulsivity) (Gilliland, Star, Hansen, & Carpenter, 2015). For instance, attachment avoidance is reported to be link with hypersexuality (Crocker, 2015). It is also shown that there is a direct relationship between attachment anxiety and increased promiscuity, and unprotected sex (Bogaert & Sadava, 2002; Tracy et al., 2003). Children who felt insecure in their relationships with their parents were more likely to be at risk of behavioural problems including precocious sexual behaviour in adolescence. Conversely, Belsky, Steinberg, and Draper (1991) proposed that children raised in a stress-free and conflict-free home environment also tended to develop more secure relationships with their parents, which could be predicted as indicators of a lack of behavioural problems, including precocious sexual behaviour in adolescence

#### *4.1.3.2. Well-being*

No clear universal definition of well-being has ever been established due to the different perspectives of different researchers. However, one commonly-used synonym of well-being is "quality of life", which has been defined by the World Health Organization as:

> *"…an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" (World Health Organization, 1997, p.1).*

Accordingly, in this current study, the researcher is looking at a broader sense of well-being by using the BBC's well-being scale (Kinderman et al., 2011), which encamps physical health, social relationship, environment, self-acceptance, autonomy, purpose in life and personal growth.

Limited research has been carried out regarding the relationship between well-being and risky sexual behaviour, especially among the gay population; however, a study conducted by Sanders (2008) revealed that well-being and risky sexual behaviour were closely related. In their study of men who have sex with men (MSM), Wilson et al (2014) reported that a higher than average well-being correlated with a lower probability of risky sexual behaviour. In their qualitative study of women living with HIV/AIDS, Teti, et al (2010) found a relationship between poor psychological well-being and risky sexual behaviour. Also, poor mental health status among adolescents has also been linked to risky sexual behaviors (Tsutsumi, Izutsu, & Toshihiko, 2012).

Many researchers have shown that LGBT individuals typically experience a lower level of well-being than their heterosexual counterparts. In particular, LGBT individuals have been found to have higher levels of anxiety, depression (Davis, 2003; Zietsch, et al., 2012; Hudson-Sharp & Metcalf, 2016; Chakraborty, et al., 2018) and suicidal feelings (Liu & Mustanski, 2012) than their heterosexual counterparts (also see NHS Choices, 2014). It was found in the research of Varney (2016) done in the UK that 22% of gay men and 26% of bisexual men were experiencing mild to severe levels of depression. The reasons for the higher levels of depression, anxiety, and stress among LGB populations has been at least partially attributed in various studies to social isolation, discrimination, suppression, and family rejection. As previously identified, there is then a tendency for gay individuals to turn to substances such as alcohol and drugs as a coping device to help them deal with their negative social experiences. One commonly found result of this substance use is a lowering of inhibitions, which in turn leads to increased exposure to sexual risk situations (Bockting & Coleman, 2007). Also, many studies have been carried out to ascertain the influence of depression (Ekstrand & Coates, 1990) and anxiety on risky sexual behaviour (Hutton et al., 2004; Theodore & Koegel, 2002). However, Crepaz and Marks (2001) failed to identify any significant positive relationship between depression and sexual risk behaviour in their meta-analysis of 27 studies, each of which incorporated quantitative measures of depression, anxiety, and/or anger and sexual risk behaviours related to HIV transmission, such as unprotected sex or promiscuity. In fact, there is evidence to show that depression can have a positive relationship with an individual's intention to use a condom although also with decreased actual condom use during sex. For example, a study of HIV-positive women revealed that those with greater depressive symptoms were less likely to use condoms (Lambert, Keegan, & Petrak, 2005). Among adolescents, both males and females with self-reported depression were more likely to have a higher number of sexual partners and abstain from using contraception

(Kosunen et al., 2003). In a separate study of 3,100 adolescent boys, a correlation was also identified between symptoms of depression and a heightened risk of unprotected sex (Shrier, Harris, Sternberg, & Beardslee, 2001).

***Well-being and sexual hyperactivation***. To the best of the researcher's knowledge there has been no study conducted so far on the relationship between well-being and sexual hyperactivation. However, various research has shown that well-being (e.g. Conlon, Rahaley, & Davis, 2017) such as in relation to anxiety (e.g. Wiebe et al., 2004; Hansen, Mukherjee, & Thomsen, 2011) affect an individual's attitude towards behaviour. The findings of these studies can help to explain how an individual's sexual hyperactivity can be altered as a result of anxiety, whereby sex is used as a means of coping with the anxiety. Because sex provides a seemingly effective short-term solution to anxiety for some individuals, this can result in the attitudes towards sexual behaviour being changed among these individuals, who then come to see it as an appropriate long-term coping strategy for their anxiety. Over time, this new attitude is reinforced, creating a cycle of behaviour whereby the individuals develop a habitual reliance on sex as a means of managing their anxiety, hence increasing in their sexual hyperactivity in the long term (Hayden, 2000). Quality of life has also been shown to be a significant indicator of certain sexual risk behaviours. Among homeless gay men, particularly those who had experienced family rejection, there was an increased likelihood of being involved in prostitution, which subsequently increased their exposure to STDs (Robertson & Monsen, 2001).

#### *4.1.3.3. Loneliness*

Loneliness is an unpleasant emotion in which a person feels a strong sense of emptiness and solitude resulting from inadequate levels of social relationships. However, it is a subjective experience (Peplau & Perlman, 1982). Loneliness has also been described as social pain—a psychological mechanism meant to alert an individual of isolation and motivate her/him to seek

social connections (Cacioppo & Patrick, 2008). While it is certainly true that social isolation and loneliness share some common factors, it is the viewpoint of the researcher that they are distinct concepts. Social isolation has been scientifically defined as an objective measure of the absence of an individual's interaction with others, measurable by a network instrument. In contrast, loneliness is regarded as a subjective condition, which typically presents itself in the form of negative feelings arising from a lack of social interaction (Havens et al., 2004). However, it is entirely possible for an individual to experience the objective condition of social isolation without developing the subjective state of loneliness.

Loneliness in the gay community is affected by a number of contributing factors. Two of the most common factors include a negative view of self-identity combined with a lack of social support, which are best understood in a developmental context. An inability to pass the relationship milestones of attraction, dating, and forming a stable relationship due to negative social perceptions of homosexuality can lead to internalized stigma and a negative self-perception (Martell, Safren, & Prince, 2004). Social attitudes to homosexual relationships result in many gay males hiding, ignoring, and suppressing their feelings (Martin & Hetrick, 1988). As a result, the development of their identity is negatively affected by a feeling of not fitting in to societal norms, often leading to isolation and feelings of loneliness (Flowers & Buston, 2001).

All research on loneliness, in general, indicates that loneliness is directly linked with poor mental health and behavioural problems. More specifically, loneliness found to be significantly associated with anxiety, depression, and interpersonal hostility (Chang , 2018; Matthews, et al., 2016) as well as with suicidal risk (Chang, et al., 2017), aggressive behaviour (Buelga, et al., 2008; Al-Yagon, 2008; Diamant & Windholz, 1981), alcohol use (McKay, et al., 2017; Canham, et al., 2016); and antisocial activities (Martens & Palermo, 2005; Check, Perlman, & Malamuth, 1983). Various studies have identified relationships between loneliness

and poor self-esteem (Zhao, Zhang, & Ran, 2017; Zinovyeva, 2016), general dissatisfaction, unhappiness (Satici, Uysal, & Deniz, 2016; Yan, Su, Zhu, & He, 2013), and quality of life (Theeke, et al., 2012).

The relationship between loneliness and risky sexual behaviour is explained in Hull's Drive Reduction Theory (1943), which posits that when an individual is deprived of a basic need, that individual will develop feelings of discomfort, stress and anxiety, which will influence their behaviours. Therefore, this model postulates a relationship between loneliness and risky sexual behaviour. Although there appears to be limited studies focusing specifically on the influence of loneliness on the gay male population, a study conducted by Yadegarfard et al (2014) has shown that loneliness is a strong predictor for sexual-risk behaviour among Thai male to female transgender youth. In addition, it has been shown that higher levels of loneliness are strongly associated with frequency of sexual risk behaviour (Hubach, et al., 2015; Munoz-Laboy, Hirsch, & Quispe-Lazaro, 2009). There is an increased risk of alcohol and drug abuse, engaging in sex with multiple partners, engaging in anonymous sex, and the subsequent exposure to HIV infection among gay males who wish to overcome their loneliness but who lack the necessary adaptive social and coping skills (Torres, 2005). However, in a study conducted by Ekstrand and Coates (1990), loneliness and risky sexual behaviour did not have a significant relationship.

***Loneliness and sexual hyperactivation***. To the best of the researcher's knowledge there has been no study conducted so far on the relationship between loneliness and sexual hyperactivation. However, various research has shown that log-term loneliness affects an individual's mental health such as depression and poor-decision making (Hämmig, 2019). As early explained, because sex provides a seemingly effective short-term solution to mental health problems such as depression for some individuals, this can result in the attitudes towards sexual behaviour being changed among these individuals, who then come to see it as an

appropriate long-term coping strategy for their loneliness. Using sex as a coping strategy repeatedly over time then becomes a habit resulting in the individual's efforts at attracting a mate and continued strong desire to engage in sexual intercourse (sexual hyperactivation) increasing, which consequently leads them to adopt less healthy sexual practices, such as visiting public places which are known to be gay cruising areas, including public toilets and parks, for the purpose of engaging in risky and often anonymous sexual activities.

### 4.1.4. Social Factors

According to the biopsychosocial model, social factors are contributory factors in the development of an illness. Social factors are those which relate to family support and social support, such as through education, employment, access to health services, and the legal system. Social factors contribute to an individual's identity, environment, relationships with others, and relationship to healthcare providers (Campbell & Rohrbaugh, 2006). As was the case with the psychological determinants, it is beyond the scope of this current study to conduct a complete review of all the possible sociocultural factors that are related to risky sexual behaviours. As such, this study will focus on social support including, family support, friends support and other support.

#### *4.1.4.1. Social support*

It is reported that "lesbian, gay and bisexual people are more likely to be estranged from their biological family compared to heterosexual people often because their biological family do not approve of their sexual orientation" (Stonwall, 2011, p.5). Social support is one of the main factors of one's psychological and emotional development, Researchers has defined and measured "social support" in different ways; however, four common function of social support has been mentioned in literatures (Wills, 1991; Uchino 2004), **emotional support** (Abraham

et al., 2016; Langford et al., 1997) such as , empathy, accepting, understanding, intimacy, loving and caring; **tangible or instrumental support** (Abraham et al., 2016; Sleving et al., 1996) such as financial support, food and material and any other form of direct and concrete assistance; **informational support** (Krause, 1986) such as giving any form of useful information, guidance and advice to someone; and **companionship support** (Wills, 1985) is any form of support that give an individual sense of belonging for the purpose of sharing a social activity. As already discussed in chapter one (page 12), gay individuals in the UK did not have any of these support from British society for long time. The relationship between lack of social support and risky sexual behaviours has been studied by many researchers; it is shown that individuals with less social support more likely to commit risky sexual behaviour (e.g. Johanston, et al., 2017; Saleh, et al., 2016; Choudhury, et al., 2015; Yadegarfard, et al., 2014; Glick & Golden, 2014; Kapadia, et al., 2013; Majumdar, 2006;). Moreover, many research have been done regarding the influence of social support and well-being, for instance it is shown by Abraham et al., (2016) that lack of a social support has significant negative effects on individuals' well-being; especially it is reported that lack of social support has a strong link with the level of individuals' alcohol consumption (e.g. Mendoza, et al., 2015; Hanson & Jensen, 2015; Velloza, et al., 2017) and substance misuse (e.g. Rothman, Anderson, & Stein, 2008; Buckman, Bates, & Morgenstern, 2008 ;Risser, et al., 2010 ; Niyonsenga, et al., 2012) which as previously was discussed consequently affect individuals safe sexual practice.

Lack of social support can lead to social isolation (Abraham et al., 2016). A situation of social isolation involves few social contacts and few social roles, as well as an absence of mutually rewarding relationships with other people. So how does social isolation influence individuals' sexual behaviour? According to Sullivan's interpersonal theory, each individual's behaviour pattern develops within a social context and humans would therefore be unable to develop a personality without social interaction (Sullivan, 1953). Sullivan explains that it is not

possible to isolate an individual's personality from the complex web of interpersonal relations within that individual's life (Sullivan, 1953). So according to Sullivan theory it can be said that sexual behaviour as part of individuals' personality also form within societies. Individuals and in this case gay individuals through their family and socialisation practice in very young age learn what is permissible or impermissible to say and do and, later, to think. Same sex relationships were specifically impermissible and taboo in the past which lead many gay individuals to isolation. Although British society has changed over the past decades and now value and support sexual diversity, it is still common for some gay individuals in the UK to experience feelings of isolation as a result of intolerance, discrimination, and rejection. The potential results of these feelings of isolation are increased risk of emotional and mental issues, including depression, anxiety, substance abuse, sexual risk behaviour, self-harm, and suicidal tendencies. It has been shown that some individuals turn to sexual intimacy and risky sexual practices as a coping mechanism for their isolation (LeGrand et al., 2014; Arcury & Quandt, 2007.

***Social support and sexual hyperactivation*.** There is a school of thought which suggests that the practice of engaging in risky sexual behaviour serves as a symbolic act of rebellion by gay males, albeit one that may be carried out subconsciously or even as just part of the accepted gay culture (Crossley, 2004). Throughout a history of oppression, when social rules and laws have been designed to prevent gay males from being open about their sexuality, many gay males have actively sought to overcome these restrictions on their freedom. This fundamental idea was first explained and placed into theoretical terms by Brehm (1966) in his concept of 'psychological reactance' (Brehm, 1966, Brehm & Brehm, 1981). The theory states that when an individual is deprived of the freedom and support to engage in a specific behaviour, it will create a 'psychological reactance' in the individual, which will manifest itself as an overpowering motivation to re-establish that threatened or lost freedom. The power of the

motivation to react in this way is directly correlated to the degree of importance the individual places on the freedom that is being threatened. Since the most obvious means of re-establishing the threatened freedom is to participate in the prohibited activity, this can cause adverse effects. So, according to reactance theory, any restriction on same sex relationships might perceived as threatening a freedom which is important to gay men will actually increase the population's motivation to engage in more sexual activity (Adam & Larsen, 2017) which repeatedly over time then becomes a habit resulting in higher sexual hyperactivation, which consequently leads them to adopt less healthy sexual practices.

### 4.2. Research Aim

This study aims to research the influence of three biopsychosocial dimensions on risky sexual behaviours among gay men in the United Kingdom: biological factors (substance use), psychological factors (adult attachment patterns, loneliness, well-being and sexual system functioning), and social factors (lack of social support).

### 4.3. Research Hypothesis

H1: Gay men report significantly higher levels of substance use, lower levels of well-being, higher scores for insecure attachment patterns, higher levels of lack of social support and loneliness, and higher levels of sexual hyperactivation and risky sexual behaviours than their heterosexual male counterparts.

H2: The reported effects of substance use, well-being, attachment patterns, experience of social support, and loneliness on the reported levels of risky sexual behaviours are mediated by the levels of sexual hyperactivation.

## 4.4. Methodology

### 4.4.1. Research Design

This study is based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. The study's predictors are the influence of drug use, well-being, attachment patterns, loneliness, and social support on the mediator Sexual hyperactivation; the criterion is risky sexual behaviour. In order to truly understand the influence of the predictors on risky sexual behaviours of gay men, the design of this study requires a control group of heterosexual men to provide base-line measurements of these relationships for comparison purposes. From such a control group, this researcher would then discover whether any negative influence of the study's predictors on the criterion is specific to the study's gay sample or common to males in general.

### 4.4.2. Sampling and recruitment

For this quantitative study (comparison study), the research requires a sample of gay males but also a group of heterosexual men aged 18 years old and over who live in the UK. Selecting the participants for the comparison study in this way means that the two groups are comparable in terms of age, level of education, social class, knowledge about sexual behaviours, and financial status (dependent on or independent of parents).

The data collection process consists of the following procedural steps:

1. As gay individuals are not an organised group, the researcher required the assistance of relevant organisations, such as universities and LGBT organisations that cater to the needs of gay individuals. The researcher then contacted the student union of University of Bedfordshire and LGBT Links in Luton. The researcher explained the objectives of the

study to the directors of the student union and the manager of LGBT Links Luton in order to seek their permission to conduct the study. Also, a poster was provided with relevant information about the aims and objectives of the study together with contact details for people who are interested in taking part in this study.

2. For the quantitative part of the study, an online survey was created on the Qualtrics online software. The link to the online survey was sent to the universities' social network pages, such as Facebook, Instagram and Twitter. Based on the snowball sampling method, interested people were asked to send the link to other heterosexual and gay men who are also students. Also known as chain sampling or referral sampling, snowball sampling is a non-probability sampling technique that can be applied when it is difficult to find an appropriate sample due to the specificity of their characteristics (Thompson, 2012). Once a small number of suitable subjects have been found, these subjects then identify and nominate other appropriate subjects from their networks. Through this chain of referrals, the size of the sample grows (snowballs) while still including only subjects with the relevant characteristics needed for the study (Thompson, 2012).

***Exponential non-discriminative snowball sampling*** was used in the present study. In this way, the researcher recruits a subject who then refers additional subjects. The researcher then vets the new referrals to determine their suitability to the research until a sufficient amount of primary data can be collected (Thompson, 2012).

Snowball sampling provides various advantages, including access to hidden populations. It is also a cost-effective and time-efficient process for the researcher (Thompson, 2012). Another advantage is that it requires minimal planning before the process of collecting primary data can begin. However, there are also certain disadvantages to the snowball sampling method. First of all, there is the issue of ethics when relying on untrained individuals to refer individuals who may even be from a vulnerable group or minority (Thompson, 2012). Also, if

too many samples are drawn from one specific network, this can create information bias. On the other hand, there is also a chance that the initial subjects may be reluctant to nominate acquaintances from within their network. Finally, there is the question of how closely the referred subjects fit the required characteristics of the sample group (Thompson, 2012).

#### *4.4.2.1. Demographic Profile of Respondents*

The sample consisted of 443 male respondents.

| | | **Gay men** | | **Heterosexual men** | | **Total** | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| **Ethno-racial** | White – British | 202 | 45.6 | 181 | 42.4 | 390 | 88.0 |
| | White – Irish | 3 | 0.7 | 1 | 0.2 | 4 | 0.9 |
| | Black | 0 | 0.0 | 4 | 0.9 | 4 | 0.9 |
| | Black – British | 0 | 0.0 | 2 | 0.5 | 2 | 0.5 |
| | Mixed - White and Black Caribbean | 2 | 0.5 | 3 | 0.7 | 5 | 1.1 |
| | Mixed - White and Black African | 2 | 0.5 | 2 | 0.5 | 4 | 0.9 |
| | Mixed - White and Asian | 0 | 0.0 | 2 | 0.5 | 2 | 0.5 |
| | Subcontinent (Indian, Bangladeshi, Pakistani, …) | 2 | 0.5 | 7 | 1.6 | 9 | 2.0 |
| | Far East (Chinese, Indonesian, Korean, …) | 2 | 0.5 | 1 | 0.2 | 3 | 0.7 |
| | Middle East/ Mediterranean (Arab, Iranian, ...) | 2 | 0.5 | 3 | 0.7 | 5 | 1.1 |
| | Any other ethnic group; please specify | 12 | 2.7 | 3 | 0.7 | 15 | 3.4 |
| | Total | 227 | 51.2 | 216 | 48.8 | 443 | 100 |
| **Educational attainment** | Post graduate Degree | 25 | 5.6 | 24 | 5.4 | 49 | 11.1 |
| | Undergraduate Degree | 66 | 14.9 | 51 | 11.5 | 117 | 26.4 |
| | Some university credits | 14 | 3.2 | 11 | 2.5 | 25 | 5.6 |
| | A-Level or equivalent | 28 | 6.3 | 46 | 10.4 | 74 | 16.7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | College or trade school graduate | 17 | 3.8 | 18 | 4.1 | 35 | 7.9 |
| | Some college credits or trade school | 5 | 1.1 | 8 | 1.8 | 13 | 2.9 |
| | G.C.S.Es | 57 | 12.9 | 46 | 10.4 | 103 | 23.3 |
| | Did not graduate from high school | 3 | 0.7 | 3 | 0.7 | 6 | 1.4 |
| | No qualification | 12 | 2.7 | 9 | 2.0 | 21 | 4.7 |
| | Total | 227 | 51.2 | 216 | 48.8 | 443 | 100 |
| **Marital status** | Never married | 133 | 30.2 | 74 | 16.8 | 207 | 47.0 |
| | Separated | 6 | 1.4 | 4 | 0.9 | 10 | 2.3 |
| | Divorced | 12 | 2.7 | 14 | 3.2 | 26 | 5.9 |
| | Widowed | 0 | 0.0 | 3 | 0.7 | 3 | 0.7 |
| | Living common-law | 27 | 6.1 | 23 | 5.2 | 50 | 11.4 |
| | Married | 28 | 6.4 | 95 | 21.6 | 123 | 28.0 |
| | Civil partnership | 18 | 4.1 | 3 | 0.7 | 21 | 4.8 |
| | Total | 224 | 50.9 | 216 | 49.1 | 440 | 100 |
| **Age** | 18-23 | 20 | 4.5 | 16 | 3.6 | 36 | 8.2 |
| | 24-29 | 31 | 7.0 | 23 | 5.2 | 54 | 12.3 |
| | 30-35 | 33 | 7.5 | 34 | 7.7 | 67 | 15.2 |
| | 36-41 | 26 | 5.9 | 29 | 6.6 | 55 | 12.5 |
| | 42-47 | 23 | 5.2 | 17 | 3.9 | 40 | 9.1 |
| | 48-53 | 13 | 3.0 | 29 | 6.6 | 42 | 9.5 |
| | 54-59 | 41 | 9.3 | 23 | 5.2 | 64 | 14.5 |
| | +60 | 37 | 8.4 | 45 | 10.2 | 82 | 18.6 |
| | Total | 224 | 50.9 | 216 | 49.1 | 440 | 100 |
| **Relationship status** | Single and not dating | 84 | 19.1 | 56 | 12.7 | 140 | 31.8 |
| | Single and dating | 42 | 9.5 | 29 | 6.6 | 71 | 16.1 |
| | In a monogamous relationship | 77 | 17.5 | 128 | 29.1 | 205 | 46.6 |
| | In a non-monogamous (open) relationship | 19 | 4.3 | 3 | 0.7 | 22 | 5.0 |
| | In a polyamorous (multiple people) relationship | 2 | 0.5 | 0 | 0.0 | 2 | 0.5 |
| | Total | 224 | 50.9 | 216 | 49.1 | 440 | 100 |

*Table 3: Demographic data*

### 4.4.3. Research Instrumentations

For the purposes of the study, a eight part questionnaire in the English language was employed to gather data. A cover letter was also provided to explain the nature and purpose of the questionnaire. Detailed descriptions of the seven parts were presented in the following section.

#### *4.4.3.1. Personal Information*

A researcher-constructed set of questions was used to obtain the required personal information about the respondents. This first part was consist of items directed at the selected demographic variables of age, sex, gender identity, sexual orientation, ethnicity, education, current relationship status, and marital status.

#### *4.4.3.2. Substance use*

This study used the *Substance Frequency-of-Use Scale* developed by Kimber and Sandell (2009) as the tool to measure substance use. There are a few reasons why this scale was used in this research. First of all, the scale is short and easy to use. It measures different types of substance usage, including "sniff a substance of any kind" which is highly relevant in the context of the current study. Unlike the other exitance measurements, the scale also measures the frequency of substance use. It has good face validity, very good internal consistency, and good concurrent validity (Kimber & Sandell, 2009). The *Substance Frequency-of-Use Scale* is a self-report scale that measures the frequency of substance use through 4 independent questions and employs 3-, 4-, and 5-point frequency scales for respondents' answers (Kimber & Sandell, 2009). Each question will be scored independently so in the analysis each question will be treated as an independent variable (Appendix E) and high scores on the scale items reflect a *high perception* of substance use (drugs, alcohol, sniffed drugs and smoking tobacco). The substances covered in the scale are drugs (hard and soft),

volatile substances (sniffing), alcohol, and tobacco (smoking). The questions are: “How many times have you tried drugs?” (7-point scale, ranging from “Never” to “More than 50 times”); “Have you ever sniffed a substance of any kind?” (3-point scale, ranging from “No” to “Yes, several times”); “How often do you drink beer, cider, wine or spirits?” (9-point scale, ranging from “Do not drink” to “Every day or every other day”); “Do you smoke?” (7-point scale, ranging from “No, have never” to “Every day or almost every day”). When considering their answers, the respondents are advised that their responses relate to their entire lives rather than a specific time period, such as the last month or year. For the statistical analyses, categories that prove to be quantitatively indistinguishable was collapsed.

*4.4.3.3. Well-being*

To measure the participants’ well-being, the BBC well-being scale was used (Kinderman, Schwannauer, Pontin, & Tai, 2011) (Appendix E). The test was created by Kinderman and his colleagues in 2011 and aims to measure key recognised aspects of well-being. The researcher decided to choose the BBC-SWB for a few reasons. First of all, the test measures three dimensions of well-being (psychological, physical, and relationship). The scale has good face validity, very good internal consistency across subsets of the sample, and good concurrent validity. It is shown that there is strong correlation between the factors. The measure also has been shown to have equivalence of fit and parameters across both the male and female subsamples, thereby demonstrating validity of use of the measure across both males and females, as well as in mixed gender groups. In addition, the measure has shown good psychometric properties in a very large UK general population, making it reasonable to conclude, therefore, that the BBC-SWB scale is well validated for the general UK population. It is explained by the authors that items in this measurement were selected from several well-known existing measures and supplemented by additional items in the field of mental health. The items reflect eight aspects of well-being: physical health, social relationship, environment,

self-acceptance, autonomy, environmental mastery, purpose in life, and personal growth. The BBC well-being has three sub-scales and consists of 24 items  12 items for Psychological well-being (items 4 (reversed score), 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15) , 7 items for Physical well-being (items 1, 2, 3, 21, 22, 23, 24), and 5 items for Relationship well-being (items 16, 17, 18, 19, 20). The items have good validity and internal consistency (α=.935) (Kinderman, et al., 2011). High scores on the scale items reflect a *high perception* of well-being (Psychological, physical and relationship).

*4.4.3.4. Attachment*

To measure the adult attachment patterns, this study used the Relationship Questionnaire (RQ), which was created by Bartholomew and Horowitz (1991) and includes 4 items that were designed to measure adult attachment style. There are a few reasons why the researcher chose this scale in this study. First of all, it is a self-report questionnaire, unlike some other attachment measurement that need to be completed as part of an interview, such as the Peer Attachment Interview (PAI). The questionnaire is short and includes only four questions, making it easy to use. It focuses on adult attachment, which is relevant to the current study. The RQ's reliability is high (ranging from .72 to .96) and it has a very good validity (Scharfe & Bartholomew, 1994). The validation results in Bartholomew & Horowitz's (1991) study relied on ratings obtained from the Peer Attachment Interview (PAI), and on multiple measures of attachments including interview measures (Holmes & Lyons-Ruth, 2006).The RQ extends the original attachment Three-Category Measure (Hazan & Shaver, 1987) by rewording the descriptions of each of the attachment styles, and by adding a fourth style (dismissive-avoidant). The RQ's reliability is high (ranging from .72 to .96) and it has a very good validity (Scharfe & Bartholomew, 1994). Validation results in Bartholomew & Horowitz (1991) relied on ratings obtained from the Peer Attachment Interview (PAI), and on multiple measures of attachment including interview measures (Holmes & Lyons-Ruth, 2006).

*4.4.3.5. Loneliness*

The instrument deemed appropriate to measure loneliness in this study is the UCLA Loneliness Scale, a 20-question scale developed to evaluate subjective feelings of loneliness (Russell, Peplau, & Ferguson, 1980). This scale was used by the current researcher in his previous studies and it had a high level of reliability $\alpha = 0.87$ (see Yadegarfard et al 2013; Yadegarfard et al., 2014). The UCLA Loneliness Scale was also chosen for the current study because it has a high level of reliability, with a coefficient alpha range from .89 to .94. In a study conducted by Russell, Kao, and Cutrona (1987), it was indicated that the validity for the 3rd version of the UCLA Loneliness Scale was correlated with other reliable scales, including the NYU Loneliness Scale and the Differential Loneliness Scale. The scale is well-known and has been widely used in social studies and research. Also, the revised version is shorter and easier to use. The Loneliness Scale has a high level of reliability, with a coefficient alpha range from .89 to .94. In a study conducted by Russell, Kao, and Cutrona (1987), it was indicated that the validity for the 3rd version of the UCLA Loneliness Scale was correlated with other reliable scales, including the NYU Loneliness Scale and the Differential Loneliness Scale. The loneliness scores in the same study were also negatively associated with the measure of social support. A high scores on the scales items reflect a *high perception* of loneliness.

*4.4.3.6. Social Support*

To measure social support, this study used the Social Support Appraisal (SSA), which was published in 1986 by Vaux et al. and contained a 23-instrument scale. This scale was used by the current researcher in his previous studies and it had a high level of reliability $\alpha = .85$ (see Yadegarfard et al 2013). SSA was also selected for the current thesis because it is one of the most well-known and most widely used measurements in social studies. It is a comprehensive scale that measures three different aspects of social support (family support,

friend support and other support), making it highly relevant to this thesis. It is also very reliable with high internal consistency and alpha coefficients ranging from .81 to .90. The validity of the SSA is considered very high with very good concurrent, predictive, known groups, and constructs validity. The SSA is closely correlated with some social support and psychological well-being measures, including network satisfaction, perceived support, family environment, depression, positive effect, negative effect, loneliness, life satisfaction, the SCL-90, and happiness (Vaux et al, 1989). High scores on the scales items reflect a *low perception* of social support totals and the subscales of family support, friend support and other support.

*4.4.3.7. Sexual System Functioning Scale*

The Sexual System Functioning Scale (SSFS) is a self-report instrument for assessing hyperactivation and deactivation of the sexual system. It was created by Birnbaum et al (2014) and consists of 24 items on a 7-point Likert scale (1=not at all to 7=very much). SSFS is one of the unique and rare scales that measures sexual hyperactivation. The researcher chose this scale because the test is reliable with Cronbach's alpha values for the subscales ranging from .70 to .91 (hyperactivation) and from .76 to .92 (deactivation). SSFS scores demonstrated high test–retest reliability over 3 months (Birnbaum et al., 2014). For deactivation, the rs between consecutive measurements ranged from .80 to .84. For hyperactivation, the rs between consecutive measurements ranged from .78 to .81. Therefore, the scale has good validity (Mikulincer & Shaver, 2016). The Convergent validity has been established by Birnbaum et al. (2014) by correlating the SFSS with existing measures. The test consists of two subscales, hyperactivation and deactivation where evenly numbered items are hyperactivation items, and odd items are deactivation items. Items 1, 5, 7, and 21 are reverse coded. For the purpose of the study only the hyperactivation subscale was used and a high score on the scales items reflect a *high perception* of hyperactivation. SSFS deactivation and hyperactivation scores are meaningfully associated with existing measures of sexual attitudes, motives, feelings, and

behaviours and with measures of personal and interpersonal well-being. The hyperactivation of the sexual system basically involves first of all increasing the individual's efforts at attracting a mate and secondly continuing to have a strong desire to engage in sexual intercourse. On the other hand, these intense desires are also accompanied by worry and fear relating to sexual rejection and performance failure. Conversely, the deactivation of the sexual system is when the individual suppresses his or her sexual desires and does not view sex as a source of pleasure (Birnbaum et al, 2014). Research has shown that the SSFS is reliable (ranging from .52 to 98) and valid (Mikulincer & Shaver, 2016). For instance, sexual-system hyperactivation has shown to be associated with sexual arousal and positive affect following exposure to erotic stimuli (Mikulincer & Shaver, 2016). At the same time, however, it was associated with experiencing sex-related worries and aversive feelings during sexual intercourse (Efrati & Mikulincer, 2018).

#### *4.4.3.8. Risky Sexual Behaviours*

To measure risky sexual behaviour, the Student Sexual Risks Scale (DeHart & Birkimer, 1997) was used in this research. The test includes 38 items which assess the likelihood of an individual engaging in condomless sexual intercourse. The researcher chose this scale because the scale possesses high internal reliability and both predictive and construct validity. Reliabilities for the subscales are as follows: attitudinal $\alpha = .88$, intention to try $\alpha = .80$, susceptibility $\alpha = .84$, and substance use $\alpha = .76$. The final 38 item scale had an $\alpha = .86$. The test has high internal consistency ($\alpha = .86$). Individuals who record higher scores on the SSRS are more likely to engage in risky sexual activities. In contrast, individuals who have safer sexual relationships tend to have more positive attitudes towards safer sex and tend to have friends and a social network that encourage safer sexual activities (DeHart & Birkimer, 1997). High score on the scales items reflect a high *perception* of risky sexual behaviours.

### 4.4.4. Ethical consideration

The participants of this study were all required to be 18 years old and above and to the best of the researcher's knowledge none of the participants is drawn from vulnerable group and population. Participation in this study was done so completely voluntarily and anonymously. All prospective participants were required to complete an informed consent form before they were allowed to participate in the study. The informed consent form included clarification of the aim and objectives of this study, while a debrief page was also provided with further information and helplines. The researcher was fully aware of the ethical aspect of this study and adhered to the BPS Code of Human Research Ethics 2014 throughout the course of the study. In addition, the researcher followed the University of Bedfordshire Research Ethics Guidelines and has sought ethical approval through the university's Research Ethics Committee. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher was conscious that participants might not be comfortable answering questions that may be considered too personal. So, a major challenge that the researcher faced regarding creating a survey on sexual behaviour was to ensure that it was unbiased while also providing precise measures of the behaviour patterns. It has been pointed out by Gullette and Lyons (2006) that participants often make mistakes, mainly when recalling their sexual activities and reporting condom use. Moreover, in the very act of scrutinising sensitive topics such as sexual behaviour, there exists a strong possibility that information bias will manifest itself in the form of social desirability bias (Kaminska & Foulsham, 2013). The definition of social desirability is an individual's tendency to provide answers that the individual believes will be accepted and viewed favourably by the individual's peers (Kaminska & Foulsham, 2013). Social desirability can manifest itself either as the over-reporting of desirable behaviours or the under-reporting of undesirable behaviours,

both of which lead to confusing associations between variables by moderating or weakening relationships (Kaminska & Foulsham, 2013). Significant influences on the risk of social desirability bias include personal and demographic factors, such as the individual's personality, gender, beliefs, or culture; the sometimes-sensitive nature of the content of the questions being asked; and the contexts in which the questions are asked, such as in a one-on-one interview or via an anonymous questionnaire. Social desirability is a major challenge for studies which rely on self-reporting for data gathering because its profound effect on the interpretation of individual behaviours and collective patterns make it essential for the researcher to exercise caution when looking for themes, especially in a topic with as much possibility for social desirability bias as sexual behaviour (Kaminska & Foulsham, 2013). Therefore, to tackle this issue, sufficient explanation and acknowledgment was provided before the participants were required to answer the questions related to their sexual activities. Furthermore, the participants were made aware through the informed consent page and debrief page that they could withdraw their participation at any time or they could contact the researcher after providing their answers if they decided that they did not want their data to be used in the study. In addition, contact numbers of the relevant organisations were provided on the debriefing page in the event that the participants required help and support.

### 4.4.5. Data Analysis

Following the completion of the data collection process, the researcher encoded the obtained data into the Statistical Package for Social Sciences (SPSSv22) for analysis. Data analysis was accomplished through the following statistical treatments:

1. Descriptive statistics: Frequency and percentage distributions were utilised to analyse the respondents' demographic data. Means and standard deviations were used in the further analysis of respondents' scores.
2. Reliability test: Reliability testing was conducted for the whole sample on items that represent the factors of drug use, well-being, attachment patterns, loneliness, social support, sexual system functioning, and risky sexual behaviour.
3. Correlation analysis: Correlation analysis was employed to test the strength of relationships between the hypothesized variables prior to multiple regression and MANOVA.
4. One-way ANOVA: One-way ANOVA was used to determine whether there were any differences in substance misuse, well-being, loneliness, social support, sexual hyperactivation and risky sexual behaviour between secure, anxious/ambivalent, avoidant, and dismissive-avoidant attachment patterns.
5. Inferential statistics: Multiple regression analysis was employed to test the hypothesised direct influence of drug use, well-being, attachment patterns, loneliness, social support and sexual hyperactivation on risky sexual behaviour.
6. GLM multivariate analysis of variance (MANOVA): MANOVA was used to test for differences between the study group of gay individuals and the baseline group of heterosexual males with regard to the seven variables of drug use, well-being, attachment patterns, loneliness, social support, sexual hyperactivation, and risky sexual behaviour.

## 4.5. Results

### 4.5.1. Reliability Analysis of Scales Employed

It should be noted that prior to reliability analysis, all of the scale items that were negatively-worded were reverse-scored in order to ensure consistency of interpretation. Thus,

after reverse-scoring, high scores (apart from attachment patterns) on the scale items reflect a *high perception* of substance use (drugs, alcohol, sniffed drugs and smoking tobacco); a *low perception* of social support totals and the subscales of family support, friend support and other support; a *high perception* of well-being (Psychological, physical and relationship); a *high perception* of loneliness; a *high perception* of hyperactivation; and a *high perception* of risky sexual behaviours.

Reliability analysis was then conducted on these seven scales and their sub-scales, the purpose of which was to maximise the internal consistency of the seven measures by identifying those items that are internally consistent (i.e., reliable), and to discard those items that are not. As it can be seen in appendix G, the internal consistency was very good. Therefore, there is no need to remove any items from the measures. Table 4 presents the Cronbach's alphas.

| Name | Cronbach's Alphas | Number of items |
|---|---|---|
| **Psychological well-being** | .941 | 12 |
| **Physical well-being** | .888 | 7 |
| **Relationship well-being** | .896 | 5 |
| **Hyperactivation** | .932 | 12 |
| **Loneliness** | .908 | 20 |
| **SSA-S Family** | .883 | 8 |
| **SSA-S Friend** | .900 | 7 |
| **SSA-S Others** | .779 | 8 |

*Table 4: Cronbach's Alphas*

### 4.5.2. Correlations

Correlation analysis was employed to test the strength of relationships between the hypothesized variables prior to multiple regression and MANOVA. (Appendix H)

#### *4.5.2.1. Risky sexual behaviour*

The results show that risky sexual behaviour was significantly negatively correlated with psychological well-being r = -.12, p < .01, positively correlated with sniffed substances of any kind r= .15, p<.01, positively correlated with smoking tobacco = .12, p< .01, positively correlated with the total social support r = .12, p<.01, positively correlated with friend support r = .11, p<.01, and positively correlated with other support r = .12, p<.01. (Table 5)

#### *4.5.2.2. Sexual Hyperactivation*

Sexual hyperactivation was not significantly correlated with risky sexual behaviour; however it was negatively correlated with psychological well-being r=-.24, p<.01; negatively correlated with physical well-being r =-.10, p<.01; negatively correlated with relationship well-being r =-.22, p<.01; positively correlated with drug use r =.10, p=17; positively correlated with smoking tobacco r =.19, p<.01; positively correlated with loneliness r = .42, p<.01; and positively correlated with social support in general r = .23, p<.01; family support r = .20, p<.01; friend support r = .21, p<.01; and other support r =.20, p<.01 (Table 5).

**Correlations**

| | Hyperactivation | Risky Sexual Behaviours |
|---|---|---|
| | Sig. (2 tailed) | Sig. (2 tailed) |
| **Psychological wellbeing** | **.000**** | **.016*** |
| **Physical wellbeing** | **.039*** | .059 |
| **Relationship wellbeing** | **.000**** | .117 |
| **Loneliness** | **.000**** | .064 |

| | | |
|---|---|---|
| **Family support** | **.000**** | .063 |
| **Friend support** | **.000**** | **.022*** |
| **Others support** | **.000**** | **.012*** |
| **Drugs use** | **.000**** | **.036*** |
| **Sniffed a substance** | .297 | **.002**** |
| **Alcohol** | .613 | .249 |
| **Smoke** | **.000**** | **.012*** |

*Table 5: Correlation between RSB and Hyperreaction with Well-being, Loneliness and Social support Substance use*

### 4.5.3. ANOVA test (Attachment patterns and other variables)

As the attachment measurement contained categorical variables (secure, anxious /ambivalent, avoidant, and dismissive-avoidant), it was not used in the bivariate correlation test. However, one-way ANOVA was used to determine whether there were differences in, sexual hyperactivation and risky sexual behaviour between secure, anxious/ambivalent, avoidant, and dismissive-avoidant attachment patterns. (Appendix I)

The results of ANOVA show that there were no differences in risky sexual behaviours between the four attachment patterns; however the results did indicate that the effect of ***sexual hyperactivation*** was significant, $F(3,396) = 5.310$, $p = .001$. Post hoc comparisons using the Tukey test indicate that the mean score for the avoidant attachment ($M = 42.3$, $SD = 15.4$) was significantly different than for the anxious/ambivalent ($M = 50.1$, $SD = 14.1$) and dismissive-avoidant ($M = 51.2$, $SD = 18.0$) attachments. However, the secure attachment ($M = 45.9$, $SD = 18.5$) did not significantly differ from the insecure attachments.

### 4.5.4. Hypothesis one

In order to test the first hypothesis, a 2 (gay men versus heterosexual men) x 16 (dependent variables) GLM Multivariate Analysis of Variance (MANOVA) was conducted. Only for attachment patterns, Chi-square was used as it is a nominal variable. Table 6 presents the means and standard deviations for the eight computed factors as a function of the respondents' sexual orientation (gay and heterosexual men). (Appendix J)

| | Gay men | | Heterosexual men | |
|---|---|---|---|---|
| | Mean | Std. Error | Mean | Std. Error |
| Psychological Well-being | 37.65 | .84 | 38.40 | .76 |
| Physical Well-being | 21.78 | .48 | 22.39 | .44 |
| Relationship Well-being | 15.16 | .40 | 15.77 | .36 |
| Drug Use | .92 | .09 | .72 | .08 |
| Sniffed a substance of any kind | .64* | .05 | .26 | .05 |
| Alcohol | 2.15 | .09 | 2.28 | .08 |
| Smoke | 1.29* | .09 | 1.04 | .08 |
| Loneliness | 47.29 | .91 | 46.10 | .83 |
| SSA-S total | 51.72 | .93 | 50.37 | .84 |
| SSA-S Family | 18.20 | .39 | 17.19 | .36 |
| SSA-S Friends | 15.45 | .37 | 15.08 | .37 |
| SSA-S Others | 18.07 | .30 | 18.10 | .27 |
| Hyperactivation | 46.94 | 1.30 | 46.26 | 1.18 |
| Risky Sexual Behaviour | 41.59 | 1.14 | 40.42 | 1.03 |

Table 6: *Means and standard deviations for the computed factors of substance use, well-being, loneliness, social support, hyperactivation, and engagement of risky sexual behaviour as a function of the respondents' sexual orientation (gay and heterosexual men)*

The results from the MANOVA show that there was an overall group (gay men versus heterosexual men) effect for the thirteen variables combined, $F(14,348)=2.95$, $p<.001$. Follow-up tests of between-subject effects showed that 'sexual orientation' had a significant effect only for two variables: "sniffed substances of any kind", $F(1,361)=25.01$, $p<.001$, and "smoked tobacco" $F(1,361)=3.98$, $p<.05$. Examination of the marginal means shows that the gay male respondents, when compared to the heterosexual male respondents, only reported *significantly* higher scores for sniffing substances and higher levels for smoking tobacco. The results did not show any significant differences between gay and heterosexual men in other variables.

***Chi square:*** A chi-square test of independence was performed to examine the differences in attachment patterns (*Secure, Anxious/Ambivalent, Dismissing-Avoidant, Avoidant)* between gay and heterosexual men. The results show that there were no significant differences in attachment patterns between gay and heterosexual men, $X2$ (3) = .985, p >.05 (Table 7). (Appendix K)

| | **Gay men** | | **Heterosexual men** | |
|---|---|---|---|---|
| | Count | Expected count | Count | Expected count |
| **Secure** | 59 | 58.2 | 69 | 69.8 |
| **Anxious/Ambivalent** | 55 | 54.6 | 65 | 65.4 |
| **Dismissing-Avoidant** | 25 | 22.7 | 25 | 27.3 |
| **Avoidant** | 37 | 40.5 | 48.5 | 52 |

Table 7: Result of Chi square test

### 4.5.5. Hypothesis 2

In order to test the regression coefficients hypothesised in the regression model, multiple regression analysis was conducted. Barron and Kenny (1986) approach to mediation testing was used. Although there are many methods available for testing hypotheses about intervening variable effects, the most widely-used method is the causal steps approach popularised by Baron and Kenny (1986). This approach requires the researcher to estimate each of the paths in the model and then ascertain whether a variable functions as a mediator by observing whether certain statistical criteria are met. For example, if both d (a+c) paths in a model such as Figure 7 are statistically significant and is closer to zero than a, then hyperactivation is deemed a mediator of the relationship between the IVs and risky sexual behaviour. The researcher assess whether the data meet these criteria only if there is evidence of a total effect of the IVs (i.e., if c is statistically significant), which is one of the requirements of mediation outlined by Baron and Kenny. Although this model has its own limitations and has been criticised by some (e.g. Fritz & MacKinnon, 2007; MacKinnon et al., 2002), it is one of the simplest and most widely understood models for mediation testing. Almost anyone can be taught this approach. Its implementation is described in only a few manuscript lines, and readers and reviewers will be able to follow along without difficulty (Hayes, 2009). As hypothesis two suggests, hyperactivation is a mediator. The analysis has four steps. The first step (path a) involved regressing the dependent variable of risky sexual behaviour on the predictor variables. The second step (path b) involved regressing the dependant variable of hyperactivation on the predictor variables. The third step (path c) involved regressing the dependant variable of risky sexual behaviour on the mediator hyperactivation. Finally, the last step (path d [a + c]) involved regressing the dependant variable of risky sexual behaviour on the predictor variables and the mediator. The analysis was conducted separately for both groups

(gay and heterosexual respondents). The results are presented in table 8 and 9, respectively. (Appendix L and M)

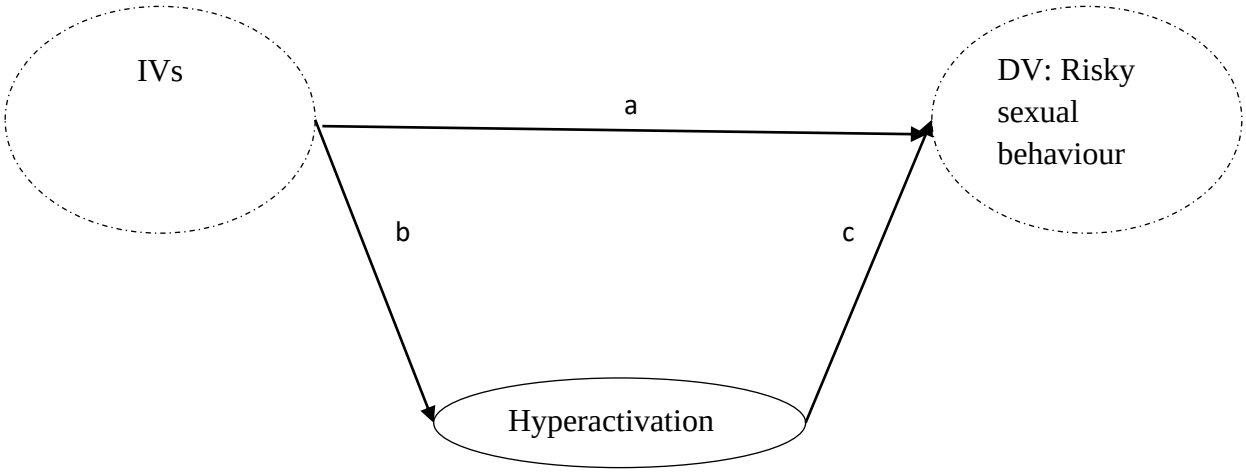


*Figure 7.* Simplified mediation with regression analysis model

In order to test the regression coefficients hypothesised among the gay participants table 9, multiple regression analysis was conducted. In **step 1 (path a)** (Table 9), none of the IVs predicted RSB. Therefore, the mediation testing was stopped at this step.

| | **DV** | **IV** | **betas (unstand)** | **Beta (Std)** | **p value** | **Outcome** |
|---|---|---|---|---|---|---|
| **Step 1** | RSB | | | | | |
| **(Path a)** | | Attachment Patterns | 1.975 | .135 | 1.559 | Assumption not met |
| | | Drugs | -1.135 | -.093 | -.925 | Assumption not met |
| | | sniffed a substance | 3.117 | .164 | 1.675 | Assumption not met |
| | | Alcohol | -.664 | -.049 | -.582 | Assumption not met |
| | | Smoking tobacco | .307 | .023 | .274 | Assumption not met |
| | | Loneliness | -.179 | -.140 | -.892 | Assumption not met |
| | | SSA_family | .176 | .059 | .590 | Assumption not met |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | SSA_friends | -.044 | -.015 | -.092 | Assumption not met |
| | | SSA_others | 1.105 | .280 | 1.771 | Assumption not met |
| | | Relationship wellbeing | .392 | .129 | .726 | Assumption not met |
| | | Psychological wellbeing | -.246 | -.164 | -.777 | Assumption not met |
| | | Physical Wellbeing | .282 | .113 | .797 | Assumption not met |
| **Step 2 (Path b)** | --- | --- | --- | --- | --- | was not conducted |
| **Step 3 (Path c)** | --- | --- | --- | --- | --- | was not conducted |
| **Step 4 (Path d)** | --- | --- | --- | --- | --- | was not conducted |

*Table 8:* Multiple regression analysis, gay male participants

In order to test the regression coefficients hypothesised among heterosexual participants table 9, multiple regression analysis was conducted. In step 1 (path a) (Table 9), only ‘smoking tobacco’ predicted RSB. Therefore, this variable alone was carried over to the next step. In step 2 (path b), the results showed that there was a significant relationship between the DV and sexual hyperactivation. Therefore, the mediation testing continues to the next step. In step 3 (path c) Sexual hyperactivation did not predict RSB, therefore the mediation testing was stopped at this step.

| | DV | IV | betas (unstand) | Beta (Std) | p value | Outcome |
|---|---|---|---|---|---|---|
| **Step 1 (Path a)** | RSB | | | | | |
| | | Attachment Patterns | -.237 | -.021 | .763 | Assumption not met |
| | | Drugs | 1.689 | .150 | .125 | Assumption not met |
| | | sniffed a substance | 1.006 | .047 | .605 | Assumption not met |
| | | Alcohol | -.603 | -.056 | .431 | Assumption not met |
| | | **Smoking tobacco** | **1.977** | **.180** | **.022** | **Assumption met** |
| | | Loneliness | .045 | .038 | .717 | Assumption not met |
| | | SSA_family | -.022 | -.008 | .931 | Assumption not met |
| | | SSA_friends | .272 | .084 | .511 | Assumption not met |
| | | SSA_others | -.104 | -.030 | .828 | Assumption not met |
| | | Relationship wellbeing | .406 | .156 | .263 | Assumption not met |
| | | Psychological wellbeing | -.102 | -.084 | .608 | Assumption not met |
| | | Physical Wellbeing | -.359 | -.164 | .174 | Assumption not met |
| **Step 2 (Path b)** | Sexual Hyperactivation | **Smoking tobacco** | **2.297** | **.163** | **.022** | **Assumption met** |
| **Step 3 (Path c)** | RSB | Sexual Hyperactivation | .078 | .101 | .156 | Assumption not met |
| **Step 4 (Path d)** | --- | --- | --- | --- | --- | was not conducted |

*Table 9:* Multiple regression analysis, heterosexual male participants

## 4.6. Discussion

The demographic data showed that of 46% of the participants gay men and the rest 54% were heterosexual men in this research. They also revealed the diversity of the participants in

terms of age and educational attainment. However, in terms of race, a clear majority of the participants were white British (88%), single and not dating (46%), and never married (46%).

The reliability test showed that all the scales and subscales were highly reliable, which allowed to make valid inferences, the results were consistent, and also the data were an accurate representation of the study population.

Risky sexual behaviour showed week correlations with psychological wellbeing, sniffed substances, smoking tobacco, social support, friend support and other support. Also, sexual hyperactivation showed weak correlation with psychological well-being, physical well-being and relationship well-being, while there was also a weak correlation with drug use, smoking tobacco, loneliness, and total score of social support together with its subscales of family support, friend support, and other support. Although other variables also had significant correlation with each other, they were week. However, amongst these variables, loneliness showed a significant correlation with every variable apart from risky sexual behaviour.

The results of ANOVA showed that there were differences in all of the variables between the four attachment patterns but not risky sexual behaviours. The ANOVA results showed that there was no difference in risky sexual behaviour between the four attachment patterns, such that individuals with different attachment patterns were not different in terms of engaging or not engaging in risky sexual behaviours. These results are in contrast with other studies (e.g. Lemelin, et al., 2014; Cook et al, 2016; Bogaert & Sadava, 2002; Tracy et al., 2003). The different outcome might be due to the use of a different measurement; in this research, only adult attachment patterns were measured, while most of the previous research has investigated retrospective the infant attachment pattern with risky sexual behaviour and sexual hyperactivation. Nevertheless, there are some studies that support the current results and show no difference in risky sexual behaviour between the adult attachment patterns (e.g. Cooper et al., 1998; Gentzler & Kerns, 2004).

Although the ANOVA result was not significant for risky sexual behaviour, the results indicate that the effect of ***sexual hyperactivation*** on attachment patterns was significant, such that individuals with different attachment patterns are different in terms of their level of sexual hyperactivation. These results are supported by previous studies in which insecure attachment was shown to be strongly linked with hypersexual behaviour (sexual addiction, sexual impulsivity) (Gilliland, Star, Hansen, & Carpenter, 2015). Specifically, those who develop attachments of a fearful and preoccupied nature are less motivated to follow safe sexual practices (Young, 2013); nevertheless, the post hoc comparisons indicated that only the avoidant attachment pattern was significantly different in terms of sexual hyperactivation from the anxious/ambivalent and dismissive-avoidant patterns, a finding which is also supported by some previous studies (e.g. Lemelin, et al., 2014; Cook et al, 2016). However, other research has shown that there has been inconsistent dissimilarities in the practice of unprotected sex between anxious and avoidant attachment patterns (Cooper et al., 1998; Gentzler & Kerns, 2004).

### 4.6.1. Hypothesis 1

The results revealed that gay respondents, when compared with heterosexual respondents, reported an overall significant difference for the thirteen variables combined. However tests of between-subjects effects showed that ‘sexual orientation’ has a significant effect only for two variables: ‘sniffed substances of any kind’ and ‘smoking tobacco’; so the first hypothesis is partly supported by the results of hypothesis testing, such that gay men report sniffing substances and smoking tobacco significantly more frequently than their heterosexual male counterparts. However, regarding the drug use, the results of this research are in contrast with the existing literature, which shows that gay individuals were found to be 7 times more likely to be using a recreational drug than the general population (e.g. Varney, 2016). Although

drug use among the gay population is reported to be higher than in the general population, most gay individuals do not use substances, and of those who use them, the majority do not use them in harmful ways (Abdulrahim, et al., 2016). From the participants' drug use report, the reported sniffing of substances was shown to be higher among gay men than among their heterosexual counterparts. There are many different drugs that can be used through sniffing ('inhaling' and 'snorting'). However, 'poppers' as a volatile substance that can be sniffed is reported to be the second most consumed substance after cannabis among the illicit drugs (Beck, Guignard, & Richard, 2014). Especially among gay individuals, poppers are reported to be very popular and commonly used (UK Drug Policy Commision, 2010) "on the dance club scene because they cause relaxation of vascular smooth muscle and produce a 'rush', or to enhance a sexual experience" (European Monitoring Centre for Drug and Drug Addiction (EMCDDA), 2017 ) In the UK, poppers are categorized as an illegal drug, although they are easily available and accessible and can be found for as little as £3.50 per bottle (10 ml). It is reported that limited research has been carried out regarding the influence of inhaled drugs, especially poppers, on sexual behaviour and more specifically on risky sexual behaviours; therefore, the researcher will investigate this area more deeply in the next study.

The results revealed that there was no difference between gay and heterosexual participants regarding their reported risky sexual behaviours. In other words, the degree to which an individual might be at risk of engaging in behaviour that exposes him to STIs was no different among either gay or heterosexual participants. Although there are not specific studies regarding the high ratio of engagement to risky sexual behaviours among gay men compared to heterosexual men, only the high diagnosis rates of STIs and HIV among gay men compared to heterosexual men suggests that gay men most probably engage in more risky sexual behaviour, such as new casual sex partners, multiple partners, and unprotected sex (condomless anal intercourse), which result in STI infection; however, this claim also debatable as STIs are

not always caught through sexual behaviour. Infection can happen through other risky activities such as sharing needles. However, as it was discussed in chapter one (page 17) that Public Health England in 2017 reported a decrease in HIV diagnoses among gay and bisexual men between 2015 and 2016, which was the most significant sign of progress in the UK HIV epidemic since two decades ago, when effective treatment became widely available. The reasons for this reduction has been attributed to increasing condom use among gay males and men who have sex with men as well as a significant increase in the number of males being tested regularly for HIV, especially those in the highest risk categories (Public Health England, 2017).

The results also showed that there were no differences regarding psychological, physical and relationship well-being between the gay and heterosexual participants. This is also in contrast with previous research (Public Health England, 2014; NHS Choices, 2014; Varney, 2016). Although relatively small sample of this study might not fully represent the entire UK's gay men's well-being, the results are positive and promising and might be an indication that all the efforts regarding LGBT health equality from the government and the community sector are taking effect. Nevertheless, it is interesting to note that there were no differences regarding the reporting of social support, whether as a total, family support, friend support, or other support, between gay and heterosexual participants. This can simply be because British society has changed over the past decades and now values and supports LGBT individuals. The results might challenge some of the existing findings; for instance, Stonewall's research in 2011, which was carried out among 2,000 lesbian, gay and bisexual (LGB) people in the UK, reported that LGB individuals were more likely to experience a lack of support from their biological family compared to their heterosexual counterparts (Stonewall, 2011). It might be too soon to draw conclusions based on the contrasting findings of this current study; however, this difference might be due to the fact that the positive changes taking place over the recent decades

in the UK regarding sexual diversity have had a positive impact on family behaviour regarding their LGBT children. It has been mentioned by other researchers that although the relationship with the family and family support are very important factors in the health and well-being of LGBT individuals, there is still limited research in this area (Soler, et al., 2017).

The results also indicate that there were no differences regarding the reported levels of subjective loneliness between the gay and heterosexual participants. Although there is limited research on the level of subjective loneliness among gay individuals compared to in heterosexual men in the UK, it has been shown that it is more likely for older gay individuals to experience loneliness than their heterosexual counterparts (Kuyper & Fokkema, 2009). Gay individuals can experience subjective loneliness because of negative social attitudes to homosexuality, resulting in many gay males hiding, ignoring, and suppressing their feelings, which negatively affects their sense of identity and creates a feeling of not fitting in to societal norms, often leading to feelings of loneliness (Flowers & Buston, 2001).

In addition, the result of the Chi square revealed that there was no difference between gay and heterosexual men in terms of the four-adult attachment styles. However, it is shown by previous research that it is more likely for gay individuals to develop insecure attachments compared to their heterosexual counterparts as gay individuals in their childhood or adolescence might face potential family rejection, especially from their parents, due to their sexual orientations or other forms of gender non-conformity (Ryan et al., 2009; Landolt, et al., 2004). So, the different in the result of the current research and the previous research such as Ryan et all (2009) and Landolt, et al (2004) might be due to the fact that they measured infant attachment patterns whereas in the current research the researcher tested adult attachment patterns. However, it is also shown that in their late adolescences or early adulthood, gay individuals might encounter challenges in identifying possible relationship partners that their heterosexual counterparts would not necessarily face (Starks & Parsons, 2014).

### 4.6.2. Hypothesis 2

The results showed that, among the gay participants, none of the variables predicted risky sexual behaviour. The results do not support the hypothesis and are in contrast with the findings of existing research as presented in the introduction. Although the results cannot be generalised, the researcher believes that there are two possible explanations. Firstly, it might be due to the fact that there are other variables that predict risky sexual behaviours among the gay men which need to be explored by the researcher in the next stage. Secondly, these different outcomes could be because STI diagnosis is reported to be higher among gay men, so the UK's heath system has focused more on the gay population in terms of sexual health education, prevention and intervention programmes than heterosexual men. As a result, gay individuals have learned over time how to protect themselves from the risk of STIs. The reduction in HIV diagnosis among the gay men in the UK from 2015 to 2016 is strong evidence that the sexual health education, preventions and intervention programmes regarding gay sexual health delivered by various organisations across the UK might have been successful. However, further investigation is required regarding this comparison study; the result of hypothesis one that there was no difference in the reported level of risky sexual behaviour between gay and heterosexual men can be also taken as evidence for this claim.

Nevertheless, among the heterosexual respondents, although smoking tobacco predicted both RSBs and sexual hyperactivation, but the mediation testing showed that the relationship between smoking tobacco and RSBs is not mediated by sexual hyperactivation. So, the question is how smoking tobacco leads heterosexual men to RSBs such as condom use inconsistency. There is substantial evidence showing that cigarette smoking is a risk factor for erectile dysfunction (ED) (Biebel et al, 2016) which make the use of a condom less practical before or during sex. It is shown that increased quantity and duration of smoking correlate with a higher risk of ED as sexual arousal requires good blood circulation, yet tobacco exerts a

negative effect on blood circulation by constricting blood vessels. (e.g. Biebel et al, 2016; Condra et al., 1986; Juenemann et al., 1987). In the current study the relationship between a higher level of smoking tobacco was found to be a predictor of a higher level of efforts at attracting a mate and continuing to have a strong desire to engage in sexual intercourse (sexual hyperactivation). This result is in contrast with the previous studies for instance, in a study done by Zavos et al., (2001) he nonsmoker males were found to experience higher sexual frequency and higher sexual satisfaction than couples where only the male smoked or both partners smoked.

In this study, the TPB was applied exclusively as a descriptive theoretical framework which aimed to measure distal factors (background factors), such as attachment patterns, loneliness and social support. However, based on the findings of the stage one quantitative study, none of the hypothesised distal factors had any considerable influence on risky sexual behaviour among the study's gay participants.

### 4.6.3. Limitations of the Study

There are few limitations of this study that need to be mentioned. First, the research cannot claim that the sample used in this study is representative of the general or entire population of gay individuals in the UK. Second, 88% of the participants were white British, which is the largest ethnic group in the UK, so the results might not necessarily represent sexual behaviours of participants from other ethnic backgrounds. The method of sampling is the main reason for the wide variation in response rates in surveys on sexual behaviour. Previous studies in this field found that non-respondents tended to be male, older, and less educated, which contradicts the findings in this current study (Fenton et al., 2001). In addition, some other studies also found immigrants to be less likely to participate in the surveys (Fenton et al., 2001).

While this can be attributed to difficulties with the language or differences in the culture, the reluctance to report sensitive behaviour can also be considered a contributing factor. Third, as was mentioned before, the participants may not completely or honestly answer the questions regarding their sexual behaviour due to personal reasons and factors.

### 4.6.4. Conclusions

The researcher considers this study to be an exploratory part of the entire project. The findings gave the researcher a new insight into the initial variables and their relationships with risky sexual behaviour. Nevertheless, it is imperative that these data not be used to generalise, stereotype or pathologies gay or heterosexual individuals, or to exaggerate and sensationalise the subject. Some of the findings of this research were supported by previous studies. However, some other findings were unique, and because there is no available research to either support or contradict them, the researcher found it difficult to interpret these findings in a wider context. Therefore, further investigation is required regarding the study variables.

The researcher, based on the existing research and data, had hypothesised that in comparison to heterosexual men, gay men have more negative experience of the variables of the study. Also, it was hypothesised that these variables lead gay men to risky sexual behaviours. However, as could be seen in this study, both hypotheses were only partly supported. It was found that only smoking tobacco directly predicted risky sexual behaviour only for the heterosexual respondents. Also, in terms of the study variables, gay and heterosexual participants had more in common and similarities than differences, especially in terms of “loneliness”, which was the only common predictor for hyperactivation in both groups. Loneliness also was the only variable that had a strong correlation with other variables, apart from risky sexual behaviour.

## 4.7. Summary

In this quantitative study the influence of substance use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, on risky sexual behaviours among gay and heterosexual men in the UK was measured. Also, the researcher investigated significant differences in the reported levels of substance use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, and risky sexual behaviours between the gay and heterosexual men, plus he investigated whether the reported level of substance use, well-being, attachment patterns, experience of social support, and loneliness were positively related to the level of sexual hyperactivation and the level of sexual hyperactivation was positively related to the respondents' reported levels of risky sexual behaviours.

This research is based on the responses of the target sample to the questions of a survey questionnaire designed to identify the study's primary variables. The sample consisted of 443 male respondents of whom 46% of the participants gay men and the rest 54% were heterosexual men.

The hypothesis testing revealed that gay respondents, when compared with heterosexual respondents, reported an overall significant difference for the thirteen variables combined. However, tests of between-subject effects showed that 'sexual orientation' has a significant effect only on two variables – 'sniffed a substance of any kind' and 'smoking tobacco' – and there was no difference between gay and heterosexual participants regarding their reported RSBs.

In addition, the ANOVA results showed that there was no difference in RSB between the four attachment patterns, such that individuals with different attachment patterns were not different in terms of engaging or not engaging in RSBs. Nevertheless, the results indicate that the effect of sexual hyperactivation on attachment patterns was significant, such that individuals with different attachment patterns had different levels of sexual hyperactivation.

The studied criteria predicted RSB only for the heterosexual respondents and did not predict RSB among the gay participants.

The research hypotheses were only partly supported. The findings gave a new insight into the study's variables and their relationships with RSB. Also, in terms of the study variables, gay and heterosexual participants had more in common and similarities than differences, especially in terms of "loneliness", which was the only common predictor of hyperactivation in both groups

## 4.8. Integrating Findings from Stage one

As explained in chapter one, the current research used a triangulation protocol to integrate the findings; the integration occurred at the end of stage one in the overall discussion and conclusion section for the purpose of answering the general research question: what factors contribute to risky sexual behaviours? As can be seen in this section, the findings of both research components are listed and discussed in terms of whether they are on the same page and agree (convergence), offer complementary information on the same issue (complementarity), or appear to contradict each other (discrepancy or dissonance) (Greene & Hall, 2010).

Twelve main findings and learning points were drawn from stage one to be applied in stage two.

1. The findings regarding substance use from the qualitative study contradicted the results of the quantitative study in stage one (discrepancy). RSBs in the quantitative study were only positively correlated with substance use but not predicted by it, while sexual hyperactivation (as a mediator) was found to be positively correlated with drug use and positively correlated with smoking tobacco. However, in the qualitative study, alcohol and sniffed substances (poppers) were reported as being used before sex by participants who had a higher number of sexual partners. Previous research (e.g., Standerwick et al., 2007; Connor, et al., 2015; Tucker, et al., 2012; Castelo-Branco, et al., 2014; Ritchwood, et al., 2016) supports the results of the qualitative study but contradicts the results of the quantitative study. The researcher believes this discrepancy might be attributed to two reasons. Firstly, the measurements for substance use and RSBs that were used in the quantitative study in stage one of this research, were different from those used in the previous research mentioned here. Secondly the discrepancy can be due to the path model that was created by the researcher in

the quantitative study, as the relationship between substance use and RSBs was more complex than the researcher initially expected.. To tackle this challenge in the next stage, the researcher will apply different measurements for RSBs and he will also measure substance use with a different path model which will be explained in detail in the next chapter. Nevertheless, the same measurement (substance frequency-of-use) will be used in next stage as the reliability test showed that the test is highly reliable.

2. Regarding risky sexual behaviours, the results of the qualitative study complemented the findings of the quantitative study (complementary). In the quantitative study, only condom use inconsistency was measured as a risky behaviour. However, we found that the majority of the participants in the qualitative study reported a high number of sexual partners as a significant risky behaviour. Therefore, in the next stage, the number of sexual partners will also be measured. However, the researcher has decided to use a different measurement for RSBs as the previous test (Student Sexual Risks Scale) does not measure the number of sexual partners.

3. Age was not hypothesised to be a significant factor in the quantitative study. However, it turned out to be a significant theme in the qualitative study. Therefore, the results of the qualitative study complemented the findings of the quantitative study (complementary). Consequently, the researcher will investigate the relationship between age as one of the distal factors and RSBs when the TPB's proximal factors and intention are the mediators and aim to determine whether age can help to predict the number of sexual partners and condom use. The relationships between age and RSBs and TPB's proximal factors is explained in detail in the next chapter.

4. Internalised homophobia was not hypothesised to be a significant factor in the quantitative study. However, it turned out to be a significant theme in the qualitative study. Therefore, the results of the qualitative study complemented the findings of the quantitative

study (complementary). Consequently, the researcher hypothesises that these negative thoughts and feelings influence the TPB's proximal factors and the individual's intention towards condom use and having multiple partners. In other words, it is hypothesised that IH influences an individual's positive or negative evaluation of the expected outcomes of condom use and having multiple partners (attitude towards behaviour), belief of negative or positive feedback of significant others on condom use and multiple partners (subjective norms), and belief that condom use and having multiple partners is or is not under the individual's control. Therefore, in the next stage, IH will be measured as one of the main distal factors in the study. The relationships between IH and RSBs and TPB's proximal factors are explained in the next chapter.

5. The findings from the qualitative study with regard to attachment patterns contradicted the results of the quantitative study in stage one (discrepancy). In the quantitative study in stage one, adult attachment patterns were measured, but they were not found to predict condom use inconsistency, neither the participants nor among the heterosexual participants. In other words, whether an individual formed secure or insecure attachment patterns, there was an equal probability that individuals with either type of attachment would engage in or avoid a risky sexual relationship. In addition, in the quantitative study, no difference was found between gay and heterosexual men regarding their adult attachment patterns. However, in the qualitative study, attachment patterns were found out to be a significant theme. This discrepancy might be due to subject bias. As the researcher hypothesised attachment as one of the significant factors in the quantitative study, it could have affected his interpretation of the qualitative study. Therefore, the researcher decided not to measure attachment patterns in the next stage. He argues that secure or insecure attachment forms between the child and parent(s)/caregiver(s) during infancy, regardless of the child's future sexual orientation. For instance, a child might grow up with positive early attachment experiences and then identify

himself as a gay man later in his adolescence, whereas a child could grow up with negative early attachment experiences and identify himself as heterosexual man in his adolescence. Nevertheless, Bowlby (1973) believed that attachment is an ongoing human experience from "the cradle to the grave" so the emotional bond that develops between adult romantic partners is also a reflection of individuals' infant attachment styles and requires the same motivational and emotional bond between infants and their caregivers. It is also clear that sexual orientation has no effect on how individuals form their relationships, nor does it necessarily help us to understand individuals' safe and unsafe sexual behaviours, which indicates that there are other psychological factors that contribute to risky behaviour, such as childhood experiences. The researcher therefore concludes that adult attachment patterns do not seem to have any influence on individuals' sexual behaviour. Instead, as discovered in the qualitative study, childhood experiences such as early sexual experience prior to the age 16 and adverse childhood experiences are more influential factors on sexual behaviour in adulthood than adult attachment patterns.

6. Childhood experiences was not hypothesised to be a significant factor in the quantitative study. However, it turned out to be a significant theme in the qualitative study. Therefore, the results of the qualitative study complemented the findings of the quantitative study (complementary). Consequently, both sub-themes, adverse childhood experiences (ACEs) and early sexual experience (ESE), will be measured as two of the significant distal factors in the next stage. The influence of ACEs and ESE on RSBs and TPB's distal factors will be discussed in detail in the next chapter.

7. The findings from the quantitative study regarding the relationship between well-being and condom use inconsistency supported the results of the qualitative study in stage one (convergence). The results of the quantitative study showed that psychical, psychological and relationship well-being did not predict condom use consistency and only appeared to be closely

correlated to the participants' sexual hyperactivation but not to their practice of safe or unsafe sex; moreover, there were no differences between this study's gay and heterosexual participants regarding their well-being. Similarly, the analysis of the qualitative data showed that the participants' psychical and psychological well-being only appeared to be related to the level of their sexual desire but not to their practice of safe or unsafe sex. These results are in contrast with those of previous research (Public Health England, 2014; NHS Choices, 2014; Varney, 2016). However, the results are aligned with the findings of Crepaz and Marks (2001). Although the relatively small sample of this study might not fully represent the well-being of the UK's entire gay male population, the results are positive and promising, and might serve as an indication that all the efforts regarding LGBT health equality from the government and the community sector are taking effect. Therefore, well-being will not be measured in the next stage.

8. The findings from the qualitative study in regard to social support supported the results of the quantitative study in stage one (convergence). The quantitative findings did not show any differences between the gay and heterosexual participant in terms of family, friends, or other support, while social support at any level also did not predict condom use consistency in either of the two groups. Similarly, social support was neither reported by the participants nor was identified as a standalone theme in the qualitative study. Although these findings are in contrast with those of previous research (e.g. Johanston, et al., 2017; Saleh, et al., 2016; Choudhury, et al., 2015; Yadegarfard, et al., 2014), this might be due to the fact that the changes taking place over the recent decades in the UK regarding sexual diversity have had a positive impact on family behaviour regarding their gay children. Therefore, social support will not be measured in the next stage.

9. The findings from the quantitative study regarding the relationship between loneliness and condom use inconsistency contradicted the results of the qualitative study in

stage one (discrepancy). In the quantitative study, loneliness did not predict RSBs and was only positively correlated with sexual hyperactivation. In the qualitative study, although loneliness appears to be a common theme in the participants' statements, only three of them directly mentioned it. It seems that that there are different types of loneliness, such as social and romantic loneliness, that drive individuals to engage in more casual sex and, in some circumstances, to participate in risky sexual behaviours such as unprotected sex. The researcher believes that using a unidimensional questionnaire for loneliness caused this discrepancy**.** Therefore, the researcher decided to measure loneliness in the next stage using a multidimensional loneliness scale instead of the UCLA loneliness scale used in stage one. Multidimensional loneliness measurement tools such as the Social and Emotional Loneliness Scale for Adults developed by DiTommaso and Spinner (1993) measure three dimensions of loneliness: social, family and romantic loneliness.

10. The findings from the quantitative study regarding the relationship between sexual hyperactivation and condom use inconsistency supported the results of the qualitative study in stage one (contingency). In the quantitative study, although sexual hyperactivation was closely correlated with the majority of the IVs, it did not predict condom use inconsistency. Similarly, in the qualitative study, sexual hyperactivation was neither reported by the participants in the qualitative study nor did it come up in the thematic analysis. As a result, this means that although individuals might be sexually hyperactive, it does not necessarily follow that they engage in risky sexual behaviours or any form of sex for that matter. Therefore, sexual hyperactivation will not be measured in the next stage.

11. Beliefs and attitudes towards RSBs were not hypothesised to be significant factors in the quantitative study. However, they turned out to be a significant theme in the qualitative study. Therefore, the results of the qualitative study complemented the findings of the quantitative study (complementary). In addition, this supported the appropriateness of the TPB

model as a theoretical framework to use regarding RSBs because one of the main components of the model is attitude towards behaviour (ATB). Therefore, in the next stage, ATB will be measured as a mediator factor between RSBs and the IVs. The relationships between RSBs and the IVs will be explained in detail in the next chapter.

12. The researcher believes that conducting the comparison study as part of the quantitative study complemented the results of the qualitative study and shed light on this subject thereby enhancing understanding of it (complementary). Some previous studies on the sexual behaviours of men have been criticised for their overgeneralised hypotheses, analyses, and conclusions, primarily because they assumed that the experiences of sexual minority men were the same as those of majority communities (Culley, Hudson, & Lohan, 2013). The researcher believes that carrying out a comparison study in stage one gave him an opportunity to review the assumptions underpinning the sexual health of sexual minorities. Although the results of the MANOVA test revealed that the only significant differences between the gay and heterosexual participants were in relation to sniffing substances and smoking tobacco, which means that the two groups of participants have more similarities than differences, the researcher has nevertheless decided to include heterosexual men in the next stage. The main reason for this decision is that in this stage, there are different variables which were not examined in the previous comparison study, such as age, ESE, ACEs, and IH. Therefore, to avoid any biased analysis and consequent conclusions in this the next stage, the researcher will again conduct a comparison study.

**Furthermore**, the remaining significant variables from stage one have shown us that the Biopsychosocial Model is still the most relevant model; therefore it will be used in the next stage to investigate the influence of biological factors (substance use, age); psychological factors (early sexual experience, internalised homophobia, adverse childhood experiences); and social factors (loneliness-romantic, family and social) on risky sexual behaviours (number

of sex partners and condom use inconsistency) among gay and heterosexual men. Nevertheless, in stage one, the TPB model was applied exclusively as a descriptive theoretical framework, which helped the researcher to focus on the wider range of factors ("background factors" according to TPB) and to eliminate irrelevant and insignificant variables related to RSBs. Accordingly, the researcher hypothesises that the integrated finding variables from stage one will have a significant predictive relationship with the TPB's proximal mediators, intention and RSBs. Therefore, in the next stage, the TPB's proximal factors and intention will be measured as mediators between the distal factors (background factors) and RSBs.

The researcher has decided to conduct only a quantitative study because, although the mixed method in stage 1 gave a comprehensive view of the subject and enabled the researcher to gather a substantial amount of data in a short period of time, it has its own challenges and limitations that the researcher cannot allow to compromise the study. Some of the challenges of a mixed method research design were discussed in chapter one (page 38) and some of these challenges were also experienced by the researcher in stage one, such as limitations on time and resources. However, one of the main challenges was conflicting results. For instance, some of the variables were found to be insignificant in the quantitative study but a significant theme in the qualitative study, such as was the case with attachment patterns. In addition, as the researcher already had a hypothesis in mind through the qualitative study, he suspects that it might have caused a bias in the data analysis in the qualitative study.

# 5. QUANTITATIVE STUDY 2

**The influence of biopsychosocial factors (substance use, age, early sexual experience, internalised homophobia, adverse childhood experience, and loneliness) and TPB's proximal factors and intention on RSBs (number of sex partners and condom use inconsistency) among gay and heterosexual men in the UK**

## 5.1. Introduction

The current study's hypotheses are based on two preliminary assumptions.

**Assumption 1:** According to the TPB model, there are multi-factors (background factors) that influence TPB's proximal factors (page 30). Based on the findings from the previous stage, the current study aims to research the influence of biopsychosocial dimensions on risky sexual behaviours (number of sex partners and condom use inconsistency) among gay and heterosexual men in the United Kingdom; biological factors (substance use, age); psychological factors (early sexual experience, internalised homophobia, adverse childhood experience); and social factors (loneliness-romantic, family and social).

**Assumption 2:** There is no direct relationship between this study's IVs (age, substance use, early sexual experiences, adverse childhood experiences, internalised homophobia, loneliness) and its DV (risky sexual behaviours [RSBs]). In other words, any correlation between the IVs and DV involve intervening variables or mediators. The IVs change a factor in individuals and that factor subsequently leads those individuals to engage in RSBs. It is shown in few other studies that the mediational effects of the TPB's components on other variables, such as situational, interpersonal, and personality variables, related to RSBs (Beadnell et al., 2007). In his study, Beadnell et al. (2007) concluded that distal variables that

are indirectly related to intentions and behaviour through their relationships with attitudes, social norms, and self-efficacy may be particularly important to sexual risk intervention and prevention programs because they may improve efforts to change attitudes, social norms, and self-efficacy if they can be changed through other interpersonal and intrapersonal variables. Also, since several variables (i.e., pressure to have sex, smoking, communication with parents, number of friends who have had sex) studied by Beadnell et al. (2007) among youths showed direct effects on intentions and behaviour, variables that have influences on sexual behaviour that are not mediated by the TPB's proximal factors and intention may be especially important in the development and implementation of programs designed to reduce risky sexual behaviour. Including additional variables also aids in testing the sufficiency of the TPB in predicting sexual risk taking. If variables are not mediated by the TPB variables as the theory assumes and have direct effects on intentions and/or behaviour, then the TPB is not sufficient in its predictive ability. Here in this research, it is assumed that IVs affect the participants' Intention to perform risky sexual behaviours by increasing ***a)*** their negative evaluation of the expected outcome of condom use and multiple sexual partners; ***b)*** the negative direct feedback of significant others on condom use and multiple sexual partners; ***c)*** the belief that condom use and having sexual relationships with multiple partners is under their control; which consequently leads individuals to engage not only in more sexual relationships but also in sexual relationships that expose them to STIs. For instance, when factor A (early sexual experience) predicts factor B (attitude towards multiple sexual partners), and factor B predicts C (intention to engage in a higher number of sexual partners), which consequently leads to D, the actual behaviour. We can hypothesise that A and D have an indirect relationship when B and C are subsequent mediators. The main question here, therefore, is how TPB's proximal factors (attitude towards the behaviour [ATB], subjective norms [SN], perceived behavioural

control [PBC], and intention) play a role as mediators between the IVs and RSBs? In this section, the researcher aims to provide a brief explanation of these relationships.

### 5.1.1. Risky sexual behaviours (RSBs)

In chapter one, sexual behaviour and risky sexual behaviour was explained (page 6). Condom use inconsistency was measured in the quantitative study in stage one and in addition, the high number of sexual partners was found to be a significant risky behaviour reported by the participants in the qualitative study. Therefore, in this stage, both condom use inconsistency and the number of sexual partners will also be measured.

#### *5.1.1.1. Number of sexual partners*

'Multiple, non-monogamous relationships' is an indicator of RSB identified by many researchers (e.g. Scott et al., 2014; Pflieger et al., 2013). There is a considerably increased risk of sexually transmitted diseases and infections (STDs/STIs) among individuals who engage in sexual activity with multiple partners (Khan, et al., 2012). When inconsistent use of condoms is combined at the same time with multiple, non-monogamous relationships, those who practice such RSB are putting their partners at risk in addition to endangering their own safety (Albert et al., 2012).

In the qualitative study, the researcher also identified "Number of sexual partners" as a factor of risky sexual behaviour among the participants. The WHO and existing models of sexual health consider having multiple sexual partners as one of the main risky sexual behaviours (Slaymaker, et al., 2004). One UK-based study of gay men aged 14-19 conducted by Weatherburn et al. (2008) found that 41% of their sample had engaged in sexual activity with between 2 and 4 male partners over the previous twelve months, while 34% had had 5 or

more partners, and only 25% had only had one partner. Another UK-based study of gay men revealed that for those without a steady partner had engaged in sexual activity with an average of 5 non-steady partners, while 29.9% of the sample had been with more than 10 non-steady partners over the previous year (Hickson, et al., 2014). Nevertheless, numerous researches have elucidated that individuals do not demonstrate a consistent pattern of sex when they have multiple sexual partners (Ashenhurst, et al., 2017), which means that an individual with multiple partners is more likely to engage in unsafe sex compared to someone who only has sex with a single partner. It is also shown that the number of sexual partners is correlated with age, in that younger adults and adolescents are more likely to have multiple sexual partners compared to older adults (Johanston, et al., 2016; Hans, 2008).

#### *5.1.1.2. Condom use inconsistency*

'Condom use inconsistency' is a term used to describe one of the primary indicators of RSB (Pflieger et al., 2013, Scott, et al., 2014). Repeatedly failing to use contraceptives during sexual activity is RSB (Scott, et al., 2014; Simons, et al., 2013). There is a greater risk of STIs/STDs among those who do not use condoms during sex, even among those who use them but only occasionally (Pflieger et al., 2013). The integrated findings from the first stage also emphasise that the reasons for inconsistent condom usage are largely social, psychological and biological (also see Pfileger et al., 2013). In addition, the findings in stage one showed us that there was no difference between gay and heterosexual participants regarding their reported inconsistency in condom use. In other words, the degree to which an individual might be at risk of engaging in behaviour that exposes him to STIs was no different among either gay or heterosexual participants.

### 5.1.2. Age

In psychological studies, one of the most widely used independent variables has been the chronological age of the study's participants (Wohlwill, 1969). Age is not only an easily measurable variable, but also accounts for a significant degree of variance in a number of behavioural measures. In the current study, age-related changes in sexual behaviours are central to the study's dependent variable of RSBs. While age itself is not strictly an independent variable, it is a dimension along which the dependent variable of this study undergoes change.

#### *5.1.2.1. Age and RSBs*

Age was one of the most frequent factors mentioned by the participants in the qualitative study. Specifically, the majority of the participants reported that when they were younger, they had more sexual partners and they engaged in unprotected anal sex. As they got older, however, they became more cautious about STIs. As a result, the number of sexual partners dropped and they began to use condom more consistently in their sexual relationships. Previous research also shows that age is a significant factor of risky sexual behaviours (e.g Sales et al., 2011; Yadegarfard et al., 2013; Kastbom et al., 2015; Janulis et al., 2018). These and other studies have shown that individuals in their adolescence are more likely to engage in unsafe sex than people in their adulthood. Studies have confirmed that a number of major biological, cognitive, contextual, and social changes take place during adolescence (e.g., Bauermeister, et al., 2010; Sales et al., 2012). These changes have been found to have a significant effect on the way in which impulsivity relates to risky sexual behaviours (e.g., Blakemore & Robbins, 2012; Harden & Tucker-Drob, 2011; Somerville & Casey, 2010). As one example, Ritchwood et al. (2014) attributed the different sexual behaviours in younger and older gay men to these developmental differences. Urgency, for instance, is one of the developmental differences associated with heightened neural response to emotional stimuli in

the amygdala and orbitofrontal cortex, indicating that urgency, and other emotion-influenced risk behaviour, is heavily influenced by brain responsivity (Cyders et al., 2014). Two of the main characteristics of adolescence are increases in both emotional volatility and risk-taking (e.g., Steinberg, 2008).

#### *5.1.2.2. Age and TPB's proximal factors*

***Attitudes toward behaviour (ATB)*** are influenced by age, which explains why younger men are more likely to engage in sexual risk behaviours. The researcher considers two possible explanations for this assumption. First, he speculates that there is a psychosocial developmental trajectory such that adolescents' attitudes towards condom use are less positive because their lack of experience in cognitive regulation specific to sexual behaviour (Kahn, et al., 2015; Dahl, 2004) results in them engaging in risky sexual behaviours more frequently. Secondly, since individuals' attitudes shape and form over time and throughout their life experiences (Gordon, 1935). their less positive attitudes during their adolescence could be due to a lack of knowledge and experience about sexual health combined with limited understanding of the importance of health and prevention (Jennings, et al., 2014; Awotidebe, et al., 2014; Jones, et al., 2014). These established habits or preferences might make younger gay men more resistant to change in response to HIV prevention efforts compared to older gay men. Also, as younger gay men were found to be less likely to concern themselves with the fears of the older gay male population having not experienced the AIDS epidemic themselves, their young men's 'complacency' makes them more likely to engage in unsafe and risky sexual behaviours (Kaighobadi et al., 2014).

***The Subjective Norm (SN)*** is also influenced by age, which explains why younger men are more likely to engage in sexual risk behaviours. Adolescence is a period in which sexual activity becomes more normative and adolescents are more likely to engage in unsafe sex, such

as condomless anal intercourse, than people in their adulthood. On the one hand, this is because part of the social development of individuals during their adolescence can lead them to distance themselves from their family (especially for young gay males who have not 'come out' to their family) and become closer to their friends and peers (Collins et al., 1997). As this results in friends and peers becoming 'significant others' in the life of the adolescent, his perception grows that he should perform a sexual behaviour as it is what his friends or peers would expect value, support and approve. For instance if the person's friends and peers value, support and approve higher numbers of sexual partners because it is a way to maintain social status or establish a sense of belonging, maturity or accomplishment, this will inevitably strengthen the individual's intention to engage with multiple partners.

***Perceived Behavioural Control (PBC)*** is under the influence of age and developmental changes, so the younger the person is, the higher the likelihood of him having a distorted sense of being in control of his behaviour. For instance, it has been shown that in adolescents, developmental changes can seriously affect the way in which impulsivity increases in both emotional volatility and risk-taking (e.g., Steinberg, 2008; Blakemore & Robbins, 2012; Romer, 2010). It is believed that the incomplete formation of the prefrontal cortex during this period of human growth has some effect on PBC, with the individual lacking the ability to regulate extreme emotional experiences (e.g., Cyders & Smith, 2008).

### 5.1.3. Early sexual experience (ESE)

As a normal part of growing up, sexual development manifests itself not only in physical changes, but also in the formation of the characteristics that make each individual unique, such as their views and attitudes. It also includes the development of the ways in which individuals express intimacy and behave within the sexual and romantic framework they define

for themselves. Sexual experience is a complex journey. It encompasses a host of sexual expressions, each with its own level of closeness that ranges from non-coital activities such as kissing, fondling, and oral sex, to full intercourse. No matter what sexual activities an individual has experienced during adulthood, the first coital experience is a significant milestone on the road to becoming an adult (Schofield, et al, 2008). The reported average age at which both males and females in the UK have their debut sexual experience is 16-17 (NHS, 2019). In terms of the UK's gay community, a study of more than 16,000 gay and homosexually active males between the ages of 14 and 83 found that the average age at which the participants had their first sexual experience with another male was 17.5 years, while the first experience of anal intercourse (AI) was at the average age of 20.6 years (Hickson, et al., 2014).

#### *5.1.3.1. ESE and RSBs*

In stage one of this thesis, it was found that the participants whose first consensual sexual experience (sexual abuse not included) was in their early adolescence (age 12-15) reported more frequent casual sex and a higher number of partners in their adulthood. It is said that it is common for individuals to engage in sexual intercourse before their adulthood (Anderson, 2012); however, engaging in sexual intercourse in early adolescence (prior to the age of 16) is rather uncommon and may expose adolescents to considerable social and psychological consequences and risks. Research shows that the early initiation of sexual activity is associated with risky sexual behaviour later in adulthood, such as higher numbers of sexual encounters, lifetime partners, and permissive sexual attitudes, which in turn increase the exposure to and risk of contracting STIs (Doyle et al., 2012; Novilla et al., 2006).

#### *5.1.3.2. ESE and TPB's proximal factors*

***Attitudes toward behaviour (ATB)*** as one of the TPB's proximal factors explain why men who have early sexual experience prior to the age of 16 are more likely to engage in RSBs. It is said that attitude in general and ATB in particular are complex, shaping and forming over time and through life experiences (Gordon, 1935). Having said that, a life experience that includes ESE prior to the age of 16 affects the individual's attitudes towards sex and sexual relationships. ESE become a source of information for how an individual views and thinks of himself and his relationships with others, which subsequently influence his intimate relationships in adulthood. Research shows that the early initiation of sexual activity is associated with risky sexual behaviours later in adulthood, such as higher numbers of sexual encounters, lifetime partners, and permissive sexual attitudes, which in turn increase the exposure to and risk of contracting STIs (Doyle et al., 2012; Novilla et al., 2006). This can be attributed to the fact that an individual's attitudes towards emotional intimacy become distorted because of ESE and subsequently over time, this distorted attitude towards emotional intimacy would be interpreted as relating to sexual relationships, which lead the individual to have a higher number of sexual partners. Over time, the attitude towards having a high number of sexual partners loses its negativity, leading the number of sexual partners to grow, which consequently increases the likelihood of condom use inconsistency and contracting STIs. In addition, another characteristic mentioned in the literature regarding individuals with ESE prior to the age of 16 is a tolerance for or seeking out of relationships in which one is victimized (Silbert & Pines, 1983); this sexual passivity leads individuals to have less negative attitudes towards risky sexual behaviour such as condomless intercourse.

***Subjective Norm (SN):*** There is a link between ESE and subsequent high-risk sexualised behaviours such as promiscuity and prostitution in adulthood (e.g. Lalor & McAlvaney, 2010; Doyle et al., 2012; Novilla et al., 2006). These sexualised behaviours over

time lead individuals to find themselves increasingly in contact with other like-minded individuals who over time then become significant others and who subsequently create an environment of support and approval for a particular type of sexual behaviour. For instance, in the case of sex workers (such as participant number 4 in the qualitative study (page 81), they usually become involved with other like-minded sex workers who over time become significant others. In such an environment, they might receive approval, support and encouragement to engage in condomless sexual activities as a way of enhancing their sexual appeal so as to increase their number of customers in order to maintain their work status among the other sex workers (e.g. Akoku et al., 2018; Mahapatra et al., 2013).

***Perceived behavioural control (PBC)*** is also influenced by life experiences, such as ESE. For instance, it has been shown that there is a connection between the early onset of sexual activity and a lack of inhibitory control, planning, and decision-making ability (Schofield, et al, 2008), all of which consequently influence PBC. Other studies have shown that some children enter adolescence with a predisposed resistance to adult authority and conventions as a result of problems with socialisation during childhood (Udry et al., 1995; Willoughby et al., 2014). When such socially lacking children enter adolescence, their sense of being in control often increases as their own autonomy grows during the onset of adolescence, making them more likely to break social rules, such as through substance use, antisocial behaviours, and sexual activity (Boles et al., 2006; Willoughby et al., 2014). Other research has found that the observed levels of a sense of being in control and impulsivity in children aged just 3 were a reliable determiner of which children would have experimented with both alcohol and romantic relationships by the age of 16, and consequently accumulated a greater number of sexual partners by the age of 19 (Zimmer-Gembeck et al., 2004). In another study, Crockett et al. (2006) observed that children with low levels of self-regulation (inability to control their own behaviour) at age 8–9 were more likely to engage in risky sexual behaviour,

such as having their first sexual encounter, having multiple partners, and not using condoms by the time they were 16–17. Most studies on the subject seem to make some level of connection between inattention and impulsivity during early childhood and rule-breaking behaviours, including early and sometimes risky sexual behaviours in adolescence (Crockett et al., 2006)

### 5.1.4. Adverse childhood experiences (ACEs)

Adverse childhood experiences (ACEs) are defined as events that take place during childhood (0-17 years) and which are traumatic on some level to the child. Examples of ACEs include experiencing violence, abuse, or neglect; witnessing violence at home; and having a relative attempt or commit suicide (Felitti et al.,1998). Additionally, the child's sense of safety, stability and bonding can be adversely affected by some negative aspects that impact the environment in which the child grows up, such as substance abuse, mental health issues, parental separation or the incarceration of a close relative (Felitti et al.,1998). The emotional pain and distress caused by ACEs can last long into adulthood (Dube et al., 2003). Connections have also been made in numerous studies between ACEs and risky sexual behaviours (Yoon, et al., 2018; Thompson, et al, 2017; Littleton, et al., 2014; Niehaus, et al., 2010) and substance use (Scheidell, et al., 2017; Maniglio, 2011).

#### *5.1.4.1. ACEs and RSBs*

In stage one, ACEs were found to be another factor that affected some of the participants' identity, and more specifically their gender identity. The ACEs were manifest in the form of bullying and sexual abuse, which were shown to be associated with risky sexual

behaviours (Yoon, et al., 2018; Thompson, et al, 2017; Littleton, et al., 2014; Niehaus, et al., 2010) and substance use (Scheidell, et al., 2017; Maniglio, 2011).

There is considerable evidence to show a relationship between physical and/or sexual abuse during childhood and RSBs in adolescence (Negriff, Schneiderman, & Trickett, 2015; Walsh, Latzman, & Latzman, 2014; Jones et al., 2013; Black et al., 2009; Arriola, et al., 2005). An increase in RSBs, such as sex with uncommitted partners, impulsive sexual behaviour, and risky anal sex during adolescence and young adulthood, has been linked to physical abuse during childhood (Negriff et al., 2015; Walsh et al., 2014). Similarly, the risk of early sexual initiation, sex with multiple partners, sex under the influence of substances, sex with uncommitted partners, and unprotected sex, all increase in adolescents who were sexually abused during their childhood (Brown, et al., 2000; Howard & Wang, 2005; Jones et al., 2013).

Despite the extensive body of literature confirming the relationship between physical and/or sexual abuse during childhood and risky sexual behaviour in adolescence and adulthood, there is still a lack of clarity with regard to the mechanisms behind this connection (e.g. Edwards et al., 2003). The researcher aims to explain this mechanism by using the TPB model.

#### *5.1.4.2. ACEs and TPB's proximal factors*

***Attitude towards behaviour (ATB):*** Family plays a significant role in the primary stage of the attitudes held by individuals. Initially, a person develops certain attitudes from his parent(s)/caregiver(s), sibling(s) and elder(s) in the family. There is a high degree of relationship between parent and children in terms of the attitudes found in them. If these relationships are influenced by domestic violence or physical, sexual and emotional abuse, their psychological construct of attitude will be changed accordingly. Based on this assumption, one possible explanation is that children's understanding of sexuality becomes distorted when they are subject to ACEs, especially sexual abuse, leading them to begin seeing sexuality as a means

of gaining attention, manipulating others, and gaining rewards. Evidence unearthed by Wilson and Widom (2011) indicated that child physical abuse (CPA) and childhood neglect were not only linked to the early initiation of sexual activity but also found to be indicators of an increased risk of engaging in prostitution. Similarly, the findings of Lemieux and Byers (2008) showed that there was an increased likelihood of engaging in both casual sex and unprotected sex among those who had experienced either child sexual abuse (CSA) or CPA.

***Subjective norm (SN):*** The researcher believes that ACEs can, perhaps in two ways, influence subjective norms for condom use and number of sexual partners. Firstly, a child growing up in a home where domestic violence is common and observing the patterns of abusive relationships among parents/caregivers will internally normalise such relationships and interpret them as the only form of functional relationship (Valdez, Hong & Lill, 2013). For instance, it is said that some of the tactics of sexual abusers include preventing their partner from protecting themselves against STDs; refusing to use condoms; and taking advantage of their partner sexually when their partner is on drugs, inebriated, sleeping or unconscious (Purdie et al., 2010). Any of these behaviour patterns can be repeated as a normal behaviour in the adulthood of a child who has grown up in a household where such abuses have been observed. Secondly, a gay man who has grown up with domestic violence, neglect or abuse can experience unmet emotional needs in his adulthood (Lloyd, 2018). It is likely that he will struggle to communicate his emotional needs to his prospective partner as perhaps he has never learned how to do so from his abusive and neglectful parents (e.g. Rakovec-Felser, 2014). A lack of effective communication skills can lead to him having unsuccessful relationships which subsequently cause him to have a higher number of sexual partners. Over time, this pattern of short-term relationships becomes adopted and accepted as a normal behaviour or as part of his lifestyle. Nevertheless, this life style might get acceptance and approval among other gay men as was explained in chapter one (page 12), this lifestyle among the gay community of engaging

with multiple, often unknown, partners was part of a perception of liberation which over time was accepted as a normal behaviour that became part of what is now called the "gay culture".

***Perceived behavioural control (PBC):*** It is proposed in the developmental traumatology model that stress experienced as a result of being abused has the potential to bring about biological changes in the affected individual's stress response systems, leading to an increased likelihood of internalising some symptoms, such as negative emotions or problems dealing with stressful situations, and externalising other symptoms, such as behavioural disinhibition (e.g. Edwards, et al. 2012). Individuals who have been sexually abused during childhood may then turn to sex as a coping tool to help relieve the negative emotions resulting from their abuse or even as a way of gaining affection and rewards (Littleton, et al., 2013; Messman-Moore, et al., 2009). With this in mind, an individual who is using casual sex as a coping strategy might develop a distorted sense of being in control in terms of managing his stress and anxiety, but the flip side of this perceived control is likely to be a higher number of sexual partners because of the habit of engaging in casual sex, which subsequently increases his exposure to STIs.

### 5.1.5. Internalised homophobia (IH)

Internalised homophobia (IH) refers to the fear, hatred or intolerance of sharing space with individuals who are homosexual (Weinberg, 1972) or having negative feelings and thoughts about being homosexual.

#### *5.1.5.1. IH and RSBs*

Numerous studies of the IH phenomenon have established a relationship between IH and both mental and physical health (Wen & Zheng, 2019; Moody, et al., 2018; LaPollo, et al.,

2014). For example, IH has been linked to detrimental psychological conditions such as a reduced sense of self-worth or self-value, which can then lead to physical health risks in the form of less self-protective behaviour (Bachmann & Simon, 2014). Taking this link to the next conclusion, studies into its effects on various subgroups and in different contexts have found higher levels of IH to be associated with increased sexual risk taking (Mansergh, et al., 2015; Dew & Chaney, 2005; Huebner, et al., 2004; Rosario, et al., 2006). One study by Ratti et al. (2000) identified inverse relationships between IH and both condom use self-efficacy (confidence in using condoms consistently and correctly) and instances of unprotected sex (anal and oral). Similar results were reported in Huebner et al.'s (2004) study of gay and bisexual men, with an inverse relationship identified between IH and safe sex self-efficacy. However, no significant relationship between IH and risky sexual behaviour was found in the studies of Kashubeck-West and Symanski (2009) and (Whitfield & Jacobson, 2017), while Newcomb and Mustanski (2011) found only a limited effect of IH on risky sexual behaviour.

#### *5.1.5.2. IH and TPB's proximal factors*

***Attitude towards behaviour (ATB):*** The attitude towards a behaviour of a person is determined by psychological factors like values and beliefs (Ajzen, 1991.). Values are ideals, the guiding principles in one's life, or the overarching goals that people strive to obtain (Maio & Olson, 1998). In the context of the current study, an example could be if somebody values the idea that "homosexuality is immoral". On the other hand, beliefs are cognitions about the world—subjective probabilities that an object has a particular attribute or that an action will lead to a particular outcome (Fishbein & Ajzen, 1975). An example in this context could be if one believes that "same sex relationships cause AIDS". From these assumptions, internalised homophobia happens when an individual develops an intrapsychic conflict between experiences of same-sex affection or desire and the feeling of a need to be heterosexual because he values heterosexuality and believes that homosexuality is wrong. This internal conflict

causes stress and anxiety in affected individuals, which might lead them to use sex as a coping strategy (e.g., Johanston, et al., 2017; Saleh, et al., 2016; Choudhury, et al., 2015; Yadegarfard, 2020; Glick & Golden, 2014). Consequently, from an early age, these individuals' attitudes towards the function of sex and sexual relationships will be changed to understand it as a means of stress relief rather than as a factor that helps in forming an intimate relationship. If this attitude towards sex and sexual relationships does not change, it is highly likely that, over time, it will lead affected individuals to engage with a higher number of sexual partners and subsequently increase the likelihood of condom use inconsistency and exposure to STIs.

***Subjective norm (SN) and perceived behavioural control (PBC)*** can explain why men with internalised homophobia (IH) are more likely to engage in RSBs. First of all, it is important to mention that anybody can internalise homophobia, regardless of their sexual orientation or gender identity. As the definition of IH is negative feelings and thoughts about being or becoming homosexual, one can self-identify as a heterosexual but still have internalised homophobia. Previous research has identified IH in the form of a fear of femininity in men as a type of gender role conflict, or in other words, heterosexual men feeling uncomfortable about feminine characteristics in men (Parrott et al., 2002). Therefore, IH seems to have a negative impact on both groups. The question, therefore, is what the strategy would be for coping with these internalised negative feelings and thoughts. From the classical psychoanalytical point of view, compensation can be one of the coping strategies. According to APA (2020), compensation is the "substitution or development of strength or capability in one area to offset real or imagined deficiency in another. This may be referred to as overcompensation when the substitute behaviour exceeds what might actually be necessary in terms of level of compensation for the deficiency" (APA, 2020). This compensation may be a conscious or unconscious process. Using this expansion and applying it in the current context shows us that having sex with the opposite sex for heterosexual men and having sex with the

same sex for gay men could be a type of substitution used to offset the imagined deficiency from IH. If this is so, then how does it work? To cope with this IH, many heterosexual men might engage with more sexual relationships with the opposite sex just to prove to themselves and others that they are not homosexual. Also, the sex is likely to be unprotected because a heterosexual man with IH might think that STIs, especially HIV, are a homosexual disease (Gander, 2017; Ward 2010). Therefore, as this substitute behaviour exceeds over time, the instances of unsafe sex with a higher number of sexual partners increases, consequently resulting in greater exposure to STIs. On the other hand, gay men who want to rid themselves of their IH engage in more unsafe sexual intercourse with members of the same sex as a way of proving to themselves and others that same sex relationships are ok and normal. It is also said that, for some gay men, unsafe sexual practices are regarded not as a spur-of-the-moment decision but as a conscious choice made as an act of 'self-expression' and 'empowerment' that is 'liberation-inspired' (Ashford, 2015). As can be seen for both groups, engaging sexually with more partners and having unprotected intercourse become sources of pride in their conscious and premeditated decisions, which help them to earn positive feedback, approval and support from their significant others (SN). Also, the substitute behaviours create a diluted sense of control over the outcomes of their behaviours that they demonstrably do not influence, resulting in the individuals' overestimated perception of their ability to control events or PBC.

When reviewing the literature on the relationship between IH and RSBs, it is also necessary to take into consideration the changes that have taken place in how gay men are perceived and accepted by society since the first study of IH was published in the late 20$^{th}$ century. It is reasonable to assume that the degree and speed of the changes that have taken place in general perceptions of homosexuality over the past three decades have had some effect on the levels of IH in members of the LGB community of different ages. Another possible assumption is that the greater visibility and public acceptance of the LGB community may have

simply caused a more subtle manifestation of homophobic behaviours, meaning that even though the outward expression of IH has decreased, there is no genuine change to its negative effects (Newcomb & Mustanski, 2011).

### 5.1.6. Loneliness

Loneliness is an unpleasant emotion in which a person feels a strong sense of emptiness and solitude resulting from inadequate levels of social relationships. However, it is very much a subjective experience (Peplau & Perlman, 1982). Loneliness has also been described as social pain—a psychological mechanism meant to alert an individual of isolation and motivate her/him to seek social connections (Cacioppo & Patrick, 2008).

#### *5.1.6.1. Loneliness and RSBs*

The relationship between loneliness and RSBs is explained in Hull's Drive Reduction Theory (1943), which posits that when an individual is deprived of a basic need, that individual will develop feelings of discomfort, stress and anxiety, which will influence their behaviours. Therefore, this model postulates a relationship between loneliness and RSBs. Although the number of studies focusing specifically on the influence of loneliness on the gay male population is limited, a study conducted by Yadegarfard et al. (2014) showed that loneliness is a strong predictor of sexual-risk behaviour among Thai male-to-female transgender youth. In addition, it has been shown that higher levels of loneliness are strongly associated with the frequency of sexual risk behaviour (Hubach, et al., 2015; Munoz-Laboy, Hirsch, & Quispe-Lazaro, 2009). There is an increased risk of alcohol and drug abuse, engaging in sex with multiple partners, engaging in anonymous sex, and the subsequent exposure to HIV infection among gay males who wish to overcome their loneliness but who lack the necessary adaptive

social and coping skills (Torres, 2005). It is also common for lonely gay males who are not able to enter into regular relationships or arrange dates to adopt less healthy sexual practices, such as visiting public places which are known to be gay cruising areas, including public toilets and parks, for the purpose of engaging in risky and often anonymous sexual activities. Such practices expose younger gay males to certain risks that include abuse by older males and increased risk of STIs (Robertson & Monsen, 2001). However, in a study conducted by Ekstrand and Coates (1990), loneliness and RSBs did not have a significant relationship.

#### *5.1.6.2. Loneliness and TPB's proximal factors*

***Attitude towards behaviour*** can explain why men who are experiencing loneliness might be more likely to engage in RSBs. Loneliness in the gay community is affected by a number of contributing factors. Two of the most common factors include a negative view of self-identity combined with a lack of social support, which are best understood in a developmental context. An inability to pass the relationship milestones of attraction, dating, and forming a stable relationship due to negative social perceptions of homosexuality can lead to gay males having a negative attitude towards themselves (less self-respect) and consequently to relationships with other gay males (Martell, Safren, & Prince, 2004). Social attitudes to homosexual relationships result in many gay males hiding, ignoring, and suppressing their feelings (Martin & Hetrick, 1988). As a result, the development of attitudes towards a healthy and intimate relationship is negatively affected by isolation and feelings of loneliness (Flowers & Buston, 2001). This negative attitude towards themselves (less self-respect) and towards a stable and healthy relationship lead them to engaging in more short or casual sexual relationships with less cautiousness for sexual risk.

***Subjective norms:*** We know from the previous quantitative study that loneliness is closely corelated with sexual hyperactivation, which means that individuals who are

experiencing more feelings of loneliness make more efforts at attracting a mate and continuing to have a strong desire to engage in sexual intercourse or simply to have more sexual relationships as a way to avoid loneliness, which hypothetically becomes a normal behaviour over time. As an example, a gay man who is experiencing loneliness in all its forms goes to cruising areas just to cope with the loneliness; he meets other gay men who have a similar experience of loneliness, and they become friends ("significant others" for each other). As a result, these men might not be socially lonely anymore, but they are still romantically lonely; hence they carry on with their cruising habit. In this scenario, cruising and having multiple sexual partners become a normal behaviour between these two individuals as there is less negative direct feedback from each other.

***Perceived behavioural control:*** The researcher anticipates that taking precautions against sexual risks as a cognitive task and priority might be affected by competition for the individual's cognitive resources from other tasks, such as coping with loneliness, which is accompanied by higher sexual desire (page 131, results from previous quantitative study). According to Jansen et al., (2016) dual task priority involves people selecting one task out of multiple tasks to work on first in order to maximize the final outcome because of the cognitive limits of human processing and how human performance is affected by these limits (Fisk, Derrick, & Schneider, 1986). Consequently, it creates a diluted sense of control on risk taking. In this scenario, the sense of being in control is diluted as the individual does not necessarily have any actual control, abilities, strategies or skills, such as the ability to communicate about using condoms in casual sex. In addition, for gay men who are experiencing severe loneliness, the willingness to engage in unsafe sexual practices with unknown individuals could be regarded as an inclination for a longer term relationship or as part of the transition from a casual to a more serious relationship (Smith, Flowers, & Osbourn, 1997; Adam, Sears, & Schellenberg, 2000; Corbett et al., 2009). Also in this scenario, therefore, the person's

unconscious priority is to cope with the loneliness, resulting in the other part of the cognitive process becoming distorted from this prioritization, which in turn creates a diluted sense of control over the outcomes of the behaviour that they evidently do not influence (PBC).

### 5.1.7. Substance use

Many studies on the influence of substance misuse on the sexual behaviours of both the general and LGBT population have shown that substance use increases risky sexual behaviours (Standerwick et al, 2007; Connor, et al, 2015;Tucker, et al., 2012; Castelo-Branco, et al, 2014; Ritchwood, et al, 2016). In the previous quantitative study in stage one, RSB was positively correlated with drug use, sniffed substances, smoking (tobacco) and sexual, however RSB was not predicted by any of substance use items. Also, in stage one of the qualitative study, alcohol and sniffed substances (poppers) were reported as the substance most commonly used by participants before sex. However, their use did not mean that all participants then engaged in condom-less anal sex. In other words, gay men participants might use substances (e.g. poppers, methamphetamine) to increase their sexual desire or/and performance, but it does not necessarily mean that they then engage in sex or risky sexual behaviours. As part of the conclusion drawn from stage one, the researcher decided to test substance use (drugs, sniffed substances, alcohol and smoking (tobacco) also in stage two. Previous research shows that substance use has a stronger overall effect on behaviour and overshadows the effect of other properties (Feaster, et al., 2010; Cofrancesco, et al., 2007). In addition, previous research showed the influence of substance use on intention to use a condom. For instance, a study carried out by Mausbach et al. (2009) using the TPB model among HIV-negative heterosexual methamphetamine users revealed that less negative intention to engage in unsafe sex was predicted by the amount of methamphetamine use. However, while a study conducted by

Conner et al. (1999) using the TPB model showed that alcohol use did not have a consistent impact on intention to use condoms, their study did show that PBC was a stronger predictor of intention when alcohol use added into the equation. These findings are explained in part by the way in which the use of substances promotes a sense of disinhibition and reduced attentional capacity (Critchlow, 1986). Another identified effect of substance use is a lowering of cognitive capacity, which leads to the behaviour of the intoxicated individual becoming increasingly guided by more heuristic processing (Conner, et al., 2008). In contrast, a study by Callahan et al. (2013) among marijuana users showed that marijuana dependence did not significantly influence the relationships between TPB's proximal factors, nor did it moderate the relationship of TPB's proximal factors with subsequent condom use. Callahan et al. (2013) sugested that intention to use condoms is equally valid regardless of marijuana dependence status.

Consequently, the researcher hypothesises that substance use (drugs, sniffed substances, alcohol and smoking (tobacco)) has a stronger overall effect on intention (condom use and multiple partners) and behaviour (condom use and number of sexual partners) to the than the background factors (IVs), TPB's proximal factors, and actual control. In other words, regardless of the participants' characteristics regarding ESE, ACEs, loneliness, age and IH, and regardless of their attitude towards condom use and number of sexual partners, subjective norms, and PBC, the author hypothesise that substance use positively predicts more intention of condom use inconsistency and multiple partners, and a higher number of sexual partners and more condom use inconsistency.

### 5.1.8. Research Aim

It is the intention of the author to expand the understanding of TPB by seeking to ascertain whether and to what extent TPB constructs mediate the relationships of distal

biopsychosocial variables, as shown in Figure 3. As already addressed in chapter one, (page 31) it is not the intention of the author to redefine TPB but to utilize for prediction of RSBs. Instead, the objective of analysing the roles of distal factors as predictors of TPB constructs is to expand the theory by adding to it the variables that influence attitudes towards behaviour, subjective norms, and PBC.

**Aim 1:** To examine the prediction of intentions and RSBs (condom use and number of sexual partners) among gay and heterosexual men using an extended version of the TPB (measuring distal variables to see whether they have direct or indirect effects on intentions and RSBs) (Figure 8). As the *"central factor in TPB is the individual's intention to perform a given behaviour* (Ajzen, 1991, p. 3) so, if on one hand there is an indirect significant relationship between distal factors and intention when the proximal factors (ATB, SN, and PBC) are the mediators and on the other hand there is a significant relationship between intention and the behaviour, then it can be concluded that that there is an indirect relationship between distal factors and the behaviour when intention and proximal factors are the mediators (e.g., Ajzen, 1988; Ajzen & Fishbein, 1980; Canary & Seibold, 1984; Sheppard, Hartwick, & Warshaw, 1988), however for the serial analysis, SPSS macro PROCESS (model 6) will be used in order to test the sequential mediating effect (X-> M1 -> M2 -> Y).

**Aim 2**: To explore the factors that differentiate between the gay men participants and heterosexual male participants (Figure 8).

### 5.1.9. Research Hypothesis

H1: Gay men report significantly higher levels of substance use, higher scores for early sexual experiences, higher scores for adverse childhood experiences, higher scores for internalised homophobia, higher levels of loneliness, less positive attitudes towards condom

use, more positive attitudes towards multiple partners, less negative subjective norms, higher PBC, higher numbers of sexual partners, and higher scores for condom use inconsistency than their heterosexual male counterparts.

H2: ***Complex hypothesis:*** a) The reported effects of IVs (distal factors) on the intention are mediated by the proximal factors, b) There is a significant relationship between intention and the actual RSBs; c) There are significant relationship between IVs (distal factors) and RSBs when proximal factors and intention are mediators:

Distal factors → Proximal factors → Intention → RSBs

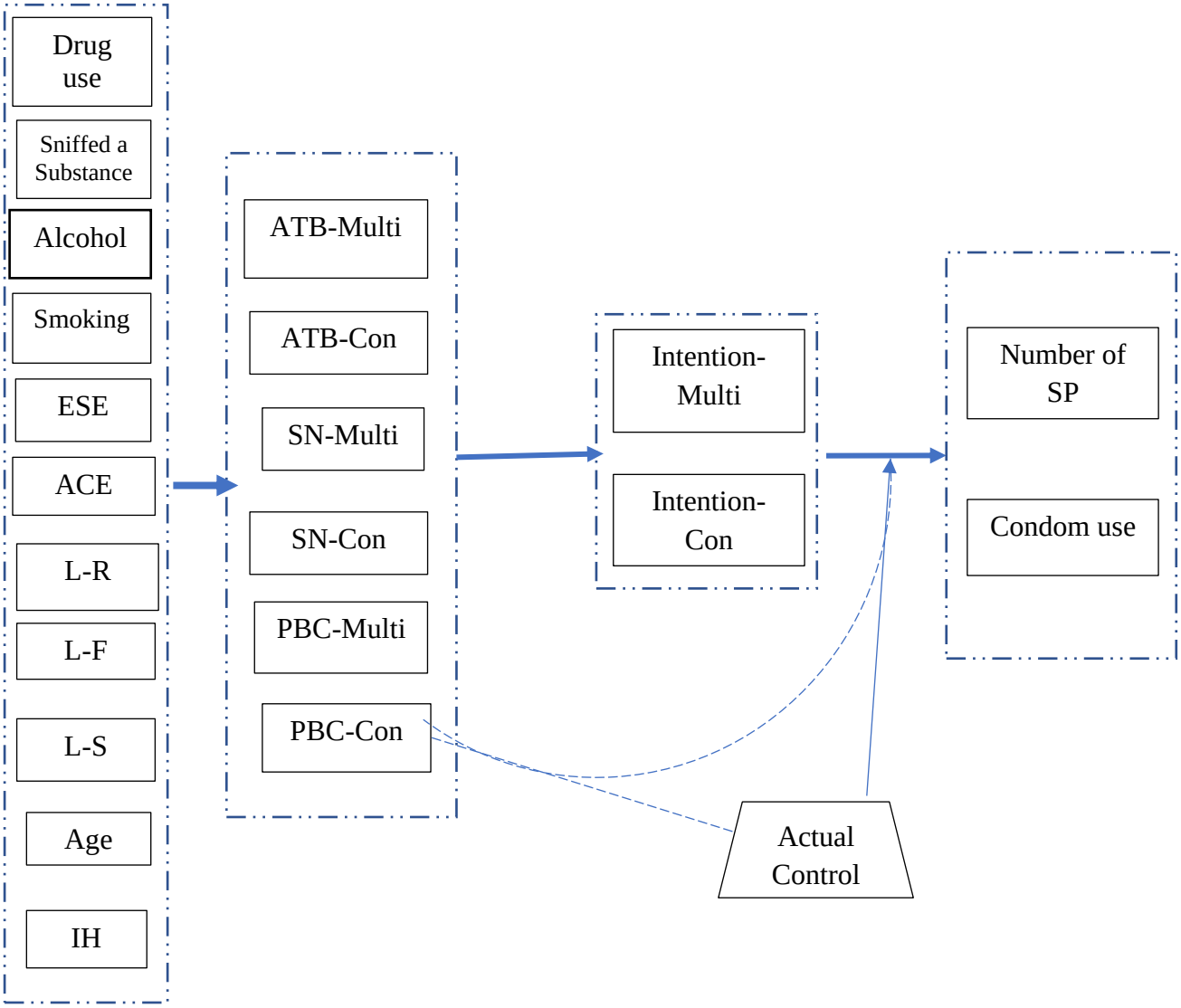


*Figure 8:* A hypothetical model indicating the indirect influence of adverse childhood experiences, age, early sexual experiences, internalized homophobia, loneliness and frequency of substance use related to the TPB proximal factor(s), intention and RSB(s).

## 5.2. Methodology

### 5.2.1. Research Design

This study is based on the responses of targeted participants to a survey questionnaire designed to identify the study's primary variables. The study's predictors are the influence of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalised homophobia, and loneliness on the mediator attitudes towards behaviour, subjective norms and PBC; the criterion is risky sexual behaviour. In order to truly understand the influence of the predictors on risky sexual behaviours, the design of the study requires a control group of heterosexual men to provide base-line of these relationships for comparison purposes. From such a control group, this researcher would then know whether any negative influence of the study's predictors on the criterion is specific to the study's gay sample or common to men in general.

### 5.2.2. Participants of the Study

*5.2.2.1. Sampling and recruitment*

For this quantitative study (comparison study), the research requires a sample of gay men but also a group of heterosexual men aged 18 years old and over who live in the UK. Selecting the participants for the comparison study in this way means that the two groups are comparable in terms of age, level of education, social class, knowledge about sexual behaviours, and financial status (dependent on or independent of parents).

The data collection process consists of the following procedural steps:

Similar to the quantitative study in stage one, the researcher benefits from the snowball sampling method to gather the data (See page 118). An online survey was created on the

Qualtrics online software. The link to the online survey was sent to the universities' and LGBT organisations' social network pages, such as Facebook, Instagram and Twitter. Based on the snowball sampling method, interested people were asked to send the link to other heterosexual and gay men.

#### *5.2.2.2. Demographic Profile of Respondents*

The sample consisted of 370 male respondents

| | | Gay men | | Heterosexual men | | Total | |
|---|---|---|---|---|---|---|---|
| | | Frequency | Percent | Frequency | Percent | Frequency | Percent |
| **Ethno-racial** | White – British | 127 | 34.3 | 174 | 47.0 | 301 | 81.4 |
| | White – Irish | 7 | 1.9 | 5 | 1.4 | 12 | 3.2 |
| | Any other White Background | 10 | 2.7 | | 0.5 | 12 | 3.2 |
| | Black | 2 | 0.5 | 2 | 0.3 | 3 | 0.8 |
| | Black – British | 13 | 3.5 | 1 | 1.1 | 17 | 4.6 |
| | Mixed - White and Black Caribbean | 7 | 1.9 | 4 | 0.0 | 7 | 1.9 |
| | Mixed - White and Black African | 1 | 0.3 | 0 | 0.3 | 2 | 0.5 |
| | Mixed - White and Asian | 0 | 0.0 | 1 | 0.3 | 1 | 0.3 |
| | Subcontinent (Indian, Bangladeshi, Pakistani, …) | 8 | 2.2 | 3 | 0.8 | 11 | 3.0 |
| | Far East (Chinese, Indonesian, Korean, …) | 2 | 0.5 | 2 | 0.5 | 4 | 1.1 |
| | Total | 177 | 47.8 | 193 | 52.2 | 370 | 100 |
| **Educational attainment** | Post graduate Degree | 17 | 4.6 | 18 | 4.9 | 35 | 9.5 |
| | Undergraduate Degree | 42 | 11.4 | 40 | 10.8 | 82 | 22.2 |
| | Some university credits | 8 | 2.2 | 2 | 0.5 | 10 | 2.7 |
| | A-Level or equivalent | 28 | 7.6 | 39 | 10.5 | 67 | 18.1 |
| | College or trade school graduate | 12 | 3.2 | 20 | 5.4 | 32 | 8.6 |
| | Some college credits or trade school | 12 | 3.2 | 7 | 1.9 | 19 | 5.1 |
| | G.C.S.Es | 47 | 12.7 | 59 | 15.9 | 106 | 28.6 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Did not graduate from high school | 5 | 1.4 | 2 | 0.5 | 7 | 1.9 |
| | No qualification | 6 | 1.6 | 6 | 1.6 | 12 | 3.2 |
| | Total | 177 | 47.8 | 193 | 52.2 | 370 | 100 |
| **Marital status** | Never married | 122 | 30.4 | 69 | 18.8 | 181 | 49.2 |
| | Separated | 7 | 1.9 | 4 | 1.1 | 11 | 3.0 |
| | Divorced | 7 | 1.9 | 14 | 3.8 | 21 | 5.7 |
| | Widowed | 3 | 0.8 | 4 | 1.1 | 7 | 1.9 |
| | Living common-law | 13 | 3.5 | 17 | 4.6 | 30 | 8.2 |
| | Married | 24 | 6.5 | 84 | 22.8 | 108 | 29.3 |
| | Civil partnership | 10 | 2.7 | 0 | 0.0 | 10 | 2.7 |
| | Total | 176 | 47.8 | 192 | 52.2 | 368 | 100 |
| **Age** | 18-23 | 40 | 10.9 | 8 | 2.2 | 48 | 13.1 |
| | 24-29 | 23 | 6.3 | 21 | 5.7 | 44 | 12.0 |
| | 30-35 | 39 | 10.6 | 21 | 5.7 | 60 | 16.3 |
| | 36-41 | 23 | 6.3 | 35 | 9.5 | 58 | 15.8 |
| | 42-47 | 16 | 4.4 | 24 | 6.5 | 40 | 10.9 |
| | 48-53 | 9 | 2.5 | 23 | 6.3 | 32 | 8.7 |
| | 54-59 | 13 | 3.5 | 35 | 9.5 | 48 | 13.1 |
| | +60 | 13 | 3.5 | 24 | 6.5 | 37 | 10.1 |
| | Total | 176 | 48.0 | 191 | 52.0 | 367 | 100 |
| **Relationship status** | Single and not dating | 38 | 10.3 | 55 | 14.9 | 93 | 25.1 |
| | Single and dating | 66 | 17.8 | 18 | 4.9 | 84 | 22.7 |
| | In a monogamous relationship | 49 | 13.2 | 115 | 31.1 | 164 | 44.3 |
| | In a non-monogamous (open) relationship | 20 | 5.4 | 4 | 1.1 | 24 | 6.5 |
| | In a polyamorous (multiple people) relationship | 4 | 1.1 | 1 | 0.3 | 5 | 1.4 |
| | Total | 177 | 47.8 | 193 | 52.2 | 370 | 100 |

*Table 10: Demographic data*

### 5.2.3. Research Instrumentation

For the purposes of this study, a questionnaire in the English language was employed to gather data. An informed consent form was also provided to explain the nature and purpose

of the questionnaire. Detailed descriptions of the questionnaire are presented in the following section.

*5.2.3.1. Personal Information*

A researcher-constructed set of questions was used to obtain the required personal information about the respondents. This first part consisted of items directed at the selected demographic variables of age, sex, gender identity, sexual orientation, ethnicity, education, current relationship status, and marital status.

*5.2.3.2. Substance use (Carried from stage one)*

This study used the *Substance Frequency-of-Use Scale* developed by Kimber and Sandell (2009) as the tool to measure substance use. The researcher decided to use the ***Substance Frequency-of-Use Scale*** to measure substance use because this scale was used in the first quantitative study in stage one and had a good overall reliability α = .70 and high correlation for psychological well-being, RSBs, sexual hyperactivation, loneliness and SS-A family. The scale is short and easy to use. It measures different types of substance use, including "sniff a substance of any kind" which is highly relevant in the context of the current study. Also, previous research has shown that the scale has good face validity, very good internal consistency α = .85, and good concurrent validity (Kimber & Sandell, 2009). The *Substance Frequency-of-Use Scale* is a self-report scale that measures the frequency of substance use through **4 independent questions** and employs 3-, 4-, and 5-point frequency scales for respondents' answers (Kimber & Sandell, 2009). Each question is scored independently so in the analysis, each question is treated as an independent variable (Appendix O) and high scores on the scale items reflect a *high perception* of the use of various substances (drugs, alcohol, sniffed drugs and tobacco). The substances covered in the scale are drugs (hard and soft), volatile substances (sniffing), alcohol, and tobacco (smoking). The questions are:

"How many times have you tried drugs?" (5-point scale, ranging from "Never" to "More than 20 times"); "Have you ever sniffed a substance of any kind?" (3-point scale, ranging from "No" to "Yes, several times"); "How often do you drink beer, cider, wine or spirits?" (9-point scale, ranging from "Do not drink" to "Every day or every other day"); "Do you smoke?" (7-point scale, ranging from "No, have never" to "Every day or almost every day"). When considering their answers, the respondents are advised that their responses relate to their entire lives rather than a specific time period, such as the last month or year.

*5.2.3.3. Risky Sexual Behaviours (Carried from stage one)*

To measure the number of sex partners, the participants were asked a direct question: "In the past 12 months, how many sex partners have you had? (Indicate the number)" while the participants were also given another option in case they had not had any sex in the past 12 months: "I have not had sex in the past 12 months" so a higher score equalling more sexual partners (Millstein & Moscicki, 1995; Green, et al., 2000). Moreover, all participants who had engaged in any amount of sex in the past 12 months were asked three direct questions regarding their condom use: "In the last 12 months, have you used condoms when you had anal sex? (4-point scale ranging from "Always" to "Never"); so a higher score equalling less condom use (Millstein & Moscicki, 1995; Green, et al., 2000). (Appendix O). These two questions have been used by the researcher in two previous studies (Yadegarfard et al., 2013; Yadegarfard et al., 2014). The previous studies showed that these two question are closely correlated with numerous social support and psychological well-being measures, including sensation seeking (Green, et al., 2000), family rejection, social isolation, loneliness (Yadegarfard et al., 2014 & Yadegarfard et al., 2013), which is also highly relevant to the current research. Therefore, the researcher has decided to use this measurement in this stage.

*5.2.3.4. Early sexual experience (New variable)*

To measure early sexual experience, the Early Sexual Experiences Checklist created by Alderson, et al., (2014) was used in this research. This measurement was selected for this thesis because it allows the researcher to explore a range of sexually inappropriate behaviours, including a young person being approached by an adult to engage in sexual behaviour in response to a range of interactions. This can include the adult buying them gifts, buying them drugs, or providing accommodation, in return for which they were then expected to engage in such sexual acts. The test has high internal consistency (α = .85) and validity (Ireland, et al., 2015). Previous studies have shown that the checklist is closely correlated with a number of social factors and psychological well-being measures, including locus of control, self-esteem, loneliness and anxiety (Ireland, et al., 2015) which is also highly relevant to the current research. Therefore, the researcher decided to use this measurement in this stage. The test includes 13 items which require a yes–no response, with a higher score equalling more sexual experience before the age of 16. This measure was designed to examine the nature and extent of sexual exploitation. An example of one of the questions is: (1) "*Below the age of 16, did you ever feel you were expected to perform sexual acts as a result of someone you believed to be over the age of 18 giving you gifts (jewellery, mobile phones, clothes, money)?"* The test has high internal consistency (α = .85) and validity (Ireland, et al., 2015) (Appendix O).

*5.2.3.5. Adverse childhood experiences (New variable)*

To measure adverse childhood experiences, the Adverse Childhood Experiences Inventory created by Finkelhor, Shattuck, Turner, and Hamby (2015) was used in this research. The test includes 14 items which assess the absence or presence in childhood experiences of physical, sexual and emotional abuse. The Adverse Childhood Experiences Inventory was selected to be used in this research because it is a comprehensive measurement which covers a

variety of ACEs (Felitti et al., 1998). Also, the instrument is considered reliable with valid internal consistency as indicated by the Cronbach's alpha of 0.81 (Finkelhor et al., 2015). The responses are scored as either 1 (presence of the experience) or 0 (absence of the experience), with a higher score equalling more adverse childhood experiences at any time in life for emotional abuse, physical abuse, sexual assault, emotional neglect, mother treated violently, household substance abuse, household mental illness, parental separation or divorce, incarcerated household member, low socioeconomic status, peer victimisation, peer isolation/rejection, and exposure to community violence (Finkelhor et al., 2015). The responses are scored as either 1 (presence of the experience) or 0 (absence of the experience), with a higher score equalling more adverse childhood experiences (Appendix O). The instrument has low to moderate test-retest reliability (α = .56) (Finkelhor, et al., 2015).

*5.2.3.6. Internalised homophobia (New variable)*

To measure internalised homophobia, the Internalised Homophobia Scale created by LaPollo, Bond, and Lauby (2014) was used in this research. This scale was selected for this research because it has a high internal consistency (α = .83) and validity (LaPollo, et al., 2014). In previous studies, the reliability analysis also showed Cronbach's alphas of .74 among Black MSM, and .83 among White MSM (LaPollo, et al., 2014). It has also been shown that the scale is closely corelated with a number of other measurements, such as sense of loneliness, self-evaluation and self-identification (Ren & Hood, 2018) which is highly relevant to the current thesis. The test includes 8 items which assess the level of internalised homophobia in individuals. Four of those items were from a scale adapted by Ross et al. (2008) and three items were adapted from Wagner's Internalised Homophobia Scale (Wagner, 1998). The responses were scored from 1 to 4 with a higher score equalling greater internalised homophobia (Appendix O). The measurement has a high internal consistency (α = .83) and validity (LaPollo, et al., 2014).

*5.2.3.7. Social and Emotional Loneliness Scale for Adults (Carried from stage one)*

To measure loneliness, the Social and Emotional Loneliness Scale for Adults created by DiTommaso and Spinner (1993) was used in this research. This scale was selected for the current research because, unlike the UCLA loneliness measure, this self-report questionnaire is designed to assess the levels of **emotional** (romantic and family) and **social** loneliness experienced by an individual. Thirty-seven items were developed based on Weiss' (1973) typology of loneliness. The **scale** is comprised of three subscales of 12, 11, and 14 items, which are answered using a 7-point Likert **scale** ranging from 1 (strongly disagree) to 7 (strongly agree). Principal components analysis on data from samples of college students confirmed a three-factor structure, including a Romantic subscale, a Family subscale, and a **Social** subscale. All three subscales have very good internal consistency ranging from .89 to .93. The patterns and magnitudes of the correlations between the SELSA **scales** and other measures of loneliness provided support for the validity of the former. All three subscales of the SELSA correlated significantly with the UCLA Loneliness Scale. Analyses of the relationship of the SELSA scales to number of dates and current involvement or non-involvement in a romantic relationship provide evidence of discriminant validity. Cronbach's alpha for the subscales of the SELSA ranged from .89 to .93. The SELSA includes 37 items and a 7-point response scale, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). The scale assesses three aspects of loneliness: romantic (12 items), family (11 items) and social (14 items). Responses with a higher score in each subscales equal a higher level of romantic, family and social loneliness, accordingly (Appendix O). The measurement has a high internal consistency ranging from $\alpha$ = .87 to $\alpha$ = .90.

*5.2.3.8. TPB questionnaire (New variable)*

To measure TPB proximal factors and intention regarding risky sexual behaviour, a measure developed by Turchik (2012) was used (Appendix O). It assesses an individual's attitude towards the behaviour, subjective norm, PBC, and intention regarding condom use and number of sex partners in accordance with guidelines from Ajzen (1991). The section on attitudes towards the behaviours includes 9 questions. An example of these is: *Having casual sex with different partners (multiple partners) is: with choices ranging from* 1(Very Pleasant [for me]) to 7 (Very Unpleasant [for me]). A higher score equals a more a negative evaluation of the expected outcome of condom use and multiple sexual partner. The subjective norm section includes 9 questions, an example of which is: *Most people who are important to me think that _____ have casual sex with different partners (multiple partners), with choices ranging from* 1 (I should not) to 7 (I should). A higher score equals to the belief of more negative direct feedback of significant others on condom use and multiple sexual partners. The PBC section includes 9 questions and an example of these is: *I am confident that I would avoid casual sex with different partners (multiple partners) if I wanted to* 1 (Strongly Disagree) to 7 (Strongly agree). A higher score equals stronger beliefs that condom use and having sexual relationship with multiple partners is under their control. The Intention section includes 13 questions and an example of these is: *Over the next 2 months, do you intend to have sex with different partners (multiple partners)?* With answers ranging from 1 (Definitely) to 7 (Definitely not). A higher score indicates less intention to commit RSB.

To measure the "actual behaviour control" the participants were asked four direct questions for: In last 12 months how many times have you restrained yourself and used a condom (had not have sex with different partners) ?" (5-point scale, ranging from "Never" to "More than 20 times"); In last 12 months, how many times have you considered but not used

condoms (not had sex with different partners)?" (5-point scale, ranging from "Never" to "More than 20 times").

It is important to mention that as the researcher's aim is to predict one type of behaviour (Risky Sexual Behaviour), the direct measures of attitudes towards the behaviour, subjective norms, and PBC are adequate. Ajzen (2019) explained that if a researcher wants: *"…to predict intentions and behaviour, the reflective ("direct") measures of attitude, subjective norms, and perceived behavioural control are sufficient. Among other things, these measures allow the researcher to examine the theory's predictive validity and to estimate the relative importance of attitudes, subjective norms, and perceived behavioural control".*

### 5.2.4. Data Analysis

Following the completion of the data collection process, the researcher encoded the obtained data into the latest edition (22) of the Statistical Package for Social Sciences (SPSS) for analysis. Data analysis were accomplished through the following statistical treatments:

2. Descriptive statistics: Frequency and percentage distributions were utilised to analyse the respondents' demographic data. Means and standard deviations were used in the further analysis of respondents' scores.
3. Reliability test: Reliability testing was conducted on items that represent the factors of age, substance use, early sexual experiences, adverse childhood experiences, internalised homophobia, loneliness, and risky sexual behaviour.
4. Correlation analysis: Correlation analysis was employed to test the strength of relationships between the variables.
5. GLM multivariate analysis of variance (MANOVA) was used to test for differences between the study group of gay individuals and the baseline group of heterosexual men

with regard to the seven variables of substance use, early sexual experiences, adverse childhood experiences, internalised homophobia, loneliness and risky sexual behaviours.

6. Inferential statistics: Multiple regression analysis and Barron and Kenny (1986) approach to mediation testing was used to test the hypothesised direct influence of age, early sexual experiences, adverse childhood experiences, internalised homophobia, and loneliness on attitude towards behaviour, subjective norms, and PBC, and of attitudes towards behaviour, subjective norms and PBC on intention and intention towards risky sexual behaviour.
7. The Sobel test was used to evaluate the statistical significance of a partial mediation effect. For the purpose of the current research, the Sobel test was conducted electronically at www.quantpsy.org/sobel/sobel.htm (Preacher & Leonardelli, 2020).
8. For the serial analysis, SPSS macro PROCESS (model 6) (an observed variable OLS and logistic regression path analysis modelling tool) (Hayes, 2020) will be used in order to test the sequential mediating effect (Distal factors → Proximal factors → Intention → RSBs)

## 5.3. Results

### 5.3.1. Reliability

It should be noted that prior to reliability analysis, all of the scale items that were negatively-worded were reverse-scored in order to ensure consistency of interpretation (Appendix Q). Thus, after reverse-scoring, high scores on the scale items reflect a *high frequency* of substance use (drugs, alcohol, sniffed drugs and smoking tobacco); a *higher number of sexual partners* and *less frequency of condom use* for Risky Sexual Behaviours; a *higher instance of sexual experience before the age of 16* for Early Sexual Experience (ESE); a *higher instance of adverse childhood experience* for Adverse Childhood Experience (ECE); a *greater degree of internalized homophobia* for Internalized Homophobia (IH); *more*

*experience of romantic, family and social loneliness* for Social and Emotional Loneliness; a *more negative attitude towards condom use and multiple sexual partners* for Attitudes toward Condom Use and Multiple Sexual Partners; a *more negative subjective norm of condom use and multiple partners* for Subjective Norms; *more perceived behavioural control on condom use and multiple sexual partners* for Perceived Behavioural Control (PBC); and *less intention of committing RSBs* for Intention.

Reliability analysis was then conducted on these fourteen scales and their sub-scales, for the purpose of maximising the internal consistency of the fourteen measures by identifying those items that are internally consistent (i.e., reliable), and discarding those items that are not. However, as can be seen, ATBs towards multiple partners and ATBs-condom use and Intention-condom use had very high reliability Cronbach's Alphas >.94. which could be due to the items being closely correlated, indicating item redundancy; hence this could be considered as a potential limitation.

| **Name** | **Cronbach's Alphas** | **Number of items** |
|---|---|---|
| Attitude towards Multiple Partners | .964 | 5 |
| Attitude towards Condom Use | .947 | 5 |
| Subjective Norm-Multiple Partners | .892 | 3 |
| Subjective Norm-Condom Use | .878 | 6 |
| PBC-Multiple Partners | .799 | 3 |
| PBC-Condom Use | .912 | 6 |
| Intention-Multiple Partners | .859 | 4 |
| Intention-Condom Use | .950 | 9 |

| | | |
|---|---|---|
| Adverse Childhood Experience | .874 | 14 |
| Loneliness-Romantic | .916 | 12 |
| Loneliness-Family | .938 | 11 |
| Loneliness-Social | .938 | 14 |
| Internalised Homophobia | .894 | 8 |
| Early Sexual Experience | .935 | 12 |

*Table 11: Cronbach's Alphas*

### 5.3.2. Correlations

Correlation analysis was employed to test the strength of relationships between the hypothesised variables prior to multiple regression and MANOVA. (Appendix R)

*5.3.2.1. Number of Sexual Partners*

The results show that the number of sex partners was positively correlated with adverse childhood Experience (ACE) r = .290, p<.01; positively correlated with early sexual experience (ESE) r= .279, p<.01; negatively correlated with internalised homophobia (IH) = - .201, p <.01; positively correlated with the loneliness-romantic r = .265, p<.01; positively correlated with loneliness-family r = .198, p<.01; positively correlated with drug use r = .410, p<.01; positively corelated with sniffed substances r=.441, p<01; negatively corelated with attitude towards behaviour-multiple partners r=-.427, p<01; negatively correlated with subjective norm-multiple partners r=-.508, r<01; negatively corelated with subjective norm-condom use r=-.225, p<01; negatively corelated to PBC-multiple partners r=-540, r<01; negatively corelated to PBC-condom use r=-.354, p<01; negatively corelated with intention-multiple

partners r=-.624, p<01; and negatively corelated to intention-condom use r=-.341, p<01. (Table 12)

*5.3.2.2. Condom Use*

The results show that condom use was negatively corelated with subjective norm-condom use r=-.263, p<001; negatively corelated to PBC-condom use r=-.248, p>001; positively corelated with intention-multiple partners r=-.165, p<05; and negatively corelated with intention-condom use r=-.292, P<001. (Table 12)

| | **Number of Sex Partners** | **Condom Use** |
|---|---|---|
| | Sig. (2 tailed) | Sig. (2 tailed) |
| **Adverse Childhood Experience (ACE)** | .000 | .727 |
| **Early Sexual Experience (ESE)** | .000 | .196 |
| **Internalised Homophobia (IH)** | .001 | .815 |
| **Loneliness Romantic (L-R)** | .005 | .083 |
| **Loneliness Family (L-F)** | .002 | .460 |
| **Loneliness Social (L-S)** | .069 | .466 |
| **Drug Use** | .000 | .962 |
| **Sniffed Substances** | .000 | .154 |
| **Alcohol** | .376 | .765 |
| **Smoking (Tobacco)** | .130 | .707 |

| | | |
|---|---|---|
| **Attitudes towards Multiple Partners** | .000 | .953 |
| **Attitudes towards Condom Use** | .450 | .082 |
| **Subjective Norm-Multiple Partners** | .000 | .289 |
| **Subjective Norm-Condom use** | .000 | .000 |
| **PBC-Multiple Partners** | .000 | .949 |
| **PBC-Condom Use** | .000 | .000 |
| **Intention-Multiple Partners** | .000 | .046 |
| **Intention-Condom Use** | .000 | .000 |

*Table 12: Correlation between number of sex partners and condom use with distal and proximal factors*

*5.3.2.3. TPB's Proximal Factors*

*Attitude towards Behaviour (ATB) :*The results show that attitude towards multiple partners was positively correlated with adverse childhood experience (ACE) r = .290, p < .05; positively correlated with the loneliness-romantic r = .265, p<.01; negatively corelated with sniffed substances r= -.196, p<01; and positively corelated with intention-multiple partners r=.533; whereas attitude towards condom use was only negatively corelated with alcohol r= -.236 ,p<001 (Table 13).

*Subjective Norm (SN):* The results show that subjective norm-multiple partners was negatively correlated with adverse childhood experience (ACE) r = -.228, p < .001; positively correlated with internalised homophobia (IH) = .177, p< .01; negatively correlated with the loneliness-romantic r = -.309; negatively corelated with loneliness-family r = -.322, p<.001; negatively correlated with loneliness-social r= -.142, p<.05; negatively corelated with drug use r = -.234, p<.001; negatively corelated with sniffed substances r= -.276, p<001; and positively corelated with intention-multiple partners r=.643, p<001; (Table 13).

The results show that subjective norm-condom use was negatively correlated with adverse childhood experience (ACE) r = -.149, p < .01; negatively correlated with early sexual experience (ESE) r= -.176, p<.01; positively correlated with internalized homophobia (IH) = .134, p< .05; negatively correlated with the loneliness-family r = -.228, p<001; negatively corelated with loneliness-social r = -.165, p<.01; negatively corelated with drug use r = -.186, p<.01; negatively corelated with sniffed substances r= -.214, p<01; and positively corelated with intention-condom use r=.747, p<001 (Table 13).

*Perceived Behavioural Control (PBC):* The results show that PBC-multiple partners was negatively correlated with adverse childhood experience (ACE) r = -.169, p < .01; negatively correlated with early sexual experience (ESE) r= -.179, p<.01; positively correlated with internalised homophobia (IH) = .177, p< .01; negatively correlated with loneliness-romantic r= -.277, p<001; negatively corelated with loneliness-family r = -.281, p<001; negatively corelated with loneliness-social r = -.150, p<.05; negatively corelated with drug use r = -.313, p<.001; negatively corelated with sniffed substances r= -.288, p<001; and positively corelated with intention-multiple partners r=.749, p<001; (Table 13).

The results show that PBC-condom use was negatively correlated with adverse childhood experience (ACE) r = -.200, p < .01; negatively correlated with early sexual

experience (ESE) r= -.252, p<.001; positively correlated with internalised homophobia (IH) = .145, p< .05; negatively corelated with loneliness-family r = -.266 p<001; negatively corelated with loneliness-social r = -.196, p<.01; negatively corelated with drug use r = -.266, p<.001; negatively corelated with sniffed substances r= -.241, p<001; and positively corelated with intention-condom use r=.859, p<001 (Table 13).

| | **Attitude towards Multiple Partners** | **Attitude towards Condom Use** | **Subjective norm-Multiple Partners** | **Subjective norm-Condom Use** | **PBC-Multiple Partners** | **PBC-Condom Use** |
|---|---|---|---|---|---|---|
| | Sig. (2 tailed) | Sig. (2 tailed) | Sig. (2 tailed) | Sig. (2 tailed) | Sig. (2 tailed) | Sig. (2 tailed) |
| **Adverse Childhood Experience (ACE)** | **.033** | .105 | **.000** | **.018** | **.007** | **.001** |
| **Early Sexual Experience (ESE)** | .800 | .934 | .062 | **.005** | **.005** | **.000** |
| **Internalised Homophobia (IH)** | .392 | .713 | **.005** | **.034** | **.005** | **.021** |
| **Loneliness Romantic (L-R)** | **.002** | .616 | **.000** | .617 | **.000** | .067 |
| **Loneliness Family (L-F)** | .247 | .679 | **.000** | **.000** | **.000** | **.000** |
| **Loneliness Social (L-S)** | .702 | .582 | **.025** | **.009** | **.017** | **.002** |
| **Drug Use** | .059 | .617 | **.000** | **.003** | **.000** | **.000** |
| **Sniffed Substances** | **.002** | .299 | **.000** | **.001** | **.000** | **.000** |
| **Drinking Alcohol** | .115 | **.000** | .274 | .348 | .584 | .715 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Smoking (Tobacco)** | .727 | .588 | .198 | .620 | .360 | .191 |
| **Intention-Multiple Partners** | **.000** | n/a | **.000** | n/a | **.000** | n/a |
| **Intention-Condom Use** | n/a | .091 | n/a | **.000** | n/a | **.000** |

*Table 13: Correlation between proximal factors and with intention and distal factors*

### *5.3.3. Hypothesis 1*

In order to test the second hypothesis, a 2 (gay male versus heterosexual male) x 20 (dependent variables) GLM Multivariate Analysis of Variance (MANOVA) was conducted. Table 14 presents the means and standard deviations for the twenty computed factors as a function of the respondents' sexual orientation (gay and heterosexual male). (Appendix S)

| | **Gay male** | | **Heterosexual male** | |
|---|---|---|---|---|
| | Mean | Std. Error | Mean | Std. Error |
| **Early Sexual Experience** | 2.113 | .286 | .910 | .245 |
| **Internalised Homophobia** | 16.274 | .796 | 20.324 | .680 |
| **Loneliness-Romantic** | 16.557 | .828 | 12.614 | .708 |
| **Loneliness-Family** | 13.642 | .727 | 8.738 | .622 |
| **Loneliness-Social** | 16.858 | .922 | 15.269 | .789 |
| **Adverse Childhood Experience** | 3.11 | .309 | 1.828 | .264 |
| **Drug Use** | 1.991 | .113 | 1.641 | .097 |

| | | | | |
|---|---|---|---|---|
| **Sniffed Substances** | 1.783 | .077 | 1.393 | .066 |
| **Alcohol** | 3.075 | .120 | 3.290 | .103 |
| **Smoking (Tobacco)** | 2.264 | .117 | 2.110 | .100 |
| **Attitudes towards Multiple Partners** | 19.575 | .914 | 20.014 | .781 |
| **Attitudes towards Condom Use** | 21.755 | .917 | 19.621 | .784 |
| **Subjective Norm-Multiple Partners** | 13.094 | .468 | 16.421 | .400 |
| **Subjective Norm-Condom Use** | 30.377 | .855 | 32.986 | .731 |
| **PBC-Multiple Partners** | 13.953 | .451 | 16.207 | .386 |
| **PBC-Condom Use** | 29.906 | .863 | 33.366 | .738 |
| **Intention-Multiple Partners** | 17.774 | .626 | 21.731 | .535 |
| **Intention–Condom Use** | 44.255 | 1.344 | 51.041 | 1.149 |
| **Number of Sexual Partners** | 2.113 | .090 | 1.434 | .077 |
| **Condom Use** | 2.604 | .173 | 2.786 | .148 |

Table 14: *Means and standard deviations for the computed factors of background factors (Distal factors) and TPB factors (Proximal factors) and RSBs (gay and heterosexual*

The results from the MANOVA show that there was an overall group effect (gay male versus heterosexual male) for the twenty variables combined, $F(23,227)=4.14$, $p<.001$. Follow-up tests of between-subject effects showed that 'sexual orientation' had a significant effect for most of the variables: "number of sex partners", $F(1,249)=33.09$, $p<.001$; "subjective norm-multiple partners" $F(1,249)=29.15$, $p<.01$; "subjective norm-condom use" $F(1,249)=5.4$, $p<.05$; "PBC-multiple partners" $F(1,249)=14.4$, $p<.01$; "PBC condom use" $F(1,249)=9.3$, $p<.01$; "intention-multiple partners" $F(1,249)=23.11$, $p<.01$; "intention-condom use"

$F(1,249)=14.72$, $p<.01$; "loneliness-romantic" $F(1,249)=13.08$, $p<.01$; "loneliness-family" $F(1,249)=26.25$, $p<.01$; "internalised homophobia" $F(1,249)=14.9$, $p<.01$; "adverse childhood experiences" $F(1,249)=9.9$, $p<.01$; "early childhood experiences" $F(1,249)=10.1$, $p<.01$; "drug use" $F(1,249)=5.5$, $p<.01$; and "sniffed substances" $F(1,249)=14.8$, $p<.01$.

Examination of the marginal means shows that the gay male respondents, when compared to their heterosexual counterparts, recorded *significantly* higher scores in seven out of twenty variables: number of sex partners, loneliness-romantic *(more experience of romantic loneliness)*, loneliness-family *(more experience of loneliness from the family)*, adverse childhood experiences *(more experience of adverse childhood experiences)*, early sexual experiences *(sexual experiences prior to the age of 16)*, drug use *(more drug use)*, and sniffed substances *(more experience of sniffing substances)*. On the other hand, the heterosexual male respondents, when compared to their gay counterparts, recorded *significantly* higher scores for subjective norm-multiple partners, subjective norm-condom use *(more negative subjective norm for condom use and multiple sexual partners)*, PBC-multiple partners, PBC condom use *(more perceived behavioural control on condom use and multiple sexual partners)*, intention-multiple partners, intention-condom use *(less intention in committing RSBs)*, and internalised homophobia *(greater internalised homophobia)*.

The results did not show any significant differences between the gay and heterosexual male in terms of condom use, drinking alcohol, smoking tobacco, attitude towards behaviour-multiple partners, attitude towards behaviour-condom use or loneliness-social.

### 5.3.4. Hypothesis 2

#### *5.3.4.1. Number of sexual partners*

***Gay male respondents:*** In order to test the regression coefficients hypothesised in the regression model among the study's gay male participants, multiple regression analysis was conducted. Barron and Kenny's (1986) approach to mediation testing was used. Four stage mediation testing was used between the IVs, TPB's proximal factors, and intention (Appendix T-1). In **step 1 (path a)** (Table 15), only internalised homophobia (IH) predicted intention for multiple sexual partners. Therefore, only these two variables were carried over to the next step. Four separate tests were conducted in **step 2 (path b)**. The results showed that both IH and 'sniff a substance' predicted all three proximal factors. In **step 3 (path c),** mediation with regression analysis between the TPB's proximal factors and intention showed statistical significance. As a result, all proximal factors were tested in **step 4 (path d)**. As can be seen in table 15, all assumptions were fully met apart from PBC and "sniff a substance". According to Tofighi & MacKinnon (2015), if X (i.e. sniff a substance) in step 4 is no longer significant when M (i.e. PBC) is controlled, the finding supports full mediation, whereas if X (i.e. IH) is still significant (i.e., both IH and PBC both significantly predict intention), the finding supports partial mediation. Consequently, to validate the result of mediation testing, a Sobel (1982) test was conducted to determine whether the partial mediation effect of intention for multiple sexual partners on the relationship between the DV and intention was statistically significant.

| | DV | M | IV | betas (unstand) | Beta (Std) | p value | Outcome |
|---|---|---|---|---|---|---|---|
| **Step 1 / Path a** | Intention-Multiple Sexual Partners | | Age | -.027 | -.008 | .924 | Assumption not met |
| | | | Lone_Roman | -.129 | -.152 | .138 | Assumption not met |
| | | | Lone_Fam | -.073 | -.083 | .445 | Assumption not met |
| | | | Lone_Social | .025 | .034 | .733 | Assumption not met |
| | | | **IH** | **.207** | **.255** | **.006** | **Assumption met** |
| | | | ACEs | -.056 | -.032 | .752 | Assumption not met |
| | | | ESE | -.038 | -.019 | .847 | Assumption not met |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Drug use | -.441 | -.079 | .423 | Assumption not met |
| | | | **Sniff a substance** | -1.993 | **-.260** | **.005** | **Assumption met** |
| | | | Alcohol | .020 | .004 | .967 | Assumption not met |
| | | | Smoke tobacco | .829 | .148 | .110 | Assumption not met |
| **Step 2/ Path b** | | ATB-Multiple Sexual Partners | **IH** | **.203** | **.173** | **.040** | **Assumption met** |
| | | | **Sniff a substance** | **-2.293** | **-.199** | **.019** | **Assumption met** |
| | | SN-Multiple Sexual Partners | **IH** | **.129** | **.203** | **.016** | **Assumption met** |
| | | | **Sniff a substance** | **-1.317** | **-.211** | **.012** | **Assumption met** |
| | | PBC-Multiple Sexual Partners | **IH** | **.130** | **.212** | **.010** | **Assumption met** |
| | | | **Sniff a substance** | **-1.666** | **-.277** | **.001** | **Assumption met** |
| **Step 3/ Path c** | Intention-Multiple Sexual Partners | **ATB-Multiple SP** | | **.168** | **.235** | **.000** | **Assumption met** |
| | | **SN-Multiple SP** | | **.182** | **.142** | **.025** | **Assumption met** |
| | | **PBC-Multiple SP** | | **.794** | **.581** | **.000** | **Assumption met** |
| **Step 4/ Path d** | Intention-Multiple Sexual Partners | | **ATB-Multiple SP** | **.453** | **.633** | **.000** | **Assumption met** |
| | | | **IH** | **.142** | **.170** | **.005** | **Assumption met** |
| | | | **Sniff a substance** | **-1.440** | **-.175** | **.004** | **Assumption met** |
| | | | **SN-Multiple SP** | **.819** | **.622** | **.000** | **Assumption met** |
| | | | **IH** | **.129** | **.153** | **.014** | **Assumption met** |
| | | | **Sniff a substance** | **-1.400** | **-.170** | **.007** | **Assumption met** |
| | | | **PBC-Multiple SP** | **1.042** | **.760** | **.000** | **Assumption met** |
| | | | **IH** | **.099** | **.118** | **.021** | **Assumption met** |
| | | | Sniff a substance | -.743 | -.090 | .083 | Assumption not met |

*Table 15:* Multiple regression analysis – Number of sexual partners-Gay male participants

***Sobel test:*** The Sobel test was used to evaluate the statistical significance of the partial mediation effect. The predictor variables for the analysis were IH and 'sniff a substance', and the mediator variables for the analysis were ATB, SN and PBC, while the DV was intention for multiple sexual partners among gay participants. The results show that both the direct and the indirect effects between "IH" and intention were statistically significant among gay participants when ATB, SN and PBC were mediators, therefore indicating partial mediation. Likewise, there were indirect effects between 'sniff a substance' and intention when ATB and SN were mediators therefore partial mediation, however there is only indirect effect between

"sniff a substance" and intention when PBC is a mediator therefore full mediation (Table 16) (Appendix T-2).

| DV | M | IV | Test Statistic | Std. Error | *p*-Value | Outcome |
|---|---|---|---|---|---|---|
| **Intention-Multiple Sexual Partners** | **ATB-Multiple SP** | **IH** | 1.83 | 0.01 | 0.06 | **Partial mediation** |
| | | **Sniff a substance** | -2.03 | 0.18 | 0.04 | **Partial mediation** |
| | **SN-Multiple SP** | **IH** | 1.65 | 0.01 | 0.09 | **Partial mediation** |
| | | **Sniff a substance** | -1.68 | 0.14 | 0.09 | **Partial mediation** |
| | **PBC-Multiple SP** | **IH** | 2.51 | 0.04 | 0.01 | **Partial mediation** |
| | | **Sniff a substance** | -3.23 | 0.40 | 0.001 | **Full mediation** |

*Table 16:* Sobel test – Multiple sexual partners- Gay male participants

A simple regression analysis was calculated to predict number of sexual partners based on intention-multiple partners. A significant regression equation was found (F (1,172) = 96.91, P< .000), with an R2 of .360. (Table 17) (Appendix T-2)

| DV | IV | betas (unstand) | Beta (Std) | p value |
|---|---|---|---|---|
| **Number of sexual partners** | Intention-Multiple Sexual Partners | **-.106** | **-.600** | **.000** |

*Table 17:* Simple regression analysis between number of sexual partners and intention - Gay male participants

For the serial analysis, the PROCESS macro for SPSS (model 6) was used, applying two significant mediators for each single analysis. As recommended by Hayes (2013), the regression/path coefficients were all in unstandardised form as standardised coefficients generally have no useful substantive interpretation. (Appendix T-3)

As can be seen in table 18, the results of the serial analysis show that the direct effect between IH and number of sexual partners (NofSPs) was not statistically significant. However, all the indirect effects were negative and significant (as the null of 0 does not fall between the lower and upper limit of the 95% confidence interval for each effect). Therefore, the indirect effect of internalised homophobia (IH) on the number of sexual partners (NofSPs) among gay male participants was statistically significant (full mediation) when a) ATB and intention were mediators, b) SN and intention were mediators, and c) PBC and intention were mediators.

| | Effect | BootSE | BootLLCI | BootULCI | *P*-value | Outcome |
|---|---|---|---|---|---|---|
| Direct effect | | | | | | |
| **IH → NofSPs** | -.0059 | .0113 | -.0283 | .0165 | .6042 | **Not sig.** |
| Indirect effect | | | | | | |
| **a) IH → ATB → Intention → NofSPs** | -.0106 | .0053 | -.0213 | -.0004 | | **Full mediation** |
| **b) IH → SN → Intention → NofSPs** | -.0122 | .0053 | -.0231 | -.0024 | | **Full mediation** |
| **c) IH → PBC → Intention → NofSPs** | -.0140 | .0065 | -.0277 | -.0023 | | **Full mediation** |

*Table 18:* The serial analysis, the PROCESS macro for SPSS (model 6) - between IH and DV when proximal factors and intention are mediators- Gay male participants

As can be seen in table 19, the results of the serial analysis show that the direct effect between sniff a substance and number of sexual partners (NofSPs) was significant. Nevertheless, all the indirect effects were also negative and significant (as the null of 0 does

not fall between the lower and upper limit of the 95% confidence interval for each effect). Therefore, both the direct and the indirect effect of sniff a substance on the number of sexual partners (NofSPs) among gay male participants were statistically significant (partial mediation) when a) ATB and intention were mediators, b) SN and intention were mediators, and c) PBC and intention were mediators. (Appendix T-3)

| | Effect | BootSE | BootLLCI | BootULCI | *P*-value | Outcome |
|---|---|---|---|---|---|---|
| Direct effect | | | | | | |
| **Sniff a substance → NofSPs** | .5048 | .0892 | .3288 | .6808 | .000 | **Sig.** |
| Indirect effect | | | | | | |
| **a) Sniff a substance → ATB → Intention → NofSPs** | .1122 | .0471 | .0334 | .2181 | | Partial mediation |
| **b) Sniff a substance → SN → Intention → NofSPs** | .1222 | .0481 | .0378 | .2285 | | Partial mediation |
| **c) Sniff a substance → PBC → Intention → NofSPs** | .1782 | .0602 | .0759 | .3088 | | Partial mediation |

*Table 19:* The serial analysis, the PROCESS macro for SPSS (model 6) - between Sniff a substance and DV when proximal factors and intention are mediators- Gay male participants

***Heterosexual male respondents:*** Four stage mediation testing was used between the IVs, TPB's proximal factors, and intention (table 20) (Appendix U-1). In **step 1 (path a),** romantic loneliness predicted intention for multiple sexual partners. Therefore, only this variable was carried over to the next step. Four separate tests were conducted in **step 2 (path b)**. The results showed that romantic loneliness only predicted SN and PBC. Therefore, only these two variables were carried over to the next step. In **step 3 (path c),** mediation with regression analysis between SN and PBC and intention showed statistical significance; as a result, they were tested in **step 4 (path d)**. As can be seen in table 20, only two assumptions were fully met. According to Tofighi & MacKinnon (2015), if X (i.e. romantic loneliness) in

step 4 is no longer significant when M (i.e. PBC) is controlled, the finding supports full mediation. Consequently, to validate the result of mediation testing, a Sobel (1982) test was conducted to determine whether the partial mediation effect of intention for multiple sexual partners on the relationship between the DV and intention was statistically significant.

| | DV | M | IV | betas (unstand) | Beta (Std) | p value | Outcome |
|---|---|---|---|---|---|---|---|
| **Step 1 / Path a** | Intention-Multiple Sexual Partners | | Age | .192 | .064 | .404 | Assumption not met |
| | | | **Lone_Roman** | **-.139** | **-.210** | **.018** | **Assumption met** |
| | | | Lone_Fam | -.068 | -.086 | .373 | Assumption not met |
| | | | Lone_Social | .057 | .092 | .308 | Assumption not met |
| | | | IH | .034 | .045 | .555 | Assumption not met |
| | | | ACEs | .129 | .054 | .500 | Assumption not met |
| | | | ESE | -.160 | -.060 | .431 | Assumption not met |
| | | | Drug use | -.581 | -.105 | .263 | Assumption not met |
| | | | Sniff a substance | -1.282 | -.144 | .117 | Assumption not met |
| | | | Alcohol | -.139 | -.029 | .695 | Assumption not met |
| | | | Smoke tobacco | -.497 | -.100 | .177 | Assumption not met |
| **Step 2/ Path b** | | ATB-Multiple Sexual Partners | Lone_Roman | **-.072** | **-.073** | **.325** | Assumption not met |
| | | SN-Multiple Sexual Partners | Lone_Roman | **-.140** | **-.275** | **.000** | **Assumption met** |
| | | PBC-Multiple Sexual Partners | Lone_Roman | **-.101** | **-.214** | **.004** | **Assumption met** |
| **Step 3/ Path c** | Intention-Multiple Sexual Partners | **SN-Multiple SP** | | **.225** | **.173** | **.004** | **Assumption met** |
| | | **PBC-Multiple SP** | | **.856** | **.607** | **.000** | **Assumption met** |
| **Step 4/ Path d** | Intention-Multiple Sexual Partners | | **SN-Multiple SP** | **.570** | **.438** | **.000** | **Assumption met** |
| | | | Lone_Roman | **-.072** | **-.109** | **.110** | Assumption not met |
| | | | **PBC-Multiple SP** | **.941** | **.668** | **.000** | **Assumption met** |
| | | | Lone_Roman | -.058 | -.087 | .116 | Assumption not met |

*Table 20:* Multiple regression analysis - Number of sexual partners-Heterosexual male participants

***Sobel test:*** The Sobel test was used to evaluate the statistical significance of the partial mediation effect. The predictor variable for the analysis was “romantic loneliness”, and the

mediator variables for the analysis were SN and PBC, while the DV was intention for multiple sexual partners among heterosexual participants. The results show that the indirect effect between "romantic loneliness" and intention was statistically significant among the heterosexual participants when SN and PBC were mediators, therefore indicating full mediation (Table 21). (Appendix U-2)

| DV | M | IV | Test Statistic | Std. Error | *p*-Value | Outcome |
|---|---|---|---|---|---|---|
| **Intention-Multiple Sexual Partners** | **SN-Multiple SP** | Lone_Roman | -2.31 | 0.01 | 0.02 | **Full mediation** |
| | **PBC-Multiple SP** | Lone_Roman | -2.85 | 0.03 | 0.00 | **Full mediation** |

*Table 21:* Sobel test – Multiple sexual partners-Heterosexual male participants

A simple regression analysis was calculated to predict number of sexual partners based on intention-multiple sexual partners. A significant regression equation was found (F (1, 189) = 37.621, P< .000), with an R2 of .166. (Table 22) (Appendix U-2)

| DV | IV | betas (unstand) | Beta (Std) | p value |
|---|---|---|---|---|
| **Number of sexual partners** | Intention-Multiple Sexual Partners | **-.059** | **-.407** | **.000** |

*Table 22:* Simple regression analysis between number of sexual partners and intention - Heterosexual male participants

For the serial analysis, the PROCESS macro for SPSS (model 6) was used, applying two significant mediators for each single analysis. As recommended by Hayes (2013), the regression/path coefficients were all in unstandardised form as standardised coefficients generally have no useful substantive interpretation. (Appendix U-3)

As can be seen in table 23 the results of the serial analysis show that the direct effect between romantic loneliness and number of sexual partners (NofSPs) was not statistically significant. However, all the indirect effects were negative and significant (as the null of 0 does not fall between the lower and upper limit of the 95% confidence interval for each effect). Therefore, the indirect effect of romantic loneliness on the number of sexual partners (NofSPs) among the heterosexual male participants was statistically significant (full mediation) when a) SN and intention were mediators and b) PBC and intention were mediators. (Appendix U-3)

| | Effect | BootSE | BootLLCI | BootULCI | *P*-value | Outcome |
|---|---|---|---|---|---|---|
| Direct effect | | | | | | |
| **Lone_Roman → NofSPs** | -.0115 | .0065 | -.0244 | 0014 | .079 | **Not sig.** |
| Indirect effect | | | | | | |
| **d) Lone_Roman → SN → Intention → NofSPs** | . .0062 | .0022 | .0026 | .0114 | | **Full mediation** |
| **e) Lone_Roman → PBC → Intention → NofSPs** | .0068 | .0028 | .0022 | .012 | | **Full mediation** |

*Table 23:* The serial analysis, the PROCESS macro for SPSS (model 6) - between Romantic loneliness and DV when proximal factors and intention are mediators- Heterosexual male participants

### 5.3.4.2. Condom use

***Gay male respondents:*** In order to test the regression coefficients hypothesised in the regression model among the study's gay male participants, multiple regression analysis was conducted. Barron and Kenny's (1986) approach to mediation testing was used. Four stage mediation testing was used between the IVs, TPB's proximal factors, and intention (Appendix V). In **step 1 (path a)** (Table 24), the results showed that there was no significant relationship between the DV and intention for condom use. Therefore, the mediation testing was stopped at this step.

| | DV | IV | betas (unstand) | Beta (Std) | p value | Outcome |
|---|---|---|---|---|---|---|
| **Step 1 / Path a** | Intention-Condom use | Age | .069 | .010 | .913 | Assumption not met |
| | | Lone_Roman | .035 | .019 | .855 | Assumption not met |
| | | Lone_Fam | -.025 | -.013 | .907 | Assumption not met |
| | | Lone_Social | -.281 | -.177 | .084 | Assumption not met |
| | | IH | .109 | .061 | .513 | Assumption not met |
| | | ACEs | -.378 | -.097 | .344 | Assumption not met |
| | | ESE | -.610 | -.142 | .171 | Assumption not met |
| | | Drug use | -2.220 | -.177 | .076 | Assumption not met |
| | | Sniff a substance | -2.006 | -.119 | .204 | Assumption not met |
| | | Alcohol | .123 | .010 | .909 | Assumption not met |
| | | Smoking tobacco | 1.207 | .098 | .297 | Assumption not met |
| **Step 2/ Path b** | --- | --- | --- | --- | --- | was not conducted |
| **Step 3/ Path c** | --- | --- | --- | --- | --- | was not conducted |
| **Step 4/ Path d** | --- | --- | --- | --- | --- | was not conducted |

*Table 24:* Multiple regression analysis - Condom use - Gay male participants

***Heterosexual male respondents:*** In order to test the regression coefficients hypothesised in the regression model among the study's heterosexual male participants, multiple regression analysis was conducted. Barron and Kenny's (1986) approach to mediation testing was used. Four stage mediation testing was used between the IVs, TPB's proximal factors, and intention (Appendix W-1). In **step 1 (path a)** (Table 25), only 'loneliness from family' predicted intention for condom use. Therefore, only this variable was carried over to the next step. Four separate tests were conducted in **step 2 (path b)**. The results showed that loneliness from family only predicted SN and PBC. In **step 3 (path c),** mediation with regression analysis between the SN and PBC and intention showed statistical significance. As a result, both proximal factors were tested in **step 4 (path d)**. As can be seen in table 25, all assumptions were fully met apart from PBC and "loneliness from family". According to

Tofighi & MacKinnon (2015), if X (i.e. loneliness from family) in step 4 is no longer significant when M (i.e. PBC) is controlled, the finding supports full mediation, whereas if X (i.e. loneliness from family) is still significant (i.e., both 'loneliness from family' and SN both significantly predict intention), the finding supports partial mediation. Consequently, to validate the result of mediation testing, a Sobel (1982) test was conducted to determine whether the partial mediation effect of intention for condom use on the relationship between the DV and intention was statistically significant. (Appendix W-1)

| | **DV** | **IV** | **betas (unstand)** | **Beta (Std)** | **p value** | **Outcome** |
|---|---|---|---|---|---|---|
| **Step 1 / Path a** | Intention-Condom use | Age | .056 | .487 | .909 | Assumption not met |
| | | Lone_Roman | .150 | .124 | .230 | Assumption not met |
| | | **Lone_Fam** | **-.613** | **.163** | **.000** | **Assumption met** |
| | | Lone_Social | .060 | .120 | .617 | Assumption not met |
| | | IH | .043 | .123 | .729 | Assumption not met |
| | | ACEs | .676 | .405 | .097 | Assumption not met |
| | | ESE | .047 | .431 | .912 | Assumption not met |
| | | Drug use | -.981 | 1.099 | .373 | Assumption not met |
| | | Sniff a substance | -2.146 | 1.729 | .216 | Assumption not met |
| | | Alcohol | .698 | .755 | .356 | Assumption not met |
| | | Smoking tobacco | -.669 | .779 | .392 | Assumption not met |
| **Step 2/ Path b** | ATB-Condom use | Lone_Fam | **.099** | **.078** | **.293** | Assumption not met |
| | SN-Condom use | Lone_Fam | **-.255** | **-.234** | **.002** | **Assumption met** |
| | PBC-Condom use | Lone_Fam | **-.306** | **-.278** | **.000** | **Assumption met** |
| **Step 3/ Path c** | Intention-Condom use | **SN-Condom use** | **1.018** | **.661** | **.000** | **Assumption met** |
| | | **PBC-Condom use** | **-.211** | **-.126** | **.023** | **Assumption met** |
| **Step 4/ Path d** | Intention-Condom use | **SN-Condom use** | **1.018** | **.661** | **.000** | **Assumption met** |
| | | **Lone_Fam** | **-.211** | **-.126** | **.023** | **Assumption met** |
| | | **PBC-Condom use** | **1.233** | **.808** | **.000** | **Assumption met** |
| | | Lone_Fam | -.093 | -.055 | .212 | Assumption not met |

*Table 25:* Multiple regression analysis - Condom use - Heterosexual male participants

***Sobel test:*** The Sobel test was used to evaluate the statistical significance of the partial mediation effect. The predictor variables for the analysis was 'loneliness from family' and the mediator variables for the analysis were SN and PBC, while the DV was intention for condom use among heterosexual participants. The results show that both the direct and the indirect effects between 'loneliness from family' and intention were statistically significant among heterosexual participants when SN was mediator, therefore indicating partial mediation. However there is only indirect effect between 'loneliness from family' and intention when PBC is a mediator therefore full mediation (Table 26). (Appendix W-2).

| DV | M | IV | Test Statistic | Std. Error | *p*-Value | Outcome |
|---|---|---|---|---|---|---|
| **Intention-Condom uses** | **SN-Condom use** | Lone_Fam | -2.47 | 0.03 | 0.01 | **Partial mediation** |
| | **PBC-Condom use** | Lone_Fam | -3.68 | 0.08 | 0.000 | **Full mediation** |

*Table 26:* Sobel test – Condom use -Heterosexual male participants

A simple regression was calculated to predict number of sexual partners based on Intention-multiple partners. A significant regression equation was found (F (1, 147) = 17.881, P< .000), with an R2 of .108. (Table 27).

| DV | IV | betas (unstand) | Beta (Std) | p value |
|---|---|---|---|---|
| **Condom use** | Intention-Condom use | **-.048** | **-.329** | **.000** |

*Table 27:* Simple regression analysis between condom use and intention - Heterosexual male participants

For the serial analysis, the PROCESS macro for SPSS (model 6) was used, applying two significant mediators for each single analysis. As recommended by Hayes (2013), the regression/path coefficients were all in unstandardised form as standardised coefficients generally have no useful substantive interpretation. (Appendix W-3).

As can be seen in table 28, the results of the serial analysis show that the direct effect between 'loneliness from family' and condom use was not statistically significant. Likewise, all the indirect effects were not significant (as the null of 0 does fall between the lower and upper limit of the 95% confidence interval for each effect). Therefore, the indirect effect of 'loneliness from family' on condom use among heterosexual male participants was not statistically significant (no mediation) when a) SN and intention were mediators and b) PBC and intention were mediators. (Appendix W-3).

| | Effect | BootSE | BootLLCI | BootULCI | *P*-value | Outcome |
|---|---|---|---|---|---|---|
| **Direct effect** | | | | | | |
| **Lone_Fam→ Condom use** | .0080 | .0204 | -.0324 | .0483 | .6966 | **Not sig.** |
| **Indirect effect** | | | | | | |
| **f) Lone_Fam→ SN → Intention → Condom use** | .0080 | .0058 | -.0001 | .0222 | | **No mediation** |
| **g) Lone_Fam→ PBC → Intention → Condom use** | .0108 | .0089 | -.0034 | .0319 | | **No mediation** |

*Table 28:* The serial analysis, the PROCESS macro for SPSS (model 6) - between Loneliness from family and DV when proximal factors and intention are mediators- Heterosexual male participants

| | | **Direct effect** | **Indirect effect** | | |
|---|---|---|---|---|---|
| Participants | ***DV*** | ***IV*** | ***IV*** | ***M1*** | ***M2*** |
| **Gay men** | Number of sexual partners | IH | IH | ATB<br>SN<br>PCB | Intention<br>Intention<br>Intention |
| | | | Sniff a substance | ATB<br>SN<br>PCB | Intention<br>Intention<br>Intention |
| | Condom use | None | None | | |

| | | | | | |
|---|---|---|---|---|---|
| **Heterosexual men** | Number of sexual partners | None | Romantic loneliness | SN<br>PBC | Intention<br>Intention |
| | Condom use | Loneliness from family | Loneliness from family | SN<br>PBC | Intention<br>Intention |

*Table 29:* Summary of the results of hypothesis 2 testing

## 5.4. Discussion

Unlike the earlier quantitative study applied in stage one, the results of the current comparative study identified more differences than similarities between the gay and heterosexual participants. The current study revealed that gay respondents, when compared with heterosexual respondents, reported an overall significant difference in the results for the twenty variables combined. However, tests of between-subject effects showed that 'sexual orientation' has a significant effect only on fourteen variables. The results did not show any significant differences between gay and heterosexual men regarding condom use, drinking alcohol, smoking (tobacco), attitude towards behaviour-multiple partners, attitude towards behaviour-condom use, and loneliness-social. The results for condom use are aligned with the previous quantitative study from stage one, which identified no differences in condom use between the gay and heterosexual male participants (page 133).

As a result, the first hypothesis is partly supported by the results of hypothesis testing, such that gay men reported significantly higher scores than their heterosexual male counterparts in terms of more adverse childhood experiences, sexual experiences prior to the age of 16, more experience of romantic loneliness, more experience of loneliness from the

family, a higher number of sex partners in the previous 12 months, more drug use, and more experience of sniffing substances in the previous 12 months.

***ACEs:*** Gay male participants reported greater experience of ACEs compared to their heterosexual counterparts. More specifically, based on the ACE inventory (Finkelhor, et al., 2015) used in this research, the gay participants reported more experience of sexual, physical, and emotional abuse and more experience of household dysfunction such as adult mental illness, substance abuse, and domestic violence in the household; incarceration of a household member; and parental divorce or separation. ACEs were also one of the factors identified in the qualitative study in stage one which affected some of the participants' sexual behaviours. This was manifest in the form of bullying from their siblings, their school mates, and/or other children in their neighbourhood. The prevalent history of ACEs in various gay populations has been well-documented in several previous studies (e.g. Rothman et al.,2011; Friedman. Et al., 2011). The higher levels of ACEs in gay populations compared to heterosexual counterparts has also been well reported (Austin et al., 2016; Andersen & Blosnich, 2013). However, the question remains of why gay men report more experience of ACEs. Answering this question is not easy as there is scant research on this subject among the gay male population (also see Austin et al., 2016). Nevertheless, earlier studies have identified a possible connection between certain behaviours, such as non-confirmation to gender stereotypes or the imitation of substance abuse, and the increased prevalence of ACEs in sexual minority youths and children who later identify themselves as LGB (Corliss, et al., 2002; Balsam, et al., 2005; Andersen & Blosnich, 2013). However, there remains a lack of sufficient evidence to correlate those behaviours with any increased prevalence of dysfunction within the household. As was explained in the introduction, despite the extensive body of literature confirming the relationship between ACEs and risky sexual behaviour in adolescence and adulthood, there is still a lack of clarity with regard to the mechanisms behind this connection. In an attempt to

understand this mechanism, this research tested the second hypothesis by measuring the influence of ACEs on condom use and number of sex partners among both gay and heterosexual participants, the results of which will be discussed later in this section.

***ESE:*** In addition, gay participants reported higher scores for early sexual experience (ESE), meaning that gay participants began engaging in sexual activities at an earlier age than their heterosexual counterparts. Although there is limited research on this subject, the existing literature shows that there is a higher likelihood that adolescents who self-identify as gay or bisexual will engage in early sexual experiences than their heterosexual counterparts (vanGriensven et al.,2004; Glick et al., 2012; Kastbom et al., 2015). However, not all research reached the same conclusion as the study of Ka°gesten and Blum (2015) identified no discernible prevalence for ESE among gay adolescents. A number of studies have, however, identified a relationship between the age of an individual's first sexual experience and an interplay of antecedents working on multiple levels (Makenzius & Larsson, 2013; James et al., 2012), thereby providing an answer to the question of why homosexual men tend to engage in sexual activities at an earlier age than their heterosexual peers. Other studies in Europe have suggested that the answer is at least in part explained by the fact that adolescents who self-identify as gay or bisexual tend to be more exposed to risk factors, such as sexual violence, unprotected sex, and paid sex, than their heterosexual counterparts (Forsberg, 2006; Saewyc et al.,1999). As was explained in the introduction, there is a substantial body of research confirming the relationship between ESE and risky sexual behaviour in adolescence and adulthood (Doyle et al., 2012; Novilla et al., 2006; Langille & Curtis, 2002; Smith, 1997). However, just as with ACE and RSB, there remains a lack of clarity with regard to the mechanisms behind this connection. In an attempt to understand this mechanism in the testing of the second hypothesis, this study measured the influence of ESE on condom use and number

of sex partners among both gay and heterosexual participants, the results of which will be discussed later in this section.

***Loneliness:*** In terms of the reported higher levels of loneliness experienced, the results in this section of the study were in contrast with the previous results from the quantitative study conducted in stage one. One explanation for this is that, in this current study, the loneliness scale was multidimensional and had three subscales, whereas in the previous study, the loneliness scale was unidimensional. In the current study, gay men reported higher scores for romantic loneliness and loneliness from the family. What does this mean? According to the scale, the gay male participants reported more subjective feeling of being apart from or not close to their family, feeling that no one in the family cared about them, or feeling that there was no one in their family who they can depend upon for support and encouragement. One of the main and most common reasons for this mentioned by many researchers is that gay men are more likely to be estranged from their biological family compared to heterosexual men because their biological family do not approve of their sexual orientation (Stonwall, 2011). Compared to heterosexual males, gay males tend to experience more distant relationships with their biological families, which they often compensate for by developing closer relationships with their network of friends, also referred to as their "families of choice" (Grossman, et al., 2001; D'Augelli , et al., 2011).

What does romantic loneliness mean? According to the scale, gay male participants reported more of a subjective feeling of having an unfulfilled need for a close romantic relationship, lacking a romantic or marital partner to provide support and encouragement, or not being an important part of someone else's life. Although there are limited studies on these topics, Carpenter and Gates (2006) concluded that gay men are also less likely than heterosexuals to live with a romantic partner. Nevertheless, individuals in both same sex and heterosexual relationships reported similar levels of satisfaction with their relationships

(Kurdek, 1998). The main question, therefore, is why gay men reported higher levels of romantic loneliness. Answering this question is not easy and requires further research. However, one of the reasons discussed in the qualitative study in stage one was that the obstacles, difficulties and reduced opportunities that gay men have in finding a partner for a long-term relationship compared to heterosexual men lead them to have more casual sex than heterosexual people (page 77). In addition, the results of higher reported levels of romantic loneliness might be due to differences in these groups of participant in terms of their age, relationship status, and legal marital status. The results show that on average, the gay male participants were younger than the heterosexual participants (71% of gay men participants were between 18 to 40 years old, whereas only 44% of the heterosexual male participants were 18 to 40). In addition, a higher number of the heterosexual male participants reported being married or in a monogamous relationship compared to their gay counterparts. Based on these observations, it can also be considered one of the study's limitation that the two groups are not completely comparable.

Moreover, even though the gay male participants reported higher numbers of sex partners, at the same time, they reported higher levels of romantic loneliness, which aligns with the hypothesis that a higher number of sexual partners does not necessarily help individuals to fulfil their emotional needs. However, having a higher number of sexual partners might be one potential source by which gay men can expand their social network of friends, as in this research, there was also no difference between gay and heterosexual men in terms of the reported levels of social loneliness.

Loneliness has been reported to be associated with engaging in sex with multiple partners (DeLonga, et al., 2011) and engaging in anonymous sex (Torres, 2005). It is also common for lonely gay males who are not able to enter into regular relationships or to arrange dates to adopt less healthy sexual practices, such as visiting public places for the purpose of

engaging in risky and often anonymous sexual activities (Robertson & Monsen, 2001). In the testing of the second hypothesis, the research measured the influence of loneliness on condom use and number of sex partners among both gay male participants and heterosexual male participants, the results of which will be discussed later in this section.

***Number of sex partners:*** Differences in how gay males and heterosexual males find, develop and maintain relationships with partners have been discussed by a variety of researchers (e.g. Rosenberg, et al., 2011; Kalichman & Grebler, 2010). Another common finding indicates that gay and bisexual men exhibit more sexually compulsive behaviour than heterosexual men (Cooper, et al., 2000; Daneback et al., 2007; Gullette & Lyons, 2006; Missildine, et al., 2005). However, the main question is why gay men report a higher number of sexual partners. Answering this question is also not easy and requires further research. However, the researcher hopes that using the TPB model in the testing of the second hypothesis will shed some light on certain aspects of this subject and go some way towards answering this question. Nevertheless, previous research has shown that gay males tend to be less discriminatory concerning the age of a sexual partner, have significantly more lifetime and annual sexual partners, continue to seek out and commence new partnerships as they get older, and are more likely to be active with two or more sexual partners at the same time (Glick et al, 2012). Some researchers, such as Crossley (2004), have contemplated the historical reasons behind the increasing number of sex partners among gay men in the UK. As was explained in chapter one (page 12), after suffering a lengthy period of systematic oppression that increased during the late 1960s and continued until the middle of the 1980s, there followed a period of increasing freedom and tolerance of sexuality which liberated homosexuals from the restrictions on their sexual pleasure. One consequence of this newfound psychological and social liberation was the freedom to enjoy multiple forms of sexual pleasure with multiple partners (Crossley, 2004). For some, this lifestyle was not just about liberation, but a way of

overcoming centuries of oppression. Over time, this lifestyle has become adopted by some gay communities as accepted and even normal behaviour. Another contributing factor has also been attributed to the very common use among the gay community of pre-exposure prophylaxis (PreP) and other similar methods of HIV prevention, which offers an extra form of protection against HIV and is believed to have had an effect the level of risk-taking in the gay population (de Wit & Adam, 2014). PrEP is being made available to 10,000 people in England as part of the IMPACT trial, which started in September 2017 which is claimed to be a "huge success" (NHS, 2019). As a result, an official request has been made by the researchers to increase the number of participants in England to the end of the trial in 2020 from 13,000 to up to 26,000. (NHS. 2019). In addition, another possible explanation offered for why gay males have a higher number of sexual partners is the larger number of venues at which sex available to them, particularly bathhouses (gay saunas) and gay sex parties, as well as the many online channels dedicated to helping homosexual males find partners for sex (Parsons et al, 2005; Parsons et al., 2008). While the well-established nature of these sexual networks is a key characteristic of gay society and culture, it also plays a negative role in the transmission of STI, including HIV (Ashenhurst, et al., 2017; Koblin et al., 2006). It should also be taken into account that the difference in the number of sexual partners might be due to the fact that the gay male participants' sexual partners are also men while those of the heterosexual men are women. This gender difference among the participants' sexual partners may also influence the probability of the participants having sexual intercourse and consequently have an effect on their number of sexual partners. It is shown that, on average, men reported higher levels of sexual desire compared to women, which is due to social, psychological or biological factors (Lippa, 2009; Baumeister et al 2001). According to Baumeister (2000), the fundamental difference between the sexuality of women and men is that the sex drive of men is biologically-determined with less influence from contextual situations, whereas the sex drive of women is far more variable

with a greater sensitivity to external circumstances. Therefore, it can be said that the probability of a gay man having a one-time only sexual encounter (one-night stand) is higher compared to his heterosexual counterparts because a gay male's prospective male sex partners would have a more comparable sex drive due to social (having sex is less taboo for men), biological (hormones and libido), and psychological (probabilities of emotional detachment) factors compared to the prospective female sex partners of the heterosexual male. In other words, a heterosexual male's sex drive might not be comparable with that of a potential female sex partner due to physiological, psychological and social (stigma of women having one-night stand sex) differences; which consequently decrease the probabilities of having sexual intercourse for heterosexual men compared to their gay male counterparts. Finally, the difference in reporting the number of sex partners might be simply due to the fact that more heterosexual male participants reported being married and/or living with a common-law partner (53%) and reported being in a monogamous relationship (60%) compared to their gay counterparts. This raise the question of whether it is more difficult for gay men to form a relationship compared to heterosexual men. While answering this question is not a focus of the current research, one participant mentioned during the qualitative study in stage one that the obstacles, difficulties, and reduced opportunities that gay people have in finding a partner for a long-term relationship compared to heterosexual men leads them to have more casual sex than heterosexual people. Also, it is worth noting that it was only as recently as 2014 that same-sex marriage was legalised in the UK. It can, therefore, also be considered that one of the study's limitation is that the two groups were not completely comparable in terms of their relationship and marital status.

As was discussed in the previous studies in stage one, a higher number of sexual partners should not lead to the automatic presumption of condomless sexual intercourse. In other words, higher number of sexual partners does not necessarily mean that individuals

commit to condomless sexual intercourse per se. Nevertheless, engaging in sexual activity with multiple partners does increase the risk of condom use inconsistency (Ashenhurst, Wilhite, Harden, & Fromme, 2017; Grov, et al., 2010; Parsons, et al., 2016). In the testing of the second hypothesis, the research measured the influence of distal and proximal factors on the number of sexual partners among both the gay male participants and the heterosexual male participants, the results of which will be discussed later in this section.

***Drug use and substance sniffing:*** The results from stage one of the current research are in line with previous quantitative studies. As was explained previously, it has been shown by previous research in the UK that gay individuals are more likely to be using a recreational drug than the general population (e.g. Varney, 2016). However, the main question that needs to be asked is why drug use and substance sniffing are higher among the gay population. Based on the results from testing the current hypothesis, it can be seen that when the number of sexual partners is higher among the gay male participants, and when there is a strong correlation between this higher number of sexual partners and drug use and substance sniffing, it can be said hypothetically that gay men use drugs and sniff substances when engaging in sexual activities. It has been mentioned by previous researchers that drugs have been used by gay men to boost their own sexual drive and performance and that the drug use has encouraged them to experiment sexually and consequently enhance their sexual pleasure (e.g. Vu, et al., 2016; Toates, 2014; Semple et al., 2004). The same logic can be used to hypothesise that, based on the results of hypothesis one, gay male participants most likely use drugs as a means of coping with romantic loneliness and loneliness from the family. However, the drug use and substance sniffing was found to have a significant correlation only with loneliness from the family (Appendix R). In addition, the greater prevalence of drug use among gay male participants can be explained because of the higher number of adverse experiences in their childhood, as many researchers have identified a strong relationship between ACE and substance use (e.g.

Scheidell, et al., 2017; Maniglio, 2011). In this study, a strong correlation was found between ACE and both drug use and substance sniffing (Appendix R). Nevertheless, although it is not the focus of this current research to investigate the influential variables of drug use, and perhaps this can be the focus on an independent research in the future, in the testing of the third hypothesis, the influence of substance use on condom use and number of sex partners was tested among both the gay male participants and the heterosexual male participants, the results of which will be discussed later in this section.

***Proximal factors:*** The heterosexual male participants reported stronger negative subjective norms for condom use and multiple sexual partners. In other words, heterosexual males reported more negative direct feedback from significant others on condom use and multiple sexual partners compared to their gay counterparts. Regarding the subjective norm for condom use, the difference can be explained, firstly, by the fact that STIs are reported to be higher amongst men who have sex with men (Public Health England, 2017), especially from anal intercourse. Many heterosexual men, therefore, believe that STIs are not an issue among heterosexual men and that it is perhaps a homosexual disease (Gander, 2017; Ward 2010), which can also explain the higher reported levels of perceived behavioural control on condom use and lower intention of using a condom among heterosexual men. Secondly, as the prevalence of marriage and monogamous relationships was reported to be higher with fewer cases of multiple partners among the heterosexual participants, it can be hypothesised that there is less negative direct feedback from significant others regarding condom use which can be due to the trust between the partners or even because of reproduction. This, consequently, explains the lower reported intention of either using a condom or having multiple partners amongst heterosexual male participants compared with their gay counterparts. Thirdly, on the one hand, the gay community in the UK has experienced distrust, fear and anger from the wider society due to spread of HIV/AIDS in the mid-80s (Crossley, 2004), while on the other hand, the health

system has for decades predominately targeted LGBT communities with sexual health initiatives, safe sex interventions and STI prevention. The result of this is likely to be that, in gay communities, negative direct feedback from significant others on condom use is higher than is experienced by heterosexual men. Finally, the reported levels of negative direct feedback from significant others on multiple sexual partners could be higher for heterosexual men compared to their gay counterparts due to the fact that both historically and culturally, British society promotes and values monogamous relationships (heterosexual monogamous relationship have traditionally been valued: mostly in the past) (Anderson, 2010). Promiscuity as a practice of having sex frequently with different partners or being indiscriminate in the choice of sexual partners carries a moral judgment in British society (Anderson, 2010). An alternative explanation for the difference could be due to the fact that the two groups are not completely comparable from a demographic perspective. As was explained earlier, heterosexual participants in this study are on average older, more likely to be married, and more likely to be in a monogamous relationship compared to their gay male counterparts, which also explains the lower reported intention of having multiple partners among the heterosexual participants. To better understand the mechanism between the distal factors (background factors) and the behaviour, in the testing of the second hypothesis (mediation testing), the influence of the proximal factors as mediators on behaviour (condom use and number of sex partners) was tested among both the gay and the heterosexual male participants, the results of which will be discussed later in this section.

***Internalised homophobia:*** Heterosexual male participants reported greater IH compare to the gay male participants. Related to the current findings, previous research has identified the fear of femininity in men known as internalised homophobia (IH) as a type of gender role conflict, or in other words, heterosexual men feeling uncomfortable about feminine characteristics in men (Parrott et al., 2002). This study's findings on reported levels of IH

among heterosexual men is unique and opens new doors for understanding sexual identity. Unlike previous research (e.g. Okutan et al., 2017; Warriner, et al 2013) in which IH was exclusively measured amongst bisexual and homosexual males, in this current study, the researcher used the IH scale in a different and exploratory approach that included both gay and heterosexual participants. Firstly, the author of the IH scale never specified or mentioned that the measurement cannot be applied to heterosexual people (see LaPollo, et al., 2014). From the face value of the IH scale, the current researcher also believes that the scale is relevant to both gay and heterosexual individuals who wants to understand their thoughts and feeling about homosexuality. Secondly, according to the definition of IH, it is an internalised negative feeling or intolerance of sharing space with individuals who are homosexual (Weinberg, 1972), or it is negative feelings and thoughts about being or becoming homosexual. Therefore, one can self-identify as a heterosexual but still having internalised homophobia. For instance, in a heteronormative society, IH has been shown to be a significant predictor for heterosexual marriage among men who married someone from the opposite sex but who do not identify themselves as heterosexual (e.g. Shi, et al., 2018). Therefore, it can be said that in the current research, there might be individuals among the participants who reported themselves as a heterosexual, most likely because of their internalised negative feelings and thoughts towards their own homosexual tendency and desires.

### 5.4.1. Gay male participants

The results showed that, for gay participants, only IH and sniff a substance had an indirect connection to the number of sex partners when ATB, SN, PBC, intention were mediators. Also, there results showed that there is neither direct nor indirect relationship between distal factors and intention to use condoms.

***Internalised homophobia (IH) and number of sexual partners:*** Although in stage one, IH was not hypothesised to be a significant factor in the quantitative study 1, it turned out to be a significant theme in the qualitative study. Consequently, the researcher hypothesised that IH influences an individual's positive or negative evaluation of the expected outcomes of having multiple partners (attitude towards behaviour), the belief of negative or positive feedback of significant others on multiple partners (subjective norms), and belief that having multiple partners is or is not under the individual's control. In consistence with the previous results the results of quantitative study 2 showed a strong correlation between IH and the number of sexual partners, and also the results showed the indirect effect of internalised homophobia (IH) on the number of sexual partners among gay male participants was statistically significant (full mediation) when a) ATB and intention were mediators, b) SN and intention were mediators, and c) PBC and intention were mediators.

$$\text{Internalized homophobia} \rightarrow \begin{matrix} \text{ATB} \\ \text{SN} \\ \text{PBC} \end{matrix} \rightarrow \text{Intention} \rightarrow \text{Number of sexual partners}$$

In the indirect relationship greater IH among gay male participants predicted more negative attitude towards multiple sexual partners (ATB), more perceived social pressure regarding multiple sexual partners and more confidence and belief regarding their control over the number of their sexual partners. In other words, gay male participants who have negative feelings and thoughts about being homosexual reported less favourable evaluation of having sex with multiple partners (ATB), more perceived pressure from significant others regarding multiple partners (SN) and that avoiding casual sex with multiple sexual partners is easier hence less motivation and effort to engage in more sexual partners (intention), therefore the less likelihood of engaging with more sexual partners (actual behaviour). The results indicate

that 37.0 % of the variance of the number of sexual partners can be predicted from the variables a) IH, ATB, and intention, b) IH, SN, and intention and c) IH, PBC and intention.

Internalised homophobia happens when an individual develops an intrapsychic conflict between experiences of same-sex affection or desire and the feeling of a need to be heterosexual because he values heterosexuality and believes that homosexuality is wrong. Earlier studies have shown how external factors such as negative attitudes towards homosexuality and cross-gender expression and experiences of repression and abuse in the family environment during childhood and religion can all lead to internalised homonegativity (e.g. Walker & Longmire-Avital, 2013; Katz-Wise, Rosario & Tsappis, 2016). Initially, the researcher hypothesised that this internal conflict causes stress and anxiety in affected individuals, which might lead them to use sex as a coping strategy hence higher number of sexual partners (e.g. Johanston, et al., 2017; Saleh, et al., 2016; Choudhury, et al., 2015; Yadegarfard, 2020; Glick & Golden, 2014). However, the results showed that a higher level of IH resulted in a lower number of sexual partners. In other words, gay men who have internalized negative feeling and thoughts about being homosexual engage with less casual sexual partners.

***Sniff a substance and number of sexual partners:*** In the quantitative study 2, the gay male respondents, when compared to their heterosexual counterparts, recorded more experience of sniffing substances, also in the same study the results showed a strong correlation between the higher number of sexual partners and sniffing a substance, it can be said that gay men sniff substances when engaging in sexual activities. The results of the previous quantitative study also showed that gay male participants reported a higher level of ‘sniffed substances of any kind’ compares to their heterosexual counterpart. In the qualitative study, poppers were also reported as being used before sex by participants who had a higher number of sexual partners. So, the first important question to ask is why “sniff a subtense” no other form of substance use? There are few reasons that why gay men might specifically sniff a

substance when they engage with sexual activities, first of all, it is an easy form of drug use in which people take a powdered or crushed-up drug and forcefully breathe in up into the nasal cavity. Drugs that users often sniff include cocaine, heroin, amphetamines, and prescription opioids. Secondly, some substances that can be sniffed such as Poopers are not categorized as an illegal drug In the UK, and they are easily available and accessible, especially among gay individuals, poppers are reported to be very popular and commonly used (UK Drug Policy Commission, 2010). “on the dance club scene because they cause relaxation of vascular smooth muscle and produce a ‘rush’, or to enhance a sexual experience” (European Monitoring Centre for Drug and Drug Addiction (EMCDDA), 2017). However, ‘poppers’ as a volatile substance that can be sniffed is reported to be the second most consumed substance after cannabis among the illicit drugs (Beck, Guignard, & Richard, 2014).

In an attempt to understand this mechanism in the testing of the second hypothesis, the influence of sniff a substance on the number of sex partners among gay participants revealed that among gay participants there is a both direct and indirect relationship between ‘sniff a substance’ and number of sexual partners such that ‘sniff a substance’ directly predicted number of sexual partners and indirectly when ATB, SN, PBC and intention were sequential mediators.

Sniff a substance → Number of sexual partners

ATB
Sniff a substance → SN → Intention → Number of sexual partners
PBC

Regarding the direct relationship between sniff a substance and number of sexual partners the results are consistent with the previous research in suggesting that substance use has a stronger overall effect on behaviour than other properties (e.g. Feaster, et al., 2010; Cofrancesco, et al., 2007). In other words, regardless of the participants' attitude towards the number of sexual partners, subjective norms, and PBC, substance use positively predicts a higher number of sexual partners. Nevertheless, in the indirect relationship sniff a substance among gay male participants predicted less negative attitude towards multiple sexual partners (ATB), less perceived social pressure regarding multiple sexual partners and more confidence and belief regarding their control over the number of their sexual partners. In other words, gay male participants who sniff a substance reported more favourable evaluation of having sex with multiple partners (ATB), less perceived pressure from significant others regarding multiple partners (SN) and that avoiding casual sex with multiple sexual partners is more difficult when they are under the influence of the sniffed substance, hence more motivation and effort to engage in more sexual partners (intention), therefore the more likelihood of engaging with more sexual partners (actual behaviour). The results indicate that 46.2 % of the variance of the number of sexual partners can be predicted from the variables a) sniff a substance, ATB, and intention, b) sniff a substance, SN, and intention and c) sniff a substance, PBC and intention. These findings are consistence with the findings of Critchlow (1986) which explain the use of substances promotes a sense of disinhibition and reduced cognitive and attentional capacity, which leads to the behaviour of the intoxicated individual becoming increasingly guided by more heuristic processing (Conner, et al., 2008). In addition, the findings shed some light on previous understanding of Chemsex among gay men. The term 'chemsex' refers to the act of enhancing the sexual experience with drugs which usually involve multiple partners over an extended period in a private setting. The subjective norm of multiple partners plus drug use predicts intention towards multiple sexual partners, which consequently predicts a higher

number of sexual partners. The result is also aligned with previous research discussed in chapter four. The study of Ahmed, et al. (2016) showed how the concept of chemsex had become a normal part of life (subjective norm) among many members of the gay community.

However, sniff a substance did not predict condom use among gay participants. The results support a study conducted by Conner et al. (1999) using the TPB model showed that alcohol use did not have a consistent impact on intention to use condoms, their study did show that PBC was a stronger predictor of intention when alcohol use added into the equation. So, it can be concluded that participants might use any substance to sniff (e.g. poppers, methamphetamine) to increase their sexual desire or/and performance, but it does not mean that they necessarily engage in, for instance, condomless anal intercourse. For instance, it has been shown that there is no evidence of a direct connection between the use of poppers and contracting STIs (Romanelli, et al., 2004; Cheng, 2013). Nevertheless, it is mentioned by some researcher that the potential concerns regarding the use of poppers during sex increasing the possibility of unprotected sex and contracting STIs are rather rare (Iversen, 2016).

### *5.4.2. Heterosexual male participants*

The results showed that, for heterosexual participants, only romantic loneliness had an indirect connection to the number of sex partners when SN, PBC, intention were mediators. And only loneliness from family had an indirect connection to the intention for condom use when SN, PBC were mediators. Neither the indirect relationship nor direct between loneliness from family and condom use was significant.

***Romantic loneliness and number of sexual partners:*** The results showed that the heterosexual male respondents when compared to their gay counterparts, recorded less experience of romantic loneliness and lower number of sexual partners. Also, romantic

loneliness found to have a strong correlation with the number of sexual partners. In an attempt to understand the relationship between romantic loneliness and RSBs in the testing of the second hypothesis, the results of the mediation testing revealed that only among the heterosexual participants more romantic loneliness predicted a higher number of sexual partners when SN, PCB were mediators for intention and intention was a mediator for the actual behaviour. In other words, that the heterosexual male participants who reported more experience of romantic loneliness such as *an unmet need for a close romantic relationship* then also reported a less perceived social pressure regarding multiple sexual partners and less confidence and belief regarding their control over the number of their sexual partners, meaning that they had more intention of having multiple partners and consequently had been with more sexual partners over the previous 12 months. As can be seen, the results are different from the mediation testing for the number of sexual partners among gay male participants. However, in both group SN, PBC and intention were significant mediator factors.

Romantic loneliness → SN → Intention → Number of sexual partners
PBC

The results indicate that 23.0 % of the variance of the number of sexual partners can be predicted from the variables a) romantic loneliness, SN, and intention and b) romantic loneliness, PBC and intention.

As an example, a heterosexual man who is experiencing romantic loneliness uses social media and dating apps to just to cope with the loneliness; he might meet girls and have casual sex. As a result, this man might not be socially lonely because of his social media friends, but he is still romantically lonely; hence he carries on with his casual sex habit. As being sexually active is an indication of masculinity he might get approval and encouragement from other male friends (significant others). In this scenario, casual sex and having multiple sexual partners become normal behaviour for him as there is less negative direct feedback from others.

Further, the researcher anticipates that taking precautions against sexual risks as a cognitive task and priority might be affected by competition for the individual's cognitive resources from other tasks, such as coping with loneliness, which is accompanied by higher sexual desire. Consequently, it creates a diluted sense of control on the number of sexual partners.

The results support the findings of the previous research. It has been shown that higher levels of loneliness are strongly associated with frequency of sexual risk behaviour (Hubach, et al., 2015; Munoz-Laboy, Hirsch, & Quispe-Lazaro, 2009). Using Hull's theory in this context shows us that feelings of discomfort, stress and anxiety due to loneliness influence individuals' perceived social pressure regarding multiple sexual partners and more confidence and belief regarding their control over the number of their sexual partners and intention, which consequently predicts the actual behaviour. Therefore, the results of this study shed a new light on the relationship between loneliness and number of sexual partners among heterosexual men. Firstly, among three dimensions of loneliness, only romantic loneliness was found to be significant, and secondly, it helps to better understand the mechanism between loneliness and the number of sexual partners which shows that, unlike the outcomes of previous research, the predictive relationship is not a linear causal relationship.

***Loneliness from family and condom use:*** The results of the Sobel test showed an indirect predictive relationship between loneliness from family and intention for condom use when SN and PBC were mediators. In other words, that the heterosexual male participants who reported more experience of loneliness from family such as "*No one in my family really cares about me"* or *"I don't feel part of my family"* then also reported a less perceived social pressure regarding condom use and less confidence and belief regarding their control over condom use, meaning that they had less intention of using condoms. The results indicate that 50.0 % of the variance of the intention for condom use can be predicted from the variables a) loneliness from

family, and SN b) and 68.0% can be predicted from the variables b) loneliness from family and PBC.

Loneliness from family → SN → Intention for condom use
PBC

On the other hand, the result of the regression analysis showed that intention for condom use had a strong predictive relationship with the actual behaviour. However, the results of the serial analysis showed that neither the direct effect nor the indirect effect between 'loneliness from family' and condom use was statistically significant. The researcher believes that there is an explanation for this result. Heterosexual men who are experiencing loneliness from their family who don't feel they are part of their family and their family do not care about them or they do not belong, will have a sexual relationship to create their own family hence not using condoms in their sexual relationships. However the actual behaviour of condom use in sexual intercourse is not entirely up to one party and both parties need to make that decision, hence a heterosexual man might have the intention of not using condoms with his sexual partner because he wants to have children and create his own family but his partner might not agree and persuade him to use condoms, in this scenario the intention does not necessarily lead to the actual behaviour. As Ajzen (1991) emphasised that that *"a behavioural intention can find expression in behaviour only if the behaviour in question is under volitional control if the person can decide at will to perform or not perform the behaviour"* (p. 182).

***Appraisal of the model:*** The TPB has been shown to be effective in predicting risky sexual behaviours (e.g., Albarracín et al., 2001; Godin & Kok, 1996), and past research has shown that the addition of outside variables can increase the predictive ability of the TPB (e.g., Albarracín et al., 2001). Therefore, extended models of the TPB were used to predict RSBs. As was mentioned in the introduction, the distal factors (background factors) have never been tested together in such a research design using the TPB model. As a result, the outcome of the

current research is unique and can shed light on the relationship between distal factors and both condom use and number of sex partners among men. This research allowed us to explore new effective variables of RSBs by using the TPB model. Ajzen (1985) postulated that behaviour is subject to the influence of numerous additional factors that can be social, cultural, or personality-based. He suggests that the influence of such distal factors is for the most part mediated by the proximal factors included in the TPB model (Ajzen, 2005). Nevertheless, the researcher found the TPB model to be a relevant and useful framework for predicting the number of sexual partners and condom use among both groups of participants. All three proximal factors had a predictive connection to intention. PBC had the strongest predictive relationship with intention, and also was the only proximal factor that had a significant connection with the behaviour. In line with Ajzen's theory, the results of this research also show that intention was the most significant immediate antecedent of behaviour. However, where the findings of the current study differ from Ajzen's theory (1991) is when a distal factor such as IH among gay male participants found to have a direct effect on intention whereas Ajzen's theory (1991) states that intention could only be affected indirectly by any of the influencing the proximal factors (attitudes, subjective norms or PBC). This shows that intention can in fact be predicted by other factors rather than the original proximal factors, which opens new doors to expanding the original TPB model. Similar to the mediation testing for the number of sex partners, the TPB model was found to be a relevant and useful framework for predicting condom use. Unlike the previous mediation testing, for condom use only, SN and PBC had predictive relationships with intention among heterosexual male participants.

In addition, unlike the previous quantitative study carried out in stage one, in which RSB was measured by a nonspecific questionnaire, in the current study, the researcher has measured RSB in two specific categories of condom use and number of sex partners. This was essential as in the TPB model, behaviour needs to be in accordance with intention and the

proximal factors (Ajzan, 1991). The number of sex partners and condom use were measured separately for gay and heterosexual male participants. More variables were found to be significant predictors for number of sexual partners compared to condom use. There are a few possible reasons for the different results. Firstly, the nature of the behaviour is different and so the questions must reflect this accordingly. In the survey questionnaire, items regarding condom use refer directly to anal intercourse, whereas items related to number of sex partners do not refer to specific sexual activities. Also, in the survey questionnaire, the participants were asked about ***casual sex with different partners***, which could be either penetrative sex or not penetrative sex (e.g. oral, mutual masturbation, autoerotic sexual activity with a partner). This can explain why the number of sexual partners is not necessarily considered to be a risky behaviour by many people. In addition, talking about condom use might be easier than talking about the number of sex partners, as having a higher number of sex partners is considered promiscuous, which is still taboo among many people in British society. Since there are also more studies on condom use than on the number of sexual partners, more research is needed on this subject. Nevertheless, there were also similarities in some of the results for both condom-use and the number of sex partners, ESE was a significantly strong predictive variable.

### 5.4.3. Limitations

One of the limitations of this study is related to the participants reporting the number of sex partners they had been with over the previous 12 months. When asking that question, the researcher did not specify the type of sexual activity he was intending to measure, which effectively could be understood by the participants to include either penetrative sex only or both penetrative and non-penetrative sex (e.g. oral, mutual masturbation, autoerotic sexual activity with a partner). The lack of clarification by the researcher here creates a possibility for

different interpretations of what was being asked, which would affect the number of sexual partners being reported by the participants. For instance, an act of mutual masturbation between two men might not be considered as sex to a homosexual participant and thus the partner in that activity might not be counted as a sexual partner. Secondly, as was discussed previously, the relationship situation and marital status of the two groups were not completely comparable. Therefore, the results of the comparison study should be considered with caution. Thirdly, it is important to begin by saying that the sample used in this research cannot and should not be considered representative of the UK's gay population as a whole. From an ethic perspective, there is some superficial correlation between the main ethnic group of the study's participants and of the general population of England and Wales, with 88% of the study's participants white British and 86% of the general population of England and Wales recorded as white in the 2011 UK census. However, this does not make the study's sample representative of the gay population of the UK (Office for National Statistics, 2018). In 2018, it was reported by PHE (2019) that 71% of all GBM in the UK newly diagnosed with HIV were white, although there was also a significant decrease in the number of white GBM newly diagnosed with HIV, falling by 49% from 2,478 in 2014 to 1,276 in 2018. The 2011 UK census also showed that the remaining population of England and Wales was made up of black/African/Caribbean British (3.3%), Asian/Asian British (7.5%), mixed (2.2%) and other (1.0%). The decline in newly diagnosed HIV infections among GBM was largely reflected across these ethnic groups, with the overall figures for black, Asian and minority ethnic (BAME) GBM down between 2014 and 2018, including decreases of 34% among black men (154 to 101) and 30% among Asian men (194 to 136). For GBM of other/mixed ethnicity groups, there was no change over this period with exactly 273 new diagnoses recorded in both 2014 and 2018 (PHE, 2019)

It is also necessary to point out that the results of this study are unlikely to offer a true representation of the sexual behaviours of gay males from other ethnic backgrounds. It is quite

possible that this study would have produced different results if the sample had been more ethnically diverse. The main explanation for the variations in the demographic characteristics of respondents for surveys on sexual behaviour is the method of sampling. In contrast to the findings of the present study, earlier research on sexual behaviour showed that those who were less likely to respond were male, older and less-educated (Fenton et al., 2001). Immigrants were another group identified in some studies as being less likely to participate in the surveys, which may be partially explained by linguistic and cultural differences but is also likely to include a reluctance to report sensitive behaviour (Fenton et al., 2001). Finally, the data validity of the self-report questionnaire on condom-use and number of sex partners was discussed earlier. In this respect, the participants may not answer the questions completely or honestly regarding their sexual behaviour due to various personal reasons and factors.

### 5.4.4. Conclusion

This project is unique of its kind and advances the literature in many ways. Firstly, the creative and comprehensive research design together with the utilisation of a comparison study helped to create a broader picture from which to discover and focus on more relevant variables. Secondly, although the study showed that sexual orientation was a significant factor in the participants' sexual behaviour, there were also some similarities between the gay and heterosexual participants in terms of their sexual behaviour patterns. Thirdly, it is understood that risky behaviours can be attributed, at least in part, to an experience in the past, such as internalized homophobia. However, just as with any other behaviour pattern, whether or not the risky behaviour continues as the individual ages can be affected by developmental factors (biological, cognitive or social). In some cases, it may continue simply because it becomes a habit. Therefore, understanding individuals' past experiences, their current beliefs regarding

sexual behaviour, and their social network, including whether they have anyone close to give them positive or negative feedback regarding the behaviour or not, would help sexual health professionals to understand the mechanism and influential factors behind men's sexual behaviours. Fourthly, in both of the quantitative studies from stage one and stage two, substance use was not found to be a predictive factor of condom use consistency. However, the analysis of the qualitative study in stage one showed that substance use was one of the most common reported factors among the participants who also reported condom use inconsistency. As a result, it can be concluded that individuals might use substances for sexual arousal, which then raises their sexual hyperactivation and consequently increases their number of sex partners in a specific period of time. However, this does not necessarily mean that these people engage in condomless sexual intercourse. Finally, although for some of the distal factors, there seemed to be a liner connection with the behaviour and the proximal factors were not a significant mediator, the TPB model helped the researcher to understand the mechanism between the research variables and the behaviours. It also suggests the need for an expansion of the current model in that, for some behaviours, there might be different mediators for RSBs other than the original TPB components.

## 5.5. Summary

Based on the findings from the previous stage, the current study aimed to research firstly, the differences in the reported levels of substance use, early sexual experiences, adverse childhood experiences, internalised homophobia, loneliness and attitudes towards risky sexual behaviour, subjective norms, PBC, intention, and risky sexual behaviours (number of sex partners and condom use inconsistency) between the gay and heterosexual men was measured. Secondly, the relationship between the TPBs' proximal factors and intention significant mediators between the IVs and RSBs (Number of sex partner and condom use) was measured.

This research was based on the responses of the target sample to the questions of a survey questionnaire designed to identify the study's primary variables. The sample consisted of 370 male respondents of whom 48% of the participants gay men and the rest 52% were heterosexual men.

Unlike the earlier quantitative study applied in stage one of this study, the results of the comparative study identified more differences than similarities between the gay and heterosexual participants. The current study revealed that gay respondents, when compared with heterosexual respondents, reported an overall significant difference in the results for the twenty variables combined. However, tests of between-subject effects showed that 'sexual orientation' has a significant effect only on fourteen variables. As a result, the first hypothesis was partly supported by the results of hypothesis testing, such that gay men reported significantly higher scores than their heterosexual male counterparts in terms of more adverse childhood experiences, sexual experiences prior to the age of 16, more experience of romantic loneliness, more experience of loneliness from the family, a higher number of sex partners in the previous 12 months, more drug use, and more experience of sniffing substances in the

previous 12 months. On the other hand, the heterosexual male respondents, when compared to their gay counterparts, reported more negative subjective norm for condom use and multiple sexual partners, more perceived behavioural control on condom use and multiple sexual partners), less intention in committing RSBs, and greater internalised homophobia. The results did not show any significant differences between the gay and heterosexual male in terms of condom use, drinking alcohol, smoking tobacco, attitude towards behaviour-multiple partners, attitude towards behaviour-condom use or loneliness-social.

The comparison study showed that among gay participants, only IH and sniff a substance had an indirect connection to the number of sex partners when ATB, SN, PBC, intention were mediators. Also, there results showed that there is neither direct nor indirect relationship between distal factors and intention to use condoms. The results showed that, for heterosexual participants, only romantic loneliness had an indirect connection to the number of sex partners when SN, PBC, intention were mediators. And only loneliness from family had an indirect connection to the intention for condom use when SN, PBC were mediators. Neither the indirect relationship nor direct between loneliness from family and condom use was significant.

# 6. GENERAL DISCUSSION

The researcher conducted three studies in two stages using a multiphase mixed method research design, consisting of a sequential-independent in the first stage and a quantitative study in the second stage. In the 3 studies, a total of 803 gay and heterosexual men participated. The study includes five comparison studies between gay and heterosexual men in two stages. The results showed that there are more similarities between gay and heterosexual men than differences and, the differences that do exist are in individuals' life experiences, which are the results of society's different responses to and treatment of gay and heterosexual men, therefore, any recommendations to be made based on this research can be implemented for both group of men. For instance, the gay male participants reported more subjective feelings of being apart from or not close to their family, feeling that no one in their family cared about them, or feeling that there was no one in their family who they could depend upon for support and encouragement. Similarly, the gay participants also reported more experience of ACEs, such as sexual, physical, and emotional abuse, and more experience of household dysfunction. Therefore, it can be concluded that individuals' life experiences have a significant impact on their attitudes and behavioural intentions, which lead them towards engaging in RSBs. These life experiences have a serious impact on individual development, ability to regulate emotions, and cognition. For instance, the results showed that internalized homophobia which is the result of external factors such as negative attitudes towards homosexuality and experiences of repression and abuse in the family environment during childhood was a significant predictor of a high number of sexual partners in adulthood. Having said that, the researcher believes that in order to better understands an individual's destructive sexual behaviour, such as RSB, we have to pay closer attention to what individuals have experienced in their early life and what they are experiencing in their present life. Nineteen background factors, including past

personality, mood, and emotion, are considered and mentioned as distal factors in the original model of the TPB. However, only one (past behaviour) out of those nineteen refers to past experience. In addition, in the original model of the TPB, individuals' current life experiences, such as loneliness, are not included. The current researcher was also aware that for the author of the TPB, it was not possible to name all possible background factors. Therefore, in an attempt to address these issues, the researcher tried to categorise the effects of influential life experience on RSBs into two groups, individuals past experiences and current life experiences. These two categories first of all cover all the original background factors suggested by Ajzen, and second of all, enable future researchers to discover new influential factors that can have an impact on RSBs. The current researcher also attempted to use the integrated findings and create a path model that is hopefully applicable to further research and behavioural sexual health interventions. To create this model, the researcher has considered three main principles: simplicity, generalisability and applicability. The final version of the model contains four main elements—past experiences, current life experience, TPB's proximal factors and intention—that are explained in the following.

**Past experiences:** Through these three studies and the integrated findings, it can be seen that behaviour is not always the results of individuals' current situation and experience. This study has shown that past experiences represent an important source of information that significantly influences current behaviour. It has been observed, for instance, that participants who had experience of negative attitudes towards homosexuality and experiences of repression and abuse in the family environment during childhood had a high number of sexual partners in their adulthood. Therefore, to change a self-distractive behaviour such as RSB, we need to understand what made the individuals vulnerable in the first place. Accordingly, in the new model (figure 9), based on the integrated findings, past experiences are considered a predictor of ATB, SN, and PBC and individuals' intention of using condoms and intention of having

multiple partners, which consequently predicts number of sexual partners and condom use inconsistency.

**Current life experience:** The integrated findings from the three studies have shown that individuals' current life experiences, such as loneliness, also are significant influencers of current sexual behaviour. As mentioned earlier, a current life experience such as loneliness triggers or reinforces RSBs or influences the continuation of RSBs. As mentioned, one of the most influential factors in both stages was loneliness. Also, substance use as part of individuals' current life experiences was found to be significant. Therefore, in the new model, based on the integrated findings, current life experiences are considered as one of the main predictors of individuals' intention of using condoms and intention of having multiple partners, which consequently predicts the number of sexual partners and condom use inconsistency (figure 9).

**Proximal factors and/or Intention:** All three proximal factors had a predictive connection to intention factor. In line with Ajzen's theory, the results of this research also show that intention was the most significant immediate antecedent of behaviour. However, where the findings of the current study differ from Ajzen's theory (1991) is that a distal factor such as IH found to have both direct and indirect predictive relationship with intention and DV, whereas Ajzen's theory (1991) states that intention could only be affected indirectly by any of the influencing proximal factors (attitudes, subjective norms or PBC). This shows that intention can in fact be predicted by other factors rather than the original proximal factors, which opens new doors to expanding the original TPB model. Therefore, in the new model, both proximal factors and intention are considered as mediators between the predictors and the behaviour (figure 9).

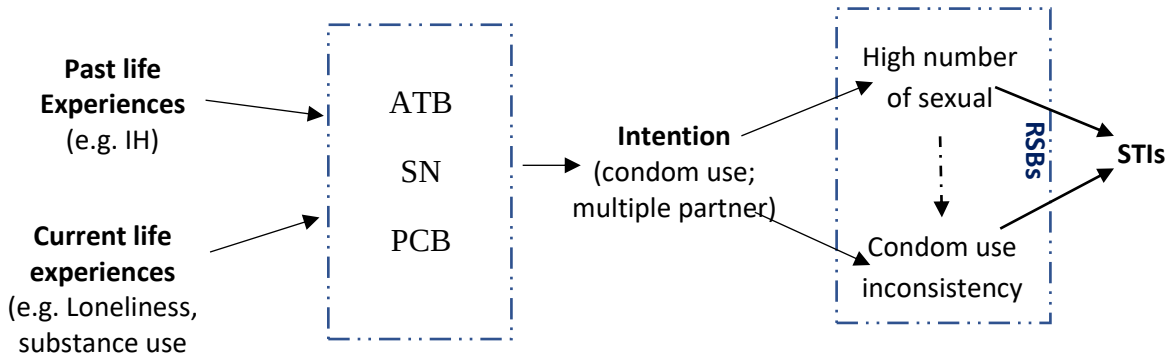


*Figure 9: New simplified model created by the current researcher based on the integrated findings*

### 6.1. Statistical novelty

The researcher believes that this current study is unique in its field and the outcomes contributed to the existing knowledge and understanding of RSBs among men because the research used a complex mixed method research design, which, to the researcher's knowledge, has never been used for investigating risky sexual behaviour before. In addition, unlike the previous research in this field that focused only on one or two factors or looked exclusively at social, psychological or biological factors, the current research explores the risky sexual behaviours among the gay and heterosexual men through a comprehensive approach that takes into consideration biopsychosocial factors. Moreover, the researcher mixed method research design in the first stage of the study in order to discover new variables in the qualitative study and focusing on a variety of variables based on a biopsychosocial model in the quantitative study. Integrated findings from the first stage was used to form hypotheses for the second stage, quantitative study. Moreover, previous studies have investigated RSBs in both the general and gay populations with the aim of identifying the factors that contribute to RSBs. However, the majority of those studies have not used any model, or a health model in particular, which constitutes a significant limitation of those studies. For the current study, the researcher applied the TPB model. However, he did not limit himself to the traditional model by trying to

identify new factors along the process that might help to expand the current TPB model in its analysis of RSBs.

### 6.2. Practical implications and recommendations to health professionals

**Case formulation worksheet:** The researcher believes that the new model has many applications for further research and practice. As an example, the researcher used the model to create a friendly case formulation worksheet which can be used by sexual health practitioners such as psychosexual therapists, sexual health advisors and GPs. However, this is a tentative version and needs to be tested before it should be used in practice. The case formulation can be thought of as any way of helping a client to understand what their risky behaviours are, where they started, and what keeps them going. This case formulation ties together the current risky sexual behaviour (condom use inconsistency or high number of sexual partners), hypotheses about the mechanisms causing the destructive sexual behaviour, proposes the recent precipitants of the current RSBs and describes the origins of the mechanisms. It has five ingredients: the RSB (high number of sexual partners, condom use inconsistency); the past experiences that made the client vulnerable to the problem in the first place (e.g. IH); current life experiences that trigger the behaviour or keep the behaviour going (e.g. Loneliness, substance use); proximal factors (ATB [e.g. *Having casual sex with different partners (multiple partners) is very pleasant*]; SN [e.g. *Most people who are important to me think that I should not have casual sex with different partners* ]; PBC [e.g. *For me to avoid casual sex is easy with different partners (multiple partners)*] and intention (e.g. Over the next 2 months, do you intend to have sex with different partners/multiple partners?) (figure 10). Each section can be filled in through interview or a set of questionnaires. The sexual health practitioners, counsellors or

health advisers can use the formulation to develop a treatment plan. The practitioner uses the formulation to guide intervention selection and other clinical decisions

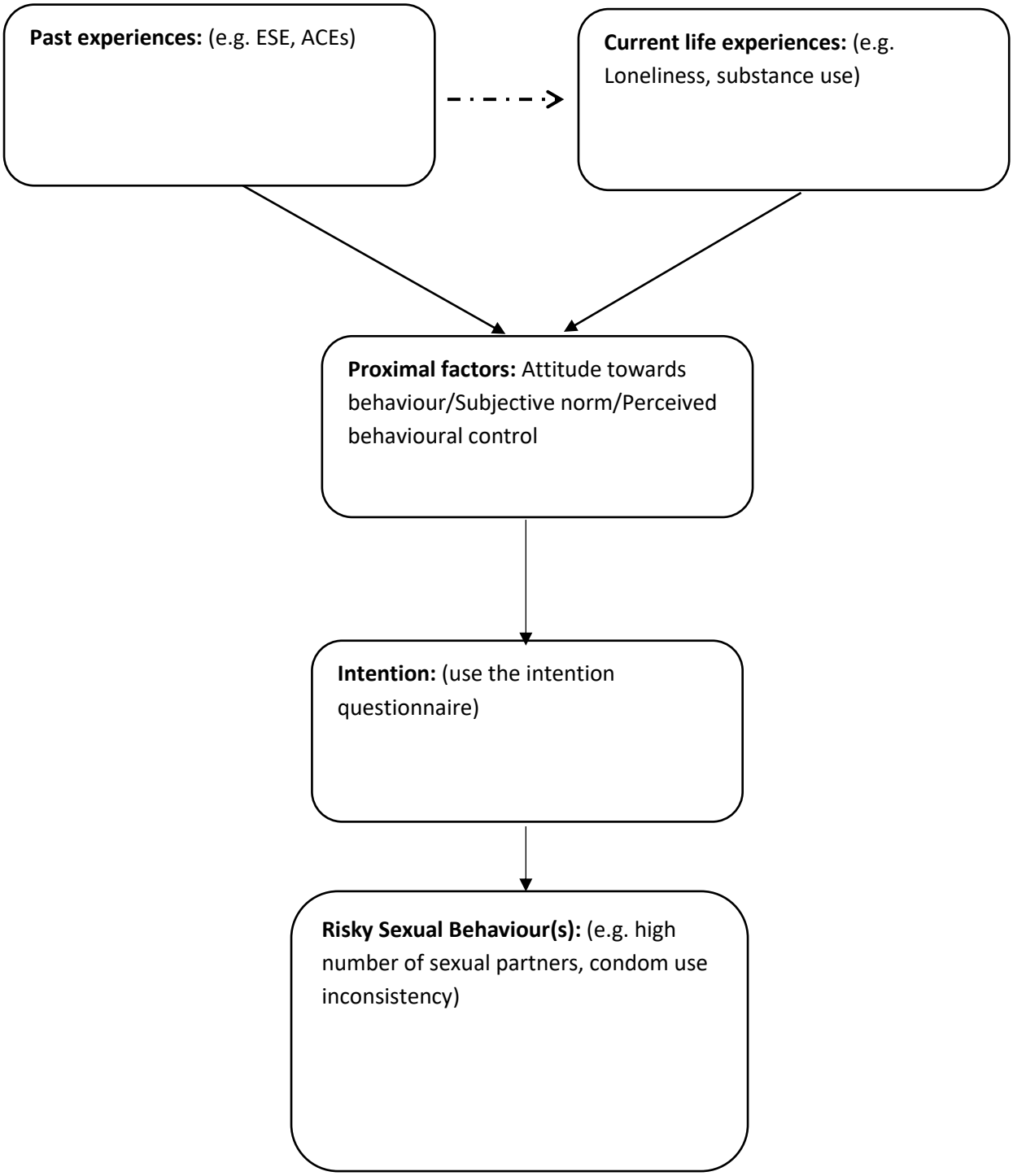


*Figure 10: RSBs case formulation worksheet*

### 6.3. Conclusion

Considering risky sexual behaviour as an ongoing issue that has no absolute answer, the results of studies conducted on RSB just ten years ago might not be in line with the results of studies carried out today. As a result, any government and related health organisation's prevention strategies for sexual health need to be updated regularly and based on current research and studies. In an attempt to support this, the current researcher tried to answer one main question: why do gay individuals subsequently choose to engage in risky sexual behaviours? The multiphase mixed methods research design used in this research project gave the researcher a comprehensive view of the subject. It allowed the researcher to measure a number of variables. The qualitative and quantitative studies complemented each other. While the quantitative study was more ethnically homogeneous, the qualitative study was more ethnically heterogenous. Also, while in the qualitative study, the range of the participants' ages was relatively narrow, in the quantitative study, the age range was wider. Therefore, the mixed method approach allowed the researcher to benefit from a more diverse sample population. The TPB was found to be a helpful model for understanding RSB. However, future researchers need to expand the framework of the model to encapsulate a broader context regarding potential predictive factors, some of which were not measured in the current project, such as pornography, ethnicity, and level of education. Regarding the number of sex partners, the researcher recommends that both the frequency and the type of sexual activity need to be measured in addition to the number of sex partners. Sexual orientation is a significant factor in an individual's sexual behaviours; however, it should not lead practitioners to pathologise or generalise in any way, shape or form. The researcher hopes that the results of this research project can help practitioners to be aware of the broader contributing factors of sexual behaviours in their assessments, prevention programmes, and interventions. As public health policy makers undoubtedly benefit from more accurate assessments and measurements, placing

appropriate consideration on some of the significant factors of condom use and number of sex partners in conducting risk assessment would represent a significant departure from the types of risky sexual behaviour assessments typically available today and from the ways in which such assessments are most commonly used. Current knowledge could serve as the basis for a number of improvements to RSB assessments to produce data that would be more useful, valid, and fair.

Moreover, as the integrated results revealed that there are psychological factors which contribute to individuals' RSBs, changing self-destructive behaviour such as RSBs requires individuals to undergo psychological intervention such as psychological therapy which is usually delivered by a psychosexual therapist/counsellor. Psychosexual (sex) therapists are qualified psychologists, counsellors, doctors or healthcare professionals who have completed extra training that enables them to help those having sex-related difficulties. Currently in the UK, psychosexual therapists are not commissioned in many sexual health clinics, although it is recommended in the most recent document published by Public Health England (2018) entitled *Integrated Sexual Health Services, a suggested national service specification*. The results of this current research project also concur with this recommendation and emphasise the necessity of having psychosexual (sex) therapists in sexual health clinics. In addition, the results also underline the need for interventions which focus on the knowledge of sexual health and the early sexual experiences of young people. Based on this study's findings, it is also strongly recommended that when sexual health clinics assess, manage and provide interventions to young and vulnerable individuals in particular, they adopt a collaborative approach that ensures those individuals have a say in the matter and a degree of autonomy over how their own vulnerability is reduced. Another important consideration here is that the good work of increasing young individuals' awareness of sexual risks through psychoeducation and

early interventions should never be diminished by reproaching such individuals over their lifestyle or sexual behaiours.

The next step for the researcher is to use the case formulation sheet in practice. In addition, the researcher aims to introduce this formulation to psychosexual therapists and sexual health practitioners who work with a diverse group of people as it will allow them to includes a wide variety of factors that they believe contribute to risky sexual behaviour and to test them. The researcher is hoping that the outcomes of this research have opened new doors for further research in this field; in his own future research, he would like to focus more closely on factors that are related to individuals' past experiences, particularly with the aim of uncovering more explanations for how ESEs influence individuals' sexual behaviours in adulthood. Some other factors that the current research has not focused on but which are highly relevant to this model include the usage of social media and dating apps as part of modern life as well as individuals' "current life experiences" and their relationships with intention for multiple partners and intention for condom use. Also, as was discussed previously as part of gay men's "current life experiences", the researcher is interested in studying the accessibility of PrEP and its increasing use by gay men together with its influence on their sexual behaviour. The jointly PHE-sponsored and partially PHE-funded PROUD Trial is just one of a number of randomised controlled trials to have produced evidence supporting the effectiveness of PrEP in providing protection against HIV infection during sexual activity when it is taken correctly and consistently. Recruiting for the PROUD trial is scheduled to continue until mid-July 2020, before publishing its full results at the beginning of 2021. In the first phase of the trial up to the end of 2018, participants were recruited from more than 140 level 3 sexual health clinics. However, in June of 2018, the trial's original capacity of 10,000 places was increased to 13,000, with this figure then doubled again to 26,000 places at the beginning of 2019. During the trial's first 23 months, 15,700 participants received PrEP. These expansions have already proven that

the multidisciplinary, multi stakeholder working group severely underestimated the demand for PrEP in its original 2016 estimates of 2,000 in the first year of the trial, 3,000 in the second year, and 5,000 by the end of year 5. There is a high probability that the falling number of new diagnoses of HIV was positively influenced by the increased usage of PrEP throughout this trial, especially after 2018, together with other factors, such as the introduction of intensified HIV testing and the immediate initiation of treatment for anyone newly diagnosed with HIV. While the arguments for increasing the availability of PrEP seem strong, the present report on the possibility of expanding the use of PrEP among GBM in the UK mentions that it could increase instances of unprotected sex among the target population. However, there is no evidence currently available confirming that PrEP usage changes the sexual behaviour of those who use it, and the report does not provide any evidence on changes to the numbers of other STIs contracted by PrEP users. The report concludes by recommending that individuals can protect themselves against HIV infection when engaging sexually with new or casual partners by using PrEP and by using a condom, with the report emphasising that condom use can also provide protection against other STIs. This closing comment indicates that there is still concern about the spread of other STIs apart from HIV and that condom usage is still promoted as the best way of preventing STIs being transmitted during sexual activity. It is the belief of the researcher that reducing the spread of STIs and helping the government achieve its target of zero HIV diagnoses by 2030 requires a multifaceted approach that combines the usage of PrEP with more realistic sexual education, psychosexual counselling and more readily-available mental health support for the most at-risk individuals.

Additionally, future research that applies the current model can measure some personality traits, such as sensation seeking and its relationship with risky sexual behaviours. Furthermore, as a focus of future research into the factors influencing sexual behaviour, the researcher would like to explore the effects of where the individuals reside (rural/urban). While

previous research has shown that those residing in rural areas are more susceptible to the challenges of mental health and well-being (Lyons, Hosking, & Rozbroj, 2015), it is reasonable to assume that exposure to risky sexual behaviours is likely to be greater for gay males living in urban areas than for their counterparts in rural areas. For example, the likelihood of there being more gay cruising areas in urban settings than in rural areas increases opportunities for engaging in sexual activities with a larger number of partners. In contrast, however, urban centres are more likely than rural settings to have established gay communities and organisations providing the support and socialising that can reduce the threat of alienation and loneliness for gay individuals. Another consideration is the negative attitudes that still exist towards homosexuality in some rural areas where more conservative values and traditional cultures prevail (Eldridge, Mack, &Swank, 2006). Gay individuals in such environments may choose to conceal their true sexual identity, which can ultimately have a negative impact on mental health and well-being (Quinn & Chaudoir, 2009). The desperation to conceal their sexuality may include avoiding contact with other gay males to minimise the chance of their homosexuality being revealed.

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# Biopsychosocial Predictors of Risky Sexual Behaviours Among the Gay Men in the UK

Volume 2 of 2

**Mohammadrasool Yadegarfard**

A thesis submitted to the University of Bedfordshire,
in fulfilment of the requirements for the degree of
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School of Psychology
Institute of Applied Social Research

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# APPENDIX
# STAGE ONE

# APPENDIX A

## ETHIC FORM (STAGE ONE)

**UNIVERSITY OF BEDFORDSHIRE**

**Research Bid: Ethical Issues**

Section A must be completed by the proposer and the form should then be submitted with a copy of the research proposal to your dissertation supervisor.

**Name of Student:** **Research Institute:** School of Psychology

**Mohammadrasool Yadegarfard**

**Student and Supervisor e-mail addresses**

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Supervisor 1: candan.ertubey@beds.ac.uk

Supervisor 2: hossein.kaviani@beds.ac.uk

**Proposal Title:**

BIOPSYCHOSOCIAL PREDICTORS OF RISKY SEXUAL BEHAVIORS: THE INFLUENCE OF DRUG USE, ATTACHMENT PATTERNS, WELL-BEING, LONELINESS, SOCIAL SUPPORT, AND HYPERACTIVATION ON RISKY SEXUAL BEHAVIOR AMONG THE GAY POPULATION IN THE UK

**SECTION A To be completed by the student**

The candidate is required to summarise within this proposal the ethical issues involved in conducting the research proposal and how they will be addressed. In addition provide:

- a clear explanation of how informed consent will be obtained,
- how will confidentiality and anonymity be observed,
- how will the nature of the research, its purpose and the means of dissemination of the outcomes be communicated to participants,
- how personal data will be stored and secured

- if participants are being placed under any form of stress (physical or mental) identify what steps are being taken to minimise risk

If protocols are being used that have already received UREC ethical approval then please specify. Roles of any collaborating institutions should be clearly identified. Reference should be made to the appropriate professional body code of practice.

1. Brief summary of project with enough information from theory/literature that the reviewer would be able to understand the rationale behind your project. Also to include aims (hypothesis/research questions)

The prevalence of HIV and STDs is higher among gay men and men who have sex with men (MSM) than in any other demographic group (Public Health England, 2014; Public Health England, 2016). In the UK "approximately 50% of new HIV cases were diagnosed in men who have sex with men" (NHS Choices, 2012). In many cases, the spread of HIV and other STIs is due to risky sexual behaviours, especially unprotected intercourse. However, the question that needs to be addressed is why gay men subsequently choose to engage in risky sexual behaviours. This is the type of question that is typically addressed in health psychology. Whereas traditional models, such as the medical model, regard illness as originating from factors such as bacteria, which are beyond the control of the individual, health psychology focuses on the roles of external forces in illness. Since the mental and physical aspects of illness are considered to be two entirely separate entities, the traditional responsibility for treatment falls exclusively on healthcare professionals. Under health psychology, however, mental processes are considered to play a significant role in an individual's health or illness. Indeed, health psychology views the individual as being an active participant rather than a passive observer in all stages of illness, from the cause to the progression and ultimate outcome. The relationships between the internal and external factors of illness are illustrated in the biophysical model. Under the biopsychosocial model, the many factors that contribute to an individual's health and illness are classified into three main categories: biological, psychological and social. For this reason, the biopsychosocial model is regarded by the researcher as the most relevant model to be used in this research for investigating the factors that contribute to risky sexual behaviours among gay individuals. Although very few studies have been conducted exclusively of gay populations, research among the general population has shown the influence of biological, psychological, and social factors on risky sexual behaviours . Moreover, risky sexual behaviour as a behaviour pattern has been examined from various perspectives and theories, including behavioural models, such as the information-motivation-behavioural model (Bazargan et al., 2010; Ndebele et al., 2012); health belief model (Li et al., 2016; Mir heydari et al., 2014; Downing-Matibag et al., 2009); planned behaviour theory (Asare, 2015;Turchik et al., 2012; Hutchinson et al., 2007); reasoned action (Dunn, 2005; Johnston, 2000); and stage of change (Grossman et al., 2008; Coury-Doiniger et al.

1999). However, the researcher has determined the theory of planned behaviour (TPB) as the most appropriate tool for gaining more meaningful insights into the interactions between the current study's variables. In particular, it is hoped that this theory can explain the role of attitude in an individual's risky sexual behaviours and more specifically how an individual may develop healthier sexual behaviours based on a combination of key factors that include the individual's attachment pattern, well-being, experience of loneliness, and level of social support and drug use. In addition, an individual's behaviours, intentions and attitude can be affected by the use of certain substances, both legal and illegal. The Theory of Planned Behaviour (TPB) is said to be particularly effective for identifying and explaining the specific influences on behaviour that could be targeted for change (Hardeman et al, 2002). This will be elaborated upon in the future.

It is important to mention here that although being mindful of these general studies can help us to increase our knowledge about the variables of this present study, in order for us to fully understand the rise in risky sexual behaviours among gay populations, we need to understand the population itself, the culture, and the history behind it. History shows us that LGBT communities have suffered from systematic suppression and discrimination for decades and, in order for them to survive like any other minorities and isolated groups, they have formed a unique culture which has included developing not particularly healthy coping strategies such as drinking excessively, taking drugs, developing eating disorders, and practicing unprotected sex. These are coping mechanisms that help LGBT communities overcome the fear and stigma they face because of their sexuality (Damas, Hein, Powell, &Dundon, 2012). Discussing LGBT culture, especially that of gay communities, is beyond the scope of PP1 and hopefully will be elaborated upon in the future.

It has been said by many researchers that, when compared to general studies, there exists a shortage of research among LGBT populations in the UK (Hines, 2006; Meads, Carmona, & Kelly, 2012), especially with regard to the influences of biopsychosocial factors on their sexual health. To find relevant studies in this field, the researcher utilised both general and advanced engines for this current study in the English Language. The focus of this search was primarily on studies in the UK setting. However, in order to gain a better understanding of the variables, the researcher also included various resources from other countries, such as studies in the US setting. The search engines that have been used in this study are Google, Google Scholar, the University of Bedfordshire library, the University of Bedfordshire database search engine, and the British Library. The keywords that have been searched for this study are biopsychosocial model, biopsychosocial and sexual behaviours, sex and sexual acts, sexual behaviour, risky sexual behaviours, risky sexual behaviour among the gay population, sexual minorities, attachment patterns, attachment theory, interpersonal theory, social isolation, loneliness, social support, family support, family rejection, health psychology, LGBT well-being, LGBT mental well-being, LGBT sexual health, and the theory and model of behaviour and behaviour change, drug and risky sexual behaviours, chemsex. The results of the systematic search revealed that limited research has been conducted on the influence of biopsychosocial factors, particularly well-being, attachment patterns, loneliness and social support on risky sexual behaviour among gay populations.

With this in mind, this current study applies a biopsychosocial model to understand the factors which contribute to risky sexual behaviours and adopts the theory of planned behaviour in order to understand the relationships between the variables. This study also aims to research the influence of three biopsychosocial dimensions on risky sexual behaviours among gay men in the United Kingdom: biological factors (substance use), psychological factors (adult attachment patterns, loneliness, well-being and sexual system functioning) and social factors (lack of social support).

**Objective**

It was recommended by the researcher in the latest report of "New STI figures among Gay men " published by Public Health England in 2016 that "the new statistics show STI rates are still very high among gay men and young adults". The report then continued by stating that "we need to do more to raise awareness about STIs and how they can be prevented" (Public Health England, 2016). It is hoped that the outcomes of this study can help professionals to develop more relevant and constructive prevention interventions that can help gay men to have respectful and satisfying social and sexual relationships.

Research Questions

Stage one

Qualitative study

Study one is preliminary stage and a qualitative method with an exploratory design will be utilized. The aim of this stage is to gain an insight and familiarity with the study's variables and help to improve the hypothesis of Study two and three. A general research question for this Study is, what factors do contribute to risky sexual behaviours for all men of their sexual orientation (heterosexual, homosexual and bisexual)?

Quantitative study

Q1: Are there significant differences in the reported levels of drug use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, and risky sexual behaviours between the gay population and heterosexual men? More specifically, do gay men report significantly higher drug use, lower levels of wellbeing, higher scores for insecure attachment patterns, higher levels of lack of social support and loneliness, and higher levels of sexual hyperactivation and risky sexual behaviours than their heterosexual male counterparts?

Q2: Are the reported (among both gay men and heterosexual men) of drug use, well-being, attachment patterns, experience of social support, and loneliness positively related to the level of sexual hyperactivation? Is the level of sexual hyperactivation positively related to the respondents' reported levels of risky sexual behaviours?

2. Brief summary of project method & procedure

Qualitative Study

This study adopts a mixed method approach of both qualitative and quantitative methods. To gain a more comprehensive perspective of the research variables, this research is conducted in three Studies. For the purpose of this study and to have a more in-depth understanding of the variables and their relationships, a qualitative method will be used. The aim is to interview 10 to 12 people and a structured interview will be used to gather the qualitative data. The questions are designed based on the variables of the study, substance use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, and risky sexual behaviours. The interview involves making audio recordings of the participation. The audio recording will be used to transcribe the interview. Recordings will be made on a digital voice recorder and stored in a locked location until transcription, at which time they will be destroyed. No identifying information will be transcribed. Complete transcriptions will be stored on a password-protected computer. If needed, for the purpose of the study, some relevant part of the audio recording and the transcription might be shared with the supervisors of the study dr. Candan Ertubey and dr. Hosein Kaviani.

Quantitative Study

Study two will be based on the responses of targeted participants to a survey questionnaire designed to tap the study's primary variables. The study's predictors are the influence of drug use ***(Substance Frequency-of-Use Scale (Sandell, 2009),*** well-being **(*The BBC Well-being (Kinderman et al, 2011*)**, attachment patterns **(*The Relationship Questionnaire (RQ) (Bartholomew et al, 1991)*,** loneliness ***(Revised UCLA Loneliness Scale (Russell et al, 1980)***, and social support ***(Social Support Appraisals Scale (Vaux et al., 1986*)** on the mediator Sexual System Functioning ***(Sexual System Functioning Scale Birnbaum et al (2014)*** ; the criterion is risky sexual behaviour **(*Student Sexual Risks Scale (DeHart & Birkimer, 1997*)**. In order to truly understand the influence of the predictors on risky sexual behaviours, Study one's design requires a control group of heterosexual men to provide base-line measurements of these relationships for comparison purposes. From such a control group, this researcher would know whether any negative influence of the study's predictors on the criterion is specific to the study's gay sample or common to males in general. Study two will be conducted among university students so that both groups (Gay, and heterosexual man) are comparable in terms of age range, social class, educational attainment, and social network.

Study three

As with Study 2, Study 3 will also be quantitative in approach. In this Study, however, the study will be conducted exclusively among the gay population. In order to gather the data from a wider population, the sampling method chosen for this Study is

convenience sampling. The researcher will use different opportunities to gather the data in this Study such as from social networks and from LGBT organisations in the UK.

3. Who are the participants? INCLUDING sampling method

For Study one and three, this research requires a sample of gay males who are from the UK and aged 18 years old and over. However, for Study two (comparison study), the research requires a sample of gay males but also a group of heterosexual men aged 18 years old and over who are students in the UK. Selecting the participants for the comparison study in Study two in this way means that the two groups are comparable in terms of age, level of education attainment, social class, knowledge about sexual behaviours, and financial status (dependent on or independent of parents). The data collection process consists of the following procedural steps:

A. As gay individuals are not an organised group, the researcher will require the assistance of relevant organisations, such as universities and LGBT organisations that cater to the needs of gay individuals. Therefore researcher is going to be contacting the student union and LGBT organisations such as LGBT links in Luton, Stonewall, the LGBT Consortium, and the LGBT foundation in London.

B. Before the data collection starts the researcher will explain the objectives of the study to the directors of the student union and the manager of the relevant LGBT organisations in order to seek their permission to conduct the study. Also, a poster will be provided with relevant information about the aims and objectives of the study together with contact details for people who are interested in taking part in this study.

C. For Study one, the interview can take place in the university and/or at LGBT Links Luton. The location will be arranged with the support of the psychology department and the student union.

D. For the quantitative part of the study (Study two and three), an online survey will be created on the Qualtrics online software.

E. For Study two, the link to the online survey will be sent to student union directors and managers in different universities in order for them to circulate the link to possible gay students. In addition, posters will be located in the relevant areas of the universities for students (both heterosexual men and gay men) who are interested in participating in the study. Also, the link to the survey will be sent to the universities' social network pages,

such as Facebook, Instagram and Twitter. Based on the snowball sampling method, interested people will be asked to send the link to other heterosexual and gay men who are also students.

F. For Study three, the link to the survey will be sent to the managers of LGBT organisations in order for them to circulate the link to their gay service users. In addition, posters will be located in those organisations to further facilitate the participation of people who are interested in the study. Also, the link of the survey will be sent to LGBT social network pages such as on Facebook, Instagram and Twitter. Once again, based on the snowball sampling method people will be asked to forward the link to other gay men who may be interested in participating. 7. Upon receipt of the completed questionnaires, the researcher will proceed to inspect every questionnaire so that only the valid ones will be subjected to statistical analysis.

4. Does the procedure involve any possible distress, discomfort or harm to participants? (Please consider all possible causes of distress carefully, including likely reactions to the subject matter, debriefing or deception. If yes, please give details and say what steps are to be taken to protect the participants.)

The researcher fully aware that asking about participant sexual activities might cause distress in participants. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher is conscious that participants might not be comfortable answering questions that may be considered too personal. Also, because in Study two and three the study relies on the participants' self-reporting, there is the possibility of bias, particularly with regard to some sensitive subjects, such as risky sexual activities. It has been pointed out by Gullette and Lyons (2006) that participants often make mistakes, mainly when recalling their sexual activities and reporting condom use. Therefore, to tackle this issue the researcher will provide sufficient explanation and acknowledgment before the participants are required to answer the questions related to their sexual activities. Furthermore, the participants will be made aware through the informed consent page and debrief page that they can withdraw their participation at any time or they can contact the researcher after providing their answers if they decide that they do not want their data to be used in the study. In addition, contact numbers of the relevant organisations will be provided on the debriefing page in the event that they require help and support. Furthermore, the researcher understands that gay populations in the UK may no longer be considered as a marginalised or stigmatised population, but many gay men might still experience discrimination and stigmatisation on a personal level. For the purpose of this study and its ethical aspect, therefore, the researcher will pay extra attention to the content of the questions and the language used and will use the most appropriate, reliable and valid measurements. Other ethical considerations related to conducting research among marginalised and stigmatised populations will be elaborated upon in the future.

**SECTION B To be completed by the candidate**

Answer the following question by ringing/deleting **yes** or **no** as appropriate:

1. Does the study involve vulnerable participants or those unable to give informed consent (e.g. children, people with learning disabilities, your own students)?

**No**

2. Will the study require permission of a gatekeeper for access to participants (e.g. schools, self-help groups, residential homes)?

**YES**

3. Will it be necessary for participants to be involved without consent (e.g. covert observation in non-public places)?

**No**

4. Will the study involve sensitive topics (e.g. sexual activity, substance abuse)?

**Yes**

5. Will blood or tissue samples be taken from participants?

**No**

6. Will the research involve intrusive interventions (e.g. drugs, hypnosis, physical exercise)?

**No**

7. Will financial or other inducements be offered to participants (except reasonable expenses)? **No**

8. Will the research investigate any aspect of illegal activity?

**No**

9. Will participants be stressed beyond what is normal for them?

**No**

10. Will the study involve participants from the NHS (e.g. patients or staff)?

**No**

If you have answered yes to any of the above questions or if you consider that there are other significant ethical issues then details should be included in your summary above. If you have answered yes to Question 1 then a clear justification for the importance of the research must be provided.

*Please note if the answer to Question 10 is yes then the proposal should be submitted through **NHS research ethics approval procedures** to the appropriate **COREC**. The University Research Ethics Committee should be informed of the outcome

**Reg. question 2**: This study requires permission from LGBT organizations, as gatekeeper, for access to participants. A letter is provided to send to all possible LGBT organization such as LGBT links Luton and Stonewall, London friends. The researcher had a verbal permission through an initial conversation with the managers of these organizations, they have shown their interest to collaborate in this research by informing their service users about this research through advertising in their website and social media pages. The formal letter will be sent after the ethic approval.

An example of the gatekeeper letter

Date 27/09/2017

LGBT Links Luton

Dear Lee Howe

My name is Mohammadrasool (Arya) Yadegarfard, student number 1229298 and I'm currently beginning a research project for my PhD in Psychology at University of Bedfordshire.
Subject to approval by University of Bedfordshire Ethics this study will be using interview (qualitative method )to study the influence of substance use, attachment patterns, well-being, loneliness, and social support of risky sexual behaviours among gay men.
I'm writing to ask your permission to be allowed access to your LGBT service users, specifically Gay individuals to have an interview with me individually. This should not take a large amount of time and can be conducted at a convenient time and date to be arranged. All I will need is to arrange a suitable time with your service users to arrange a date for the interview.

All answers and results from the interview are kept strictly confidential and the results will be reported in a research paper available to all participants on completion.
If this is possible please could you E-mail me at mohammadrasool.yadegarfard@study.beds.ac.uk to confirm that you are willing to allow access to the LGBT service users providing they agree to take part?

Yours sincerely

Mohammadrasool (Arya) Yadegarfard

**Response from Lee Howe the manager of LGBT Links ( Also see appendix A)**

Good morning Arya,

Thank you so much for your email – yes, we would be more than happy to support you with this piece of work.

Following from our phone conversation – I will get some dates over to you next week, we can work from there to decide on the logistics and management to invite service users in to complete the questionnaire with you.

Should you require anything in the meantime, please feel free to get in touch,

Kind regards,
Lee

**Lee Howe**
*Service Manager*
Embrace Life / LGBT Links Luton
63 Inkerman Street
Luton
Bedfordshire
LU1 1JD

**Mobile:** 07552277196 / 01582454207
*"Countless cultures, one community!"*
*Moving Forward Together!*

**Reg. question 4:** The researcher fully aware that asking about participant sexual activities might cause distress in participants. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher is conscious that participants might not be comfortable answering questions that may be considered too personal. So, the researcher will make sure that interview will take place in a quiet, private place where the conversation cannot be overheard or disturbed.

Before the interview the researcher makes it clear to participants that the interview is likely to cause any distress. If participants do become distressed, they should be given the opportunity for audio tapes to be switched off, or to take a break or stop the activity entirely. Researchers is aware that in some situations participants may wish to continue with the activity even though it is upsetting them. The researcher is fully aware that in some cases it may be helpful to provide participants with contact details for support services such as counselling or help groups. Carrying out the interview in the local LGBT organization give the participants an opportunity that in case of experiencing distress there is someone to whom the participant could refer if they would like advice or help. As participants are being recruited via a gatekeeper (LGBT organizations) the researchers will check with the organisation as to whether they have a safeguarding policy or procedures for dealing with sensitive issues. Such organisations may have a policy of that requires researchers to refer distressed participants to a member of their own staff, rather than referring them to external advice or support.

Use of audio recordings for research purposes could cause distress or embarrassment to the participants, therefore they should be informed about and give their consent to any use to which recordings are to be put, including who will be able to see them, and the context in which they will be used.

Signature of student ***Mohammadrasool Yadegarfard…***……

Note to student: Signing this form certifies that you agree to carry out your research in the manner specified. If you wish to deviate from the approved method at any time, you should discuss any proposed change with your supervisor, and, if they think it necessary, a new ethics form should be completed.

Date ……11 July 2017…….

Signature of supervisor ……..…..

Countersigned by member of ethics committee

…….…….……...……

Note to counter signatories: Signing this form certifies that, in your opinion as an independent reviewer, the project is ethical under BPS guidelines.

Please pass completed forms to your supervisor.

**Student: please tick to show that you feel that you have included the following:**

| | |
|---|---|
| General aim of study | Y |
| Research questions/hypothesis | Y |
| Research Design | Y |
| Participants (including sampling method) | Y |
| Any materials that you will use | Y |
| Consent Form | Y |
| Brief/Debrief forms | Y |
| Letter from organization (if required) | |
| Have included information regarding sensitive/ethical issues/vulnerable groups (e.g. deception, giving rewards, those that are unable to provide their own consent, relating to very personal issues) | Y |

## APPENDIX B

## INTERVIEW INFORM CONSENT AND SCHADULE

Consent for Participation in Interview Research

I volunteer to participate in a research project conducted by Mohammadrasool (Arya) Yadegarfard from University of Bedfordshire. The title of the project is *Biopsychosocial predictors of risky sexual behaviours: The influence of drug use, attachment patterns, well-being, loneliness, social support, and hyperactivation on risky sexual behaviour among the gay population in the UK*. I understand that the project is designed to gather information about my past (e.g. relationship with family) and my current relationships and also my sexual behaviour and drug use. I will be one of approximately 15 people being interviewed for this research.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one on my campus/organization will be told.
2. I understand that most interviewees in will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in any way during the interview session, I have the right to decline to answer any question or to end the interview.
3. Participation involves being interviewed by researcher from University of Bedfordshire. The interview will last approximately 30-45 minutes. Notes will be written during the interview. An audio tape of the interview and subsequent dialogue will be made. If I don't want to be taped, I will not be able to participate in the study.
4. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.
5. Faculty and administrators from my campus and other employees of the organization will neither be present at the interview nor have access to raw notes or transcripts. This precaution will prevent my individual comments from having any negative repercussions.
6. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.
7. I have been given a copy of this consent form.
8. I'll be given the transcript of this interview to confirm if it is accurate.

_____ My Signature Date _____

_____ My Printed Name

Signature of the interviewer

_____

For further information, please
contact: mohammadrasool.yadegarfard@study.beds.ac.uk
Or the project supervisor
Dr. Candan Ertubey
candan.ertubey@beds.ac.uk

# INTERVIEW SCHADULE

Questions

I'd like to ask you questions about sex and how you feel about your sex life and sexuality. I understand that these can be sensitive topics but I wanted to include these questions because sex and relationships can be important parts of our lives and can have a big impact on how we feel about ourselves.

I am asking you to please recall your sexual experiences over the last year and your lifetime. By "sex partners," please include everyone you've had sexual contact with, even once, including anal, oral, or genital sex.

- Would you please tell me about your first sexual relationship?
- How is your sexual relationship now? How do you feel about it?
- What do you understand when if I say "safe sex" and "unsafe sex"?
- According to your definition would you please tell me if you consider your sexual relationship safe or unsafe?
- Would you please tell me if you ever used drug and alcohol before or during your sexual relationship and how did it affect your experience of sex?

- Would you please tell me about your childhood?

- How was your relationship with your parents (care giver)? How is it now?
- How was your relationship with your sibling(s)? (if it is applicable)

- Would you please tell me about your first love or emotional relationship you had in the past?
- Would you please tell me about any current relationship?

- Would you please tell me about your social life now (e.g. friends, any group activities)? How do you feel about your social life?

- Would you please tell me about your health in general?
- (Sleep patterns, appetite, exercise, smoking, if you ever being diagnosed for any psychological or physical problems)
- Would you please tell me if you ever had use drug? how often do you use or did you use to?

# APPENDIX C

Qualitative data: Initial Codes

Step 5

| Name | Sources | References |
|---|---|---|
| 1. Negative perception on being gay | 11 | 6 |
| 2. Negative perception of gay men in general | 6 | 4 |
| 3. Not out from friends and family/shame | 5 | 5 |
| 4. Sexual orientation and sexual behaviour | 5 | 4 |
| 5. Alcohol | 3 | 2 |
| 6. Appetite | 8 | 6 |
| 7. Diagnosis | 7 | 5 |
| 8. Medication | 4 | 3 |
| 9. Drug | 14 | 5 |
| 10. Exercise | 5 | 4 |
| 11. Future | 2 | 2 |
| 12. HIV status | 2 | 2 |
| 13. Mood | 3 | 1 |
| 14. Sleep | 13 | 6 |
| 15. Smoke | 5 | 4 |
| 16. Sexual abuse | 4 | 6 |
| 17. Domestic violence | 4 | 5 |
| 18. Bullying | 8 | 3 |
| 19. Belief | 16 | 4 |
| 20. Using drugs before or during sex | 12 | 6 |
| 21. Knowledge | 14 | 6 |

| | | |
|---|---|---|
| 22. Perceived control on the behaviour | 3 | 3 |
| 23. STDs Test | 5 | 3 |
| 24. Social life in adulthood | 32 | 8 |
| 25. Social media | 4 | 4 |
| 26. Work relationships | 3 | 3 |
| 27. Emotional relationship in childhood | 21 | 7 |
| 28. Sexual relationship in early | 20 | 5 |
| 29. Relationship with Parents | 46 | 8 |
| 30. Father | 18 | 4 |
| 31. Mother | 11 | 5 |
| 32. Parents relationship | 4 | 1 |
| 33. Siblings | 20 | 8 |
| 34. Birth order | 3 | 3 |
| 35. Number of siblings | 6 | 6 |
| 36. Partner(s) | 5 | 25 |
| 37. Friend(s) | 4 | 15 |
| 38. School | 4 | 12 |
| 39. Age | 7 | 35 |

Step 6

| Name | Sources | References |
|---|---|---|
| 1. Identity and internalized homophobia | 27 | 6 |
| a) Negative perception on being gay | 11 | 6 |
| b) Negative perception of gay men in general | 6 | 4 |
| c) Not out from friends and family/shame | 5 | 5 |
| d) Sexual orientation and sexual behaviour | 5 | 4 |

| | | |
|---|---|---|
| 2. Health in general-Well-being | 14 | 5 |
| a) Alcohol | 3 | 2 |
| b) Appetite | 8 | 6 |
| c) Diagnosis | 7 | 5 |
| d) Medication | 4 | 3 |
| e) Drug | 14 | 5 |
| f) Exercise | 5 | 4 |
| g) Future | 2 | 2 |
| h) HIV status | 2 | 2 |
| i) Mood | 3 | 1 |
| j) Sleep | 13 | 6 |
| k) Smoke | 5 | 4 |
| l) STDs Test | 5 | 3 |
| 3. Social support/loneliness | | |
| a) Partner(s) | 5 | 25 |
| b) Friend(s) | 4 | 15 |
| c) Social media | 4 | 4 |
| d) Social life in adulthood | 32 | 8 |
| 4. Belief and attitude | 16 | 4 |
| a) Sexual health Knowledge | 14 | 6 |
| b) Sexual behaviours | 19 | 6 |
| 5. Substance use | 12 | 6 |
| a) Perceived control on behaviour | 3 | 3 |
| b) Risky Behaviours | 12 | 5 |
| 6. Emotional relationship in childhood | 21 | 7 |
| 7. Sexual relationship in early | 20 | 5 |

| | | |
|---|---|---|
| 8. Relationship with Parents | 46 | 8 |
| a) Father | 18 | 4 |
| b) Mother | 11 | 5 |
| c) Parents relationship | 4 | 1 |
| 9. Adverse childhood experiences | 19 | 6 |
| Adverse childhood experiences | 19 | 6 |
| Sexual abuse | 4 | 6 |
| Domestic violence | 4 | 5 |
| 10. Age | 7 | 35 |

# APPENDIX D

Qualitative Data: Codes grouping

| Code | Sources | References |
|---|---|---|
| 1. Beliefs and Attitude towards RSBs | 8 | 26 |
| 2. Identity and internalized homophobia | 8 | 27 |
| 3. Childhood experiences<br>*3.1. Early sexual experience*<br>*3.2. Adverse childhood experiences* | 8 | 41 |
| 4. Age | 7 | 35 |
| 5. Substance use | 8 | 14 |
| 6. Attachment patterns | 8 | 46 |
| 7. Well-being | 6 | 40 |

# APPENDIX E

## SURVEY QUESTIONNAIRE (STAGE ONE)

**Inform consent**

Dear Participant, You are invited to participate in a post graduate school research which is carried out by Mohammadrasool (Arya) Yadegarfard from the University of Bedfordshire, UK with the student number of 1229298 and under the supervision of Dr. Candan Ertubey and Dr. Hoseyn Kaviani. This Study aims to assess influences of substance use, attachment patterns, well-being, loneliness, social support on risky sexual behaviours among the British men. Your participation in this study is voluntary and you are free to refuse or to take part and as well you may withdraw your participation at any time. If you agree to participate, please complete this survey questionnaire. All the information provided by you will be kept strictly confidential according to the British Psychological Society (BPS) code of ethics and conduct. There are no right or wrong answers. Please answer all the questions as honestly as you can. It will take you about 20 min to fill in all questionnaires.

I have read and understood the above information including the aims of the study. I give my consent to take part in this study ( )

Thank you for your help and cooperation.

Mohammadrasool Yadegarfard The University of Bedfordshire, Luton

**Substance Frequency-of-Use Scale (Sandell, 2009)**

Please read each statement and indicate the extent it applies to you, using the following scale:

| Questions | Response categories | Designations |
|---|---|---|
| 1. How many times have you tried drugs?<br>0<br>1<br>2<br>3<br>4 | Never<br>once<br>2-10<br>11-50<br>>50 | Non-user<br>Light user<br>Moderate user<br>Heavy user<br>Heavy user |
| 2. Have you ever sniffed a substance of any kind?<br>0<br>1<br>2 | No<br>Yes, once<br>Yes several times | Non-user<br>Light user<br>Moderate/heavy user |
| 3. How often do you drink beer, cider, wine or spirits?<br>0<br>1<br>2<br>3<br>4 | Do not drink<br>1–6 times a year<br>1–2 times a month<br>1–2 times a week<br>Every day or every other day | Non-user<br>Light user<br>Moderate user<br>Moderate/heavy user |
| 4. Do you smoke?<br>0<br>1<br>2<br>3 | No, have never<br>Have tried, but stopped<br>Yes, but only occasionally, at weekends, or parties<br>Yes, every day or almost every day | Non-user<br>Non-user<br>Light user<br>Moderate/ heavy user |

**The Relationship Questionnaire (RQ) (Bartholomew et al, 1991)**

Scale: Following are four general relationship styles that people often report. Place a checkmark next to the letter corresponding to the style that best describes you or is closest to the way you are.

____ A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

____ B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

____ C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

____ D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

Now please rate each of the relationship styles above to indicate how well or poorly each description corresponds to your general relationship style.

**The BBC Well-being (Kinderman et al, 2011)**

scale This questionnaire attempts to measure how happy you feel generally in most parts of your life. Select the response that best describes your experience.

| | Not at all | A little | Moderately | Very much | Extremely |
|---|---|---|---|---|---|
| 1. Are you happy with your physical health | | | | | |
| 2. Are you happy with the quality of your sleep | | | | | |
| 3. Are you happy with your ability to perform daily living activities | | | | | |
| 4. Do you feel depressed or anxious* | | | | | |
| 5. Do you feel able to enjoy life | | | | | |
| 6. Do you feel you have a purpose in life | | | | | |
| 7. Do you feel optimistic about the future | | | | | |
| 8. Do you feel in control of your life | | | | | |
| 9. Do you feel happy with yourself as a person | | | | | |
| 10. Are you happy with your looks and appearance | | | | | |
| 11. Do you feel able to live your life the way you want | | | | | |
| 12. Are you confident in your own opinions and beliefs | | | | | |
| 13. Do you feel able to do the things you choose to do | | | | | |
| 14. Do you feel able to grow and develop as a person | | | | | |
| 15. Are you happy with yourself and your achievements | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 16. Are you happy with your personal and family life | | | | | |
| 17. Are you happy with your friendships and personal relationships | | | | | |
| 18. Are you comfortable about way you relate connect with others | | | | | |
| 19. Are you happy with your sex life | | | | | |
| 20. Are you able to ask someone for help with a problem | | | | | |
| 21. Are you happy that you have enough money to meet your needs | | | | | |
| 22.Are you happy with your opportunity for exercise/leisure | | | | | |
| 23. Are you happy with access to health services | | | | | |
| 24. Are you happy with your ability to work | | | | | |

**Revised UCLA Loneliness Scale (Russell et al, 1980)**

Please read each statement and indicate the extent it applies to you, using the following scale:

| | Never | Rarely | Sometimes | often |
|---|---|---|---|---|
| 1. I feel in tune with the people around me | | | | |
| 2. I lack companionship | | | | |
| 3. There is no one I can turn to | | | | |
| 4. I do not feel alone . | | | | |
| 5. I feel part of a group of friends | | | | |
| 6. I have a lot in common with the people around me | | | | |

| | | | | |
|---|---|---|---|---|
| 7. I am no longer close to anyone | | | | |
| 8. My interests and ideas are not shared by those around me | | | | |
| 9. I am an outgoing persona . | | | | |
| 10. There are people I feel close to | | | | |
| 11. I feel left out | | | | |
| 12. My social relationships are superficial | | | | |
| 13. No one really knows me well | | | | |
| 14. I feel isolated from others | | | | |
| 15. I can find companionship when I want it | | | | |
| 16. There are people who really understand me | | | | |
| 17. I am unhappy being so withdrawn | | | | |
| 18. People are around me but not with me | | | | |
| 19. There are people I can talk to | | | | |
| 20. There are people I can turn to | | | | |

**Social Support Appraisals Scale (Vaux et al., 1986).**

Below are a list of statements about your relationships with family and friends. Please indicate how much you agree or disagree with each statement as being true.

| | Strongly agree | Agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| 1. My friends respect me. | | | | |
| 2. My family cares for me very much. | | | | |
| 3. I am not important to others. | | | | |
| 4. My family holds me in high esteem. | | | | |
| 5. I am well liked. | | | | |
| 6. I can rely on my friends. | | | | |
| 7. I am really admired by my family. | | | | |
| 8. I am respected by other people. | | | | |
| 9. I am loved dearly by my family. | | | | |
| 10. My friends don't care about my welfare. | | | | |
| 11. Members of my family rely on me. | | | | |
| 12. I am held in high esteem. | | | | |
| 13. I can't rely on my family for support. | | | | |
| 14. People admire me. | | | | |
| 15. I feel a strong bond with my friends. | | | | |
| 16. My friends look out for me. | | | | |
| 17. I feel valued by other people. | | | | |
| 18. My family really respects me. | | | | |
| 19. My friends and I are really important to each other. | | | | |
| 20. I feel like I belong. | * | | | |

| | | | | |
|---|---|---|---|---|
| 21. If I died tomorrow, very few people would miss me. | * | | | |
| 22. I don't feel close to members of my family. | | | | * |
| 23. My friends and I have done a lot for one another. | * | | | |

In this section, we'd like to ask you questions about sex, specifically, who you're having sex with, what types of sex you're having, if any, and how you feel about your sex life and sexuality. We understand that these can be sensitive topics but we wanted to include these questions because sex and relationships can be important parts of our lives and can have a big impact on how we feel about ourselves.

We're asking you to please recall your sexual experiences over the last year and your lifetime. By "sex partners," please include everyone you've had sexual contact with, even once, including anal, oral, or genital sex.

**Student Sexual Risks Scale (DeHart & Birkimer, 1997)**

The following self-assessment allows you to evaluate the degree to which you may be at risk for engaging in behaviour that exposes you to Sexual Transmitted Infections (STIs).

Safer sex means sexual activity that reduces the risk of transmitting the STIs. Using condoms is an example of safer sex. Unsafe, risky, or unprotected sex refers to sex without a condom, or to other sexual activity that might increase the risk of STI's transmission. For each of the following items, circle the response that best characterizes your option.

A = Agree, U = Undecided, D = Disagree

| | Agree | Undecid | Disagree |
|---|---|---|---|
| 1. If my partner wanted me to have unprotected sex, I would probably give in. | | | |
| 2. The proper use of a condom could enhance sexual pleasure. | | | |
| 3. I may have had sex with someone who was at risk for STI's such as HIV. | | | |
| 4. If I were going to have sex, I would take precautions to reduce my risk of STI's such as HIV/AIDS. | | | |
| 5. Condoms ruin the natural sex act. | | | |
| 6. When I think that one of my friends might have sex on a date, I ask him/her if he/she has a condom. | | | |
| 7. I am at risk for STI's (e.g. HIV) | | | |
| 8. I would try to use a condom when I had sex. | | | |
| 9. Condoms interfere with romance. | | | |
| 10. My friends talk a lot about safer sex. | | | |
| 11. If my partner wanted me to participate in risky sex and I said that we needed to be safer, we would still probably end up having unsafe sex. | | | |
| 12. Generally, I am in favour of using condoms. | | | |
| 13. I would avoid using condoms if at all possible. | | | |
| 14. If a friend knew that I might have sex on a date, he/she would ask me whether I was carrying a condom. | | | |
| 15. There is a possibility that I have some kind of STI's (e.g. HIV) | | | |
| 16. If I had a date, I would probably not drink alcohol or use drugs. | | | |
| 17. Safer sex reduces the mental pleasure of sex. | | | |
| 18. If I thought that one of my friends had sex on a date, I would ask him/her if he/she used a condom. | | | |
| 19. The idea of using a condom doesn't appeal to me. | | | |
| 20. Safer sex is a habit for me. | | | |
| 21. If a friend knew that I had sex on a date, he/she wouldn't care whether I had used a condom or not. | | | |
| 22. If my partner wanted me to participate in risky sex and I suggested a lower-risk alternative, we would have the safer sex instead. | | | |
| 23. The sensory aspects (smell, touch, etc.) of condoms make them unpleasant. | | | |
| 24. I intend to follow "safer sex" guidelines within the next year. | | | |
| 25. With condoms, you can't really give yourself over to your partner. | | | |

| | | | |
|---|---|---|---|
| 26. I am determined to practice safer sex. | | | |
| 27. If my partner wanted me to have unprotected sex and I made some excuse to use a condom, we would still end up having unprotected sex. | | | |
| 28. If I had sex and I told my friends that I did not use condoms, they would be angry or disappointed. | | | |
| 29. I think safer sex would get boring fast. | | | |
| 30. My sexual experiences do not put me at risk for HIV/AIDS. | | | |
| 31. Condoms are irritating. | | | |
| 32. My friends and I encourage each other before dates to practice safer sex. | | | |
| 33. When I socialize, I usually drink alcohol or use drugs. | | | |
| 34. If I were going to have sex in the next year, I would use condoms. | | | |
| 35. If a sexual partner didn't want to use condoms, we would have sex without using condoms. | | | |
| 36. People can get the same pleasure from safer sex as from unprotected sex. | | | |
| 37. Using condoms interrupts sex play. | | | |
| 38. It is a hassle to use condoms. | | | |

**Sexual System Functioning Scale Birnbaum et al (2014)**

The following statements concern how you feel during sexual activity. We are interested in how you generally experience sexual activity, not just in what is happening in your current sex life. Please read each statement and indicate the extent you agree with it, using the following scale:

Not at all Very much

1 2 3 4 5 6 7

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| *1. I feel comfortable responding to my partner's sexual needs. | | | | | | | |
| *2. I worry about not being "good enough" in bed. | | | | | | | |
| *3. I often find it hard to experience pleasure during sexual activity. | | | | | | | |
| *4. During sexual activity, I worry about my sexual "performance." | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *5. I feel comfortable discussing sex or talking about sex. | | | | | | | |
| *6. I worry that other people won't be attracted to me and won't want to have sex with me. | | | | | | | |
| *7. I feel comfortable exploring my sexuality and being open to new sexual experiences. | | | | | | | |
| *8. I need a lot of reassurance regarding my sexual performance. | | | | | | | |
| *9. I find it hard to feel comfortable during sexual intercourse. | | | | | | | |
| 10. If I can't get other people to desire me and want to have sex with me, I get frustrated and angry. | | | | | | | |
| *11. During sexual activity, I sometimes feel uninvolved and uninterested. | | | | | | | |
| *12. When I haven't had sex for a while, I begin to feel anxious and insecure. | | | | | | | |
| 13. I usually have sex only when my partner pressures me or really wants me to. | | | | | | | |
| *14. When I don't perform well sexually, I feel really bad about myself. | | | | | | | |
| *15. Having sex isn't high on my priority list. | | | | | | | |
| *16. During sexual intercourse, I worry a lot about what my partner is thinking and feeling. | | | | | | | |
| *17. Thoughts about sex don't especially excite or interest me. | | | | | | | |
| *18. Being sexually desirable is extremely important to me. | | | | | | | |
| *19. Sometimes, sexual activities strike me as an unnecessary nuisance. | | | | | | | |
| *20. I often need a lot of reassurance that someone desires me and wants to have sex with me. | | | | | | | |
| *21. I enjoy sex. | | | | | | | |
| *22. During sex, I worry about disappointing my partner. | | | | | | | |
| *23. Thinking about sex leaves me indifferent. | | | | | | | |
| *24. My desire for sex is often stronger than my partner's. | | | | | | | |

**Personal Information**

**About You**

Directions: These first set of questions are meant to give you a chance to tell us some basic information about yourself. Please tick/answer accordingly.

1. How old are you? (Please indicate your age in years)
   _____ Years-old
2. What was your assigned sex at birth?
   ___ Male
   ___ Female
3. Which of the following describes your present gender identity? (Please check all that apply)
   ___ Man
   ___ Woman
   ___ Transgender
   ___ Intersex
   ___Non-binary
4. At this point, what level of education have you completed?
   ___ Did not graduate from high school
   ___ High school graduate
   ___ Some college credits or trade school
   ___ College or trade school graduate
   ___ Some university credits
   ___ University - bachelor's degree
   ___ University - graduate or professional degree
   ___ I don't know
5. How do you currently identify? (Please check all that apply)
   ___ Bisexual
   ___ Gay
   ___ Lesbian
   ___ Asexual
   ___ Pansexual
   ___ Queer
   ___ Straight or Heterosexual
   ___ Not sure
   ___ Others (please specify): _____

DEBRIEFING FORM

For Study entitled:

**the influences of substance use, attachment patterns, well-being, loneliness, social support on risky sexual behaviours among the gay men and men in the UK.**

Dear Participant; Thank you for agreeing to participate in this study. The general purpose of this research is to measure the influences of substance use, attachment patterns, well-being, loneliness, social support on risky sexual behaviours among the gay men in the UK.. Your participation in this study is voluntary.

If you have any concern about your participation or the data you provided in light of this disclosure, pleas discuss this with us. We will be glad to provide any information to answer your questions about this study. If your concerns are such that you would like to have your data withdrawn, and data is identifiable, we will do so, please email mohammadrasool.yadegarfard@study.beds.ac.uk

Help and support services regarding sexual health

**NHS sexual health services**

Find **Sexual health services** near you
http://www.nhs.uk/Service-Search/Sexual%20health%20services/LocationSearch/1847

UK LGBT organizations (for advice support and information)

**Stonewall UK**
Tel: 020 7593 1850
email: info@stonewall.org.uk
address : 192 St John Street
London, EC1V 4JY
website :
www.stonewall.org.uk

**LGBT foundation**
Tel: 03453303030
email: info@lgbt.foundation.
address: LGBT Foundation
5 Richmond Street,
Manchester
M1 3HF

**LGBT Drug and Alcohol services**

**London Friend**
www.londonfriend.org.uk
86 Caledonian Rd, Kings Cross,
London N1 9DN
020 7833 1674 (10am-6pm, Monday to Friday).
Ask for one of the Antidote Team.

**Club Drug Clinic**
www.clubdrugclinic.cnwl.nhs.uk
For confidential advice call 020 3315 6111

# APPENDIX F

## Demographic frequencies

**Which of the following reflect your ethno-racial background? - Selected Choice**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | White - British | 390 | 88.0 | 88.0 | 88.0 |
| | White - Irish | 4 | .9 | .9 | 88.9 |
| | Black | 4 | .9 | .9 | 89.8 |
| | Black - British | 2 | .5 | .5 | 90.3 |
| | Mixed - White and Black Caribbean | 5 | 1.1 | 1.1 | 91.4 |
| | Mixed - White and Black African | 4 | .9 | .9 | 92.3 |
| | Mixed - White and Asian | 2 | .5 | .5 | 92.8 |
| | Subcontinent (Indian, Bangladeshi, Pakistani,...) | 9 | 2.0 | 2.0 | 94.8 |
| | Far East (Chinese, Indonesian, Korean,...) | 3 | .7 | .7 | 95.5 |
| | Middle East/ Mediterranean (Arab, Iranian, ...) | 5 | 1.1 | 1.1 | 96.6 |
| | Any other ethnic group; please specify | 15 | 3.4 | 3.4 | 100.0 |
| | Total | 443 | 100.0 | 100.0 | |

**At this point, what level of education have you completed?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Post graduate Degree | 49 | 11.1 | 11.1 | 11.1 |
| | Undergraduate Degree | 117 | 26.4 | 26.4 | 37.5 |
| | Some university credits | 25 | 5.6 | 5.6 | 43.1 |
| | A-Level or equivalent | 74 | 16.7 | 16.7 | 59.8 |
| | College or trade school graduate | 35 | 7.9 | 7.9 | 67.7 |
| | Some college credits or trade school | 13 | 2.9 | 2.9 | 70.7 |
| | G.C.S.Es | 103 | 23.3 | 23.3 | 93.9 |
| | Did not graduate from high school | 6 | 1.4 | 1.4 | 95.3 |
| | No qualification | 21 | 4.7 | 4.7 | 100.0 |
| | Total | 443 | 100.0 | 100.0 | |

**What is your legal marital status right now?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Never married | 207 | 46.7 | 47.0 | 47.0 |
| | Separated | 10 | 2.3 | 2.3 | 49.3 |
| | Divorced | 26 | 5.9 | 5.9 | 55.2 |
| | Widowed | 3 | .7 | .7 | 55.9 |
| | Living common-law | 50 | 11.3 | 11.4 | 67.3 |
| | Married | 123 | 27.8 | 28.0 | 95.2 |
| | Civil partnership | 21 | 4.7 | 4.8 | 100.0 |
| | Total | 440 | 99.3 | 100.0 | |
| Missing | System | 3 | .7 | | |
| Total | | 443 | 100.0 | | |

**What is your current relationship status?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Single and not dating | 140 | 31.6 | 31.8 | 31.8 |
| | Single and dating | 71 | 16.0 | 16.1 | 48.0 |
| | In a monogamous relationship | 205 | 46.3 | 46.6 | 94.5 |
| | In a non-monogamous (open) relationship | 22 | 5.0 | 5.0 | 99.5 |
| | In a polyamorous (multiple people) relationship | 2 | .5 | .5 | 100.0 |
| | Total | 440 | 99.3 | 100.0 | |
| Missing | System | 3 | .7 | | |
| Total | | 443 | 100.0 | | |

**How Old are you?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Under 18 | 1 | .2 | .2 | .2 |
| | 18-23 | 35 | 7.9 | 8.0 | 8.2 |
| | 24-29 | 54 | 12.2 | 12.3 | 20.5 |
| | 30-35 | 67 | 15.1 | 15.2 | 35.7 |
| | 36-41 | 55 | 12.4 | 12.5 | 48.2 |
| | 42-47 | 40 | 9.0 | 9.1 | 57.3 |
| | 48-53 | 42 | 9.5 | 9.5 | 66.8 |
| | 54-59 | 64 | 14.4 | 14.5 | 81.4 |
| | +60 | 82 | 18.5 | 18.6 | 100.0 |
| | Total | 440 | 99.3 | 100.0 | |
| Missing | System | 3 | .7 | | |
| Total | | 443 | 100.0 | | |

# APPENDIX G

## Reliability

## Scale: Well-being

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 430 | 97.1 |
| | Excluded[a] | 13 | 2.9 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .964 | .964 | 24 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 9- 1. Are you happy with your physical health? | 2.9512 | 1.11147 | 430 |
| 9.- 2. Are you happy with the quality of your sleep? | 2.9302 | 1.13629 | 430 |
| 9.- 3. Are you happy with your ability to perform daily living activities? | 3.4372 | 1.03977 | 430 |
| 9. - 4. Do you feel depressed or anxious ? | 3.4674 | 1.25254 | 430 |
| 9. - 5. Do you feel able to enjoy life? | 3.1837 | 1.08226 | 430 |
| 9. - 6. Do you feel you have a purpose in life? | 3.1023 | 1.19975 | 430 |
| 9. - 7. Do you feel optimistic about the future? | 2.9674 | 1.18020 | 430 |
| 9. - 8. Do you feel in control of your life? | 3.1000 | 1.14934 | 430 |
| 9.- 9. Do you feel happy with yourself as a person? | 3.1884 | 1.15444 | 430 |
| 9. - 10. Are you happy with your looks and appearance? | 3.0233 | 1.10705 | 430 |
| 9. - 11. Do you feel able to live your life the way you want? | 3.0047 | 1.20216 | 430 |
| 9. - 12. Are you confident in your own opinions and beliefs? | 3.6442 | 1.02482 | 430 |
| 9. - 13. Do you feel able to do the things you choose to do? | 3.2279 | 1.03061 | 430 |
| 9. - 14. Do you feel able to grow and develop as a person? | 3.1721 | 1.11283 | 430 |
| 9. - 15. Are you happy with yourself and your achievements? | 3.0860 | 1.19421 | 430 |
| 9. - 16. Are you happy with your personal and family life? | 3.2791 | 1.19489 | 430 |

| | | | |
|---|---|---|---|
| 9.. - 17. Are you happy with your friendships and personal relationships? | 3.2349 | 1.18781 | 430 |
| 9. - 18. Are you comfortable about way you relate connect with others? | 3.2395 | 1.12435 | 430 |
| 9. - 19. Are you happy with your sex life? | 2.8070 | 1.30891 | 430 |
| 9. - 20. Are you able to ask someone for help with a problem? | 3.0721 | 1.24856 | 430 |
| 9. - 21. Are you happy that you have enough money to meet your needs? | 2.9302 | 1.26998 | 430 |
| 9. - 22.Are you happy with your opportunity for exercise/leisure? | 3.1744 | 1.13835 | 430 |
| 9. - 23. Are you happy with access to health services? | 3.4140 | 1.06252 | 430 |
| 9. - 24. Are you happy with your ability to work? | 3.1860 | 1.25261 | 430 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 3.159 | 2.807 | 3.644 | .837 | 1.298 | .038 |
| Item Variances | 1.344 | 1.050 | 1.713 | .663 | 1.631 | .033 |
| Inter-Item Covariances | .707 | .118 | 1.121 | 1.002 | 9.462 | .035 |
| Inter-Item Correlations | .531 | .085 | .790 | .705 | 9.281 | .019 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 24 |
| Item Variances | 24 |
| Inter-Item Covariances | 24 |
| Inter-Item Correlations | 24 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 75.8233 | 422.673 | 20.55900 | 24 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 7555.274 | 429 | 17.611 |
| Within People | Between Items | | 377.223 | 23 | 16.401 |
| | Residual | Nonadditivity | 63.020[a] | 1 | 63.020 |
| | | Balance | 6222.590 | 9866 | .631 |
| | | Total | 6285.610 | 9867 | .637 |
| | Total | | 6662.833 | 9890 | .674 |
| Total | | | 14218.107 | 10319 | 1.378 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 25.746 | .000 |
| | Residual | Nonadditivity | 99.919 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |

| | | |
|---|---|---|
| Total | | |

Grand Mean = 3.1593

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 2.509.

## Scale: Well-being_ psychological

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 430 | 97.1 |
| | Excluded[a] | 13 | 2.9 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .940 | .941 | 12 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 9. - 4. Do you feel depressed or anxious ? | 3.4674 | 1.25254 | 430 |
| 9. - 5. Do you feel able to enjoy life? | 3.1837 | 1.08226 | 430 |
| 9. - 6. Do you feel you have a purpose in life? | 3.1023 | 1.19975 | 430 |
| 9. - 7. Do you feel optimistic about the future? | 2.9674 | 1.18020 | 430 |
| 9. - 8. Do you feel in control of your life? | 3.1000 | 1.14934 | 430 |
| 9.- 9. Do you feel happy with yourself as a person? | 3.1884 | 1.15444 | 430 |
| 9. - 10. Are you happy with your looks and appearance? | 3.0233 | 1.10705 | 430 |
| 9. - 11. Do you feel able to live your life the way you want? | 3.0047 | 1.20216 | 430 |
| 9. - 12. Are you confident in your own opinions and beliefs? | 3.6442 | 1.02482 | 430 |
| 9. - 13. Do you feel able to do the things you choose to do? | 3.2279 | 1.03061 | 430 |
| 9. - 14. Do you feel able to grow and develop as a person? | 3.1721 | 1.11283 | 430 |
| 9. - 15. Are you happy with yourself and your achievements? | 3.0860 | 1.19421 | 430 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 3.181 | 2.967 | 3.644 | .677 | 1.228 | .038 |
| Item Variances | 1.306 | 1.050 | 1.569 | .519 | 1.494 | .026 |
| Inter-Item Covariances | .740 | .131 | 1.055 | .924 | 8.035 | .056 |
| Inter-Item Correlations | .572 | .095 | .774 | .679 | 8.170 | .032 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 12 |
| Item Variances | 12 |
| Inter-Item Covariances | 12 |
| Inter-Item Correlations | 12 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 38.1674 | 113.408 | 10.64931 | 12 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 4054.329 | 429 | 9.451 |
| Within People | Between Items | | 181.583 | 11 | 16.508 |
| | Residual | Nonadditivity | 82.523[a] | 1 | 82.523 |
| | | Balance | 2587.227 | 4718 | .548 |
| | | Total | 2669.750 | 4719 | .566 |
| | Total | | 2851.333 | 4730 | .603 |
| Total | | | 6905.662 | 5159 | 1.339 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 29.178 | .000 |
| | Residual | Nonadditivity | 150.487 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 3.1806

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 3.419.

## Scale: Well-being_ physical

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 430 | 97.1 |
| | Excluded[a] | 13 | 2.9 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .886 | .888 | 7 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 9- 1. Are you happy with your physical health? | 2.95 | 1.111 | 430 |
| 9.- 2. Are you happy with the quality of your sleep? | 2.93 | 1.136 | 430 |
| 9.- 3. Are you happy with your ability to perform daily living activities? | 3.44 | 1.040 | 430 |
| 9. - 21. Are you happy that you have enough money to meet your needs? | 2.93 | 1.270 | 430 |
| 9. - 22.Are you happy with your opportunity for exercise/leisure? | 3.17 | 1.138 | 430 |
| 9. - 23. Are you happy with access to health services? | 3.41 | 1.063 | 430 |
| 9. - 24. Are you happy with your ability to work? | 3.19 | 1.253 | 430 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 3.146 | 2.930 | 3.437 | .507 | 1.173 | .048 |
| Item Variances | 1.316 | 1.081 | 1.613 | .532 | 1.492 | .042 |
| Inter-Item Covariances | .694 | .481 | .886 | .405 | 1.842 | .015 |
| Inter-Item Correlations | .532 | .399 | .692 | .294 | 1.737 | .008 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 7 |
| Item Variances | 7 |
| Inter-Item Covariances | 7 |
| Inter-Item Correlations | 7 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 22.02 | 38.368 | 6.194 | 7 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 2351.395 | 429 | 5.481 |
| Within People | Between Items | | 124.737 | 6 | 20.789 |
| | Residual | Nonadditivity | 3.519[a] | 1 | 3.519 |
| | | Balance | 1598.030 | 2573 | .621 |
| | | Total | 1601.549 | 2574 | .622 |
| | Total | | 1726.286 | 2580 | .669 |
| Total | | | 4077.681 | 3009 | 1.355 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | Friedman's Chi-Square | Sig |
|---|---|---|

| | | | | |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 33.413 | .000 |
| | Residual | Nonadditivity | 5.666 | .017 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 3.15

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 1.598.

## Scale: Well-being_ relationship

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 430 | 97.1 |
| | Excluded[a] | 13 | 2.9 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .893 | .896 | 5 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 9. - 16. Are you happy with your personal and family life? | 3.28 | 1.195 | 430 |
| 9.. - 17. Are you happy with your friendships and personal relationships? | 3.23 | 1.188 | 430 |
| 9. - 18. Are you comfortable about way you relate connect with others? | 3.24 | 1.124 | 430 |
| 9. - 19. Are you happy with your sex life? | 2.81 | 1.309 | 430 |
| 9. - 20. Are you able to ask someone for help with a problem? | 3.07 | 1.249 | 430 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 3.127 | 2.807 | 3.279 | .472 | 1.168 | .038 |
| Item Variances | 1.475 | 1.264 | 1.713 | .449 | 1.355 | .029 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Inter-Item Covariances | .924 | .811 | 1.121 | .310 | 1.382 | .007 |
| Inter-Item Correlations | .632 | .537 | .790 | .252 | 1.469 | .007 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 5 |
| Item Variances | 5 |
| Inter-Item Covariances | 5 |
| Inter-Item Correlations | 5 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 15.63 | 25.855 | 5.085 | 5 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 2218.389 | 429 | 5.171 |
| Within People | Between Items | | 65.728 | 4 | 16.432 |
| | Residual | Nonadditivity | .014[a] | 1 | .014 |
| | | Balance | 945.458 | 1715 | .551 |
| | | Total | 945.472 | 1716 | .551 |
| | Total | | 1011.200 | 1720 | .588 |
| Total | | | 3229.589 | 2149 | 1.503 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 29.824 | .000 |
| | Residual | Nonadditivity | .026 | .873 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

## Scale: Hyperactivation

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 400 | 90.3 |
| | Excluded[a] | 43 | 9.7 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .934 | .932 | 12 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| *2. I worry about not being "good enough" in bed. | 4.11 | 1.837 | 400 |
| *4. During sexual activity, I worry about my sexual "performance." | 4.05 | 1.845 | 400 |
| *6. I worry that other people won't be attracted to me and won't want to have sex with me. | 4.00 | 1.933 | 400 |
| *8. I need a lot of reassurance regarding my sexual performance. | 3.77 | 1.819 | 400 |
| 10. If I can't get other people to desire me and want to have sex with me, I get frustrated and angry. | 3.29 | 1.873 | 400 |
| *12. When I haven't had sex for a while, I begin to feel anxious and insecure. | 3.66 | 1.929 | 400 |
| *14. When I don't perform well sexually, I feel really bad about myself. | 3.98 | 1.883 | 400 |
| *16. During sexual intercourse, I worry a lot about what my partner is thinking and feeling. | 3.93 | 1.815 | 400 |
| *18. Being sexually desirable is extremely important to me. | 4.27 | 1.694 | 400 |
| *20. I often need a lot of reassurance that someone desires me and wants to have sex with me. | 3.75 | 1.838 | 400 |
| *22. During sex, I worry about disappointing my partner. | 4.13 | 1.854 | 400 |
| *24. My desire for sex is often stronger than my partner's. | 4.18 | 1.713 | 400 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 3.925 | 3.288 | 4.273 | .985 | 1.300 | .075 |
| Item Variances | 3.376 | 2.870 | 3.737 | .866 | 1.302 | .069 |
| Inter-Item Covariances | 1.822 | .723 | 2.684 | 1.960 | 3.711 | .333 |
| Inter-Item Correlations | .535 | .232 | .780 | .548 | 3.363 | .024 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 12 |
| Item Variances | 12 |
| Inter-Item Covariances | 12 |
| Inter-Item Correlations | 12 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 47.11 | 280.981 | 16.763 | 12 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 9342.633 | 399 | 23.415 |
| Within People | Between Items | | 328.149 | 11 | 29.832 |
| | Residual | Nonadditivity | 37.912[a] | 1 | 37.912 |
| | | Balance | 6784.606 | 4388 | 1.546 |
| | | Total | 6822.518 | 4389 | 1.554 |
| | Total | | 7150.667 | 4400 | 1.625 |
| Total | | | 16493.299 | 4799 | 3.437 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 19.191 | .000 |
| | Residual | Nonadditivity | 24.520 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 3.93

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 1.956.

## Scale: Loneliness

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 426 | 96.2 |
| | Excluded[a] | 17 | 3.8 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .906 | .908 | 20 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 11.1 | 2.1385 | .81577 | 426 |
| 11. - 2. I lack companionship. | 2.4718 | 1.01999 | 426 |
| 11. - 3. There is no one I can turn to. | 2.2136 | 1.02390 | 426 |
| 11. - 4.I do not feel alone . | 2.7019 | 1.03939 | 426 |
| 11.5 | 2.3545 | .95237 | 426 |
| 11. - 6.I am no longer close to anyone . | 2.0798 | .92709 | 426 |

| | | | |
|---|---|---|---|
| 11.7 | 2.2770 | .84201 | 426 |
| 11. - 8.My interests and ideas are not shared by those around me. | 2.3169 | 1.08922 | 426 |
| 11.9 | 2.5587 | .87721 | 426 |
| 11.10 | 2.3803 | .95842 | 426 |
| 11. - 11.I feel left out. | 2.0094 | .88113 | 426 |
| 11. - 12.My social relationships are superficial. | 2.3521 | 1.01423 | 426 |
| 11. - 13.No one really knows me well. | 2.4296 | .96087 | 426 |
| 11. - 14.I feel isolated from others. | 2.6502 | 1.01156 | 426 |
| 11.15 | 2.4085 | 1.03461 | 426 |
| 11.16 | 2.2300 | .93489 | 426 |
| 11. - 17. I am unhappy being so withdrawn. | 2.2066 | .94536 | 426 |
| 11. - 18.People are around me but not with me. | 2.2911 | 1.06263 | 426 |
| 11.19 | 2.5329 | .99415 | 426 |
| 11. - 20. There are people I can turn to . | 2.0728 | .94152 | 426 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 2.334 | 2.009 | 2.702 | .692 | 1.345 | .036 |
| Item Variances | .939 | .665 | 1.186 | .521 | 1.783 | .020 |
| Inter-Item Covariances | .306 | -.317 | .752 | 1.069 | -2.371 | .048 |
| Inter-Item Correlations | .330 | -.324 | .861 | 1.185 | -2.658 | .050 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 20 |
| Item Variances | 20 |
| Inter-Item Covariances | 20 |
| Inter-Item Correlations | 20 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 46.6761 | 135.222 | 11.62849 | 20 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 2873.465 | 425 | 6.761 |
| Within People | Between Items | | 291.937 | 19 | 15.365 |
| | Residual | Nonadditivity | 51.245[a] | 1 | 51.245 |
| | | Balance | 5056.018 | 8074 | .626 |
| | | Total | 5107.263 | 8075 | .632 |
| | Total | | 5399.200 | 8094 | .667 |
| Total | | | 8272.665 | 8519 | .971 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | Friedman's Chi-Square | Sig |
|---|---|---|
| Between People | | |

| | | | | |
|---|---|---|---|---|
| Within People | Between Items | | 24.293 | .000 |
| | Residual | Nonadditivity | 81.833 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 2.3338
a. Tukey's estimate of power to which observations must be raised to achieve additivity = 2.684.

## Scale: social support total

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 419 | 94.6 |
| | Excluded[a] | 24 | 5.4 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .922 | .930 | 23 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 14. - 1. My friends respect me. | 2.0263 | .74614 | 419 |
| 14. - 2. My family cares for me very much. | 1.9427 | .85927 | 419 |
| 14.- 3. I am not important to others. | 2.2291 | .95347 | 419 |
| 14. - 4. My family holds me in high esteem. | 2.2029 | .85526 | 419 |
| 14.- 5. I am well liked. | 2.0955 | .72906 | 419 |
| 14. - 6. I can rely on my friends. | 2.1432 | .83781 | 419 |
| 14.. - 7. I am really admired by my family. | 2.2888 | .80676 | 419 |
| 14. - 8. I am respected by other people. | 2.1718 | .70138 | 419 |
| 14. - 9. I am loved dearly by my family. | 2.0310 | .84802 | 419 |
| 14.- 10. My friends don’t care about my welfare. | 2.2053 | .93105 | 419 |
| 14. - 11. Members of my family rely on me. | 2.3723 | .87211 | 419 |
| 14. - 12. I am held in high esteem. | 2.2792 | .74553 | 419 |

| | | | |
|---|---|---|---|
| 14. - 13. I can't rely on my family for support. | 2.3079 | 1.00868 | 419 |
| 14. - 14. People admire me. | 2.3246 | .79149 | 419 |
| 14. - 15. I feel a strong bond with my friends. | 2.2482 | .84177 | 419 |
| 14. - 16. My friends look out for me. | 2.2363 | .86618 | 419 |
| 14. - 17. I feel valued by other people. | 2.2768 | .82120 | 419 |
| 14. - 18. My family really respects me. | 2.1456 | .82154 | 419 |
| 14.- 19. My friends and I are really important to each other. | 2.1862 | .86600 | 419 |
| 14. - 20. I feel like I belong. | 2.3007 | .88327 | 419 |
| 14. - 21. If I died tomorrow, very few people would miss me. | 2.4487 | .99958 | 419 |
| 14. - 22. I don't feel close to members of my family. | 2.3866 | .99203 | 419 |
| 14. - 23. My friends and I have done a lot for one another. | 2.2530 | .86004 | 419 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 2.222 | 1.943 | 2.449 | .506 | 1.260 | .015 |
| Item Variances | .736 | .492 | 1.017 | .525 | 2.068 | .021 |
| Inter-Item Covariances | .250 | -.528 | .585 | 1.113 | -1.108 | .045 |
| Inter-Item Correlations | .367 | -.532 | .802 | 1.334 | -1.506 | .085 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 23 |
| Item Variances | 23 |
| Inter-Item Covariances | 23 |
| Inter-Item Correlations | 23 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 51.1026 | 143.437 | 11.97651 | 23 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 2606.808 | 418 | 6.236 |
| Within People | Between Items | | 135.387 | 22 | 6.154 |
| | Residual | Nonadditivity | 110.769[a] | 1 | 110.769 |
| | | Balance | 4354.714 | 9195 | .474 |
| | | Total | 4465.483 | 9196 | .486 |
| | Total | | 4600.870 | 9218 | .499 |
| Total | | | 7207.678 | 9636 | .748 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 12.673 | .000 |
| | Residual | Nonadditivity | 233.888 | .000 |
| | | Balance | | |
| | | Total | | |

| | | | |
|---|---|---|---|
| | Total | | |
| Total | | | |

Grand Mean = 2.2219

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 4.864.

## Scale: social support Friend

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 419 | 94.6 |
| | Excluded[a] | 24 | 5.4 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .897 | .900 | 7 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 14. - 1. My friends respect me. | 2.0263 | .74614 | 419 |
| 14. - 6. I can rely on my friends. | 2.1432 | .83781 | 419 |
| 14.- 10. My friends don't care about my welfare. | 2.2053 | .93105 | 419 |
| 14. - 15. I feel a strong bond with my friends. | 2.2482 | .84177 | 419 |
| 14. - 16. My friends look out for me. | 2.2363 | .86618 | 419 |
| 14.- 19. My friends and I are really important to each other. | 2.1862 | .86600 | 419 |
| 14. - 23. My friends and I have done a lot for one another. | 2.2530 | .86004 | 419 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 2.185 | 2.026 | 2.253 | .227 | 1.112 | .006 |
| Item Variances | .725 | .557 | .867 | .310 | 1.557 | .008 |
| Inter-Item Covariances | .402 | .199 | .585 | .386 | 2.936 | .019 |
| Inter-Item Correlations | .562 | .249 | .802 | .553 | 3.225 | .038 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 7 |
| Item Variances | 7 |
| Inter-Item Covariances | 7 |
| Inter-Item Correlations | 7 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 15.2983 | 21.942 | 4.68422 | 7 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 1310.244 | 418 | 3.135 |
| Within People | Between Items | | 16.175 | 6 | 2.696 |
| | Residual | Nonadditivity | 6.229[a] | 1 | 6.229 |
| | | Balance | 804.453 | 2507 | .321 |
| | | Total | 810.682 | 2508 | .323 |
| | Total | | 826.857 | 2514 | .329 |
| Total | | | 2137.101 | 2932 | .729 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 8.340 | .000 |
| | Residual | Nonadditivity | 19.413 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 2.1855

a. Tukey's estimate of power to which observations must be raised to achieve additivity = -1.029.

## Scale: social support others

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 419 | 94.6 |
| | Excluded[a] | 24 | 5.4 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .726 | .779 | 8 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 14.- 3. I am not important to others. | 2.2291 | .95347 | 419 |
| 14.- 5. I am well liked. | 2.0955 | .72906 | 419 |
| 14. - 8. I am respected by other people. | 2.1718 | .70138 | 419 |
| 14. - 12. I am held in high esteem. | 2.2792 | .74553 | 419 |
| 14. - 14. People admire me. | 2.3246 | .79149 | 419 |
| 14. - 17. I feel valued by other people. | 2.2768 | .82120 | 419 |
| 14. - 20. I feel like I belong. | 2.3007 | .88327 | 419 |
| 14. - 21. If I died tomorrow, very few people would miss me. | 2.4487 | .99958 | 419 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 2.266 | 2.095 | 2.449 | .353 | 1.169 | .011 |
| Item Variances | .696 | .492 | .999 | .507 | 2.031 | .034 |
| Inter-Item Covariances | .173 | -.505 | .491 | .996 | -.972 | .093 |
| Inter-Item Correlations | .306 | -.530 | .677 | 1.207 | -1.278 | .191 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 8 |
| Item Variances | 8 |
| Inter-Item Covariances | 8 |
| Inter-Item Correlations | 8 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 18.1265 | 15.273 | 3.90812 | 8 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 798.037 | 418 | 1.909 |
| Within People | Between Items | | 32.520 | 7 | 4.646 |
| | Residual | Nonadditivity | 132.044[a] | 1 | 132.044 |
| | | Balance | 1397.561 | 2925 | .478 |
| | | Total | 1529.605 | 2926 | .523 |
| | Total | | 1562.125 | 2933 | .533 |
| Total | | | 2360.162 | 3351 | .704 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 8.887 | .000 |
| | Residual | Nonadditivity | 276.358 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 2.2658

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 10.357.

## Scale: social support family

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 419 | 94.6 |
| | Excluded[a] | 24 | 5.4 |
| | Total | 443 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .875 | .883 | 8 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| 14. - 2. My family cares for me very much. | 1.9427 | .85927 | 419 |
| 14. - 4. My family holds me in high esteem. | 2.2029 | .85526 | 419 |
| 14.. - 7. I am really admired by my family. | 2.2888 | .80676 | 419 |
| 14. - 9. I am loved dearly by my family. | 2.0310 | .84802 | 419 |
| 14. - 11. Members of my family rely on me. | 2.3723 | .87211 | 419 |
| 14. - 13. I can’t rely on my family for support. | 2.3079 | 1.00868 | 419 |
| 14. - 18. My family really respects me. | 2.1456 | .82154 | 419 |
| 14. - 22. I don’t feel close to members of my family. | 2.3866 | .99203 | 419 |

**Summary Item Statistics**

| | Mean | Minimum | Maximum | Range | Maximum / Minimum | Variance |
|---|---|---|---|---|---|---|
| Item Means | 2.210 | 1.943 | 2.387 | .444 | 1.229 | .026 |
| Item Variances | .785 | .651 | 1.017 | .367 | 1.563 | .019 |
| Inter-Item Covariances | .366 | .065 | .554 | .490 | 8.592 | .016 |
| Inter-Item Correlations | .485 | .073 | .761 | .688 | 10.373 | .037 |

**Summary Item Statistics**

| | N of Items |
|---|---|
| Item Means | 8 |
| Item Variances | 8 |
| Inter-Item Covariances | 8 |
| Inter-Item Correlations | 8 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 17.6778 | 26.798 | 5.17666 | 8 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Sum of Squares | df | Mean Square |
|---|---|---|---|---|---|
| Between People | | | 1400.188 | 418 | 3.350 |
| Within People | Between Items | | 75.840 | 7 | 10.834 |
| | Residual | Nonadditivity | 8.188[a] | 1 | 8.188 |
| | | Balance | 1215.347 | 2925 | .416 |
| | | Total | 1223.535 | 2926 | .418 |
| | Total | | 1299.375 | 2933 | .443 |
| Total | | | 2699.563 | 3351 | .806 |

**ANOVA with Friedman's Test and Tukey's Test for Nonadditivity**

| | | | Friedman's Chi-Square | Sig |
|---|---|---|---|---|
| Between People | | | | |
| Within People | Between Items | | 25.909 | .000 |
| | Residual | Nonadditivity | 19.706 | .000 |
| | | Balance | | |
| | | Total | | |
| | Total | | | |
| Total | | | | |

Grand Mean = 2.2097

a. Tukey's estimate of power to which observations must be raised to achieve additivity = 2.123.

# APPENDIX H
# CORELATION

## Correlations

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Hyperactivation | 47.1050 | 16.76250 | 400 |
| Psychological_wellbeing | 38.1674 | 10.64931 | 430 |
| Physical_wellbeing | 22.0233 | 6.19417 | 430 |
| Relationship_wellbeing | 15.6326 | 5.08482 | 430 |
| 10.1. How many times have you tried drugs? | .84 | 1.250 | 429 |
| 10.2. Have you ever sniffed a substance of any kind? | .42 | .747 | 429 |
| 10.3. How often do you drink beer, cider, wine or spirits? | 2.21 | 1.217 | 429 |
| 10.4.Do you smoke? | 1.20 | 1.204 | 429 |
| Loneliness | 46.6761 | 11.62849 | 426 |
| SS_A_Total | 51.1026 | 11.97651 | 419 |
| SS_A_Family | 17.6778 | 5.17666 | 419 |
| SS_A_Friend | 15.2983 | 4.68422 | 419 |
| SS_A_Others | 18.1265 | 3.90812 | 419 |

**Correlations**

| | | Hyperactivation | Psychological_ wellbeing | Physical_wellbe ing | Relationship_w ellbeing |
|---|---|---|---|---|---|
| Hyperactivation | Pearson Correlation | 1 | -.241** | -.103* | -.226** |
| | Sig. (2-tailed) | | .000 | .039 | .000 |
| | N | 400 | 400 | 400 | 400 |
| Psychological_wellbeing | Pearson Correlation | -.241** | 1 | .818** | .851** |
| | Sig. (2-tailed) | .000 | | .000 | .000 |
| | N | 400 | 430 | 430 | 430 |
| Physical_wellbeing | Pearson Correlation | -.103* | .818** | 1 | .713** |
| | Sig. (2-tailed) | .039 | .000 | | .000 |
| | N | 400 | 430 | 430 | 430 |
| Relationship_wellbeing | Pearson Correlation | -.226** | .851** | .713** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | |
| | N | 400 | 430 | 430 | 430 |
| 10.1. How many times have you tried drugs? | Pearson Correlation | .177** | -.165** | -.110* | -.151** |
| | Sig. (2-tailed) | .000 | .001 | .023 | .002 |
| | N | 400 | 429 | 429 | 429 |
| 10.2. Have you ever sniffed a substance of any kind? | Pearson Correlation | .052 | -.074 | -.046 | -.092 |
| | Sig. (2-tailed) | .297 | .127 | .345 | .057 |
| | N | 400 | 429 | 429 | 429 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Pearson Correlation | .025 | .154** | .123* | .146** |
| | Sig. (2-tailed) | .613 | .001 | .011 | .002 |
| | N | 400 | 429 | 429 | 429 |
| 10.4.Do you smoke? | Pearson Correlation | .192** | -.044 | .021 | .004 |
| | Sig. (2-tailed) | .000 | .364 | .661 | .938 |
| | N | 400 | 429 | 429 | 429 |
| Loneliness | Pearson Correlation | .428** | -.651** | -.461** | -.666** |

| | | | | | |
|---|---|---|---|---|---|
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 426 | 426 | 426 |
| SS_A_Total | Pearson Correlation | .238** | -.677** | -.550** | -.674** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 419 | 419 | 419 |
| SS_A_Family | Pearson Correlation | .203** | -.501** | -.411** | -.504** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 419 | 419 | 419 |
| SS_A_Friend | Pearson Correlation | .213** | -.617** | -.504** | -.614** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 419 | 419 | 419 |
| SS_A_Others | Pearson Correlation | .206** | -.671** | -.538** | -.662** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 419 | 419 | 419 |

**Correlations**

| | | 10.1. How many times have you tried drugs? | 10.2. Have you ever sniffed a substance of any kind? | 10.3. How often do you drink beer, cider, wine or spirits? | 10.4.Do you smoke? |
|---|---|---|---|---|---|
| Hyperactivation | Pearson Correlation | .177** | .052 | .025 | .192** |
| | Sig. (2-tailed) | .000 | .297 | .613 | .000 |
| | N | 400 | 400 | 400 | 400 |
| Psychological_wellbeing | Pearson Correlation | -.165** | -.074 | .154** | -.044 |
| | Sig. (2-tailed) | .001 | .127 | .001 | .364 |
| | N | 429 | 429 | 429 | 429 |
| Physical_wellbeing | Pearson Correlation | -.110* | -.046 | .123* | .021 |
| | Sig. (2-tailed) | .023 | .345 | .011 | .661 |
| | N | 429 | 429 | 429 | 429 |
| Relationship_wellbeing | Pearson Correlation | -.151** | -.092 | .146** | .004 |
| | Sig. (2-tailed) | .002 | .057 | .002 | .938 |
| | N | 429 | 429 | 429 | 429 |
| 10.1. How many times have you tried drugs? | Pearson Correlation | 1 | .582** | .095* | .349** |
| | Sig. (2-tailed) | | .000 | .049 | .000 |
| | N | 429 | 429 | 429 | 429 |
| 10.2. Have you ever sniffed a substance of any kind? | Pearson Correlation | .582** | 1 | .077 | .268** |
| | Sig. (2-tailed) | .000 | | .111 | .000 |
| | N | 429 | 429 | 429 | 429 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Pearson Correlation | .095* | .077 | 1 | .106* |
| | Sig. (2-tailed) | .049 | .111 | | .027 |
| | N | 429 | 429 | 429 | 429 |
| 10.4.Do you smoke? | Pearson Correlation | .349** | .268** | .106* | 1 |
| | Sig. (2-tailed) | .000 | .000 | .027 | |
| | N | 429 | 429 | 429 | 429 |
| Loneliness | Pearson Correlation | .187** | .109* | -.179** | .127** |
| | Sig. (2-tailed) | .000 | .024 | .000 | .009 |
| | N | 426 | 426 | 426 | 426 |
| SS_A_Total | Pearson Correlation | .132** | .043 | -.135** | .064 |
| | Sig. (2-tailed) | .007 | .381 | .006 | .194 |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Family | Pearson Correlation | .169** | .034 | -.110* | .105* |
| | Sig. (2-tailed) | .001 | .483 | .024 | .032 |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Friend | Pearson Correlation | .076 | .041 | -.155** | .043 |
| | Sig. (2-tailed) | .120 | .403 | .002 | .382 |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Others | Pearson Correlation | .090 | .037 | -.083 | .004 |
| | Sig. (2-tailed) | .064 | .453 | .090 | .929 |
| | N | 419 | 419 | 419 | 419 |

**Correlations**

| | | Loneliness | SS_A_Total | SS_A_Family | SS_A_Friend |
|---|---|---|---|---|---|
| Hyperactivation | Pearson Correlation | .428** | .238** | .203** | .213** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 400 | 400 | 400 | 400 |
| Psychological_wellbeing | Pearson Correlation | -.651** | -.677** | -.501** | -.617** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 426 | 419 | 419 | 419 |
| Physical_wellbeing | Pearson Correlation | -.461** | -.550** | -.411** | -.504** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 426 | 419 | 419 | 419 |
| Relationship_wellbeing | Pearson Correlation | -.666** | -.674** | -.504** | -.614** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 426 | 419 | 419 | 419 |
| 10.1. How many times have you tried drugs? | Pearson Correlation | .187** | .132** | .169** | .076 |
| | Sig. (2-tailed) | .000 | .007 | .001 | .120 |
| | N | 426 | 419 | 419 | 419 |
| 10.2. Have you ever sniffed a substance of any kind? | Pearson Correlation | .109* | .043 | .034 | .041 |
| | Sig. (2-tailed) | .024 | .381 | .483 | .403 |
| | N | 426 | 419 | 419 | 419 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Pearson Correlation | -.179** | -.135** | -.110* | -.155** |
| | Sig. (2-tailed) | .000 | .006 | .024 | .002 |
| | N | 426 | 419 | 419 | 419 |
| 10.4.Do you smoke? | Pearson Correlation | .127** | .064 | .105* | .043 |
| | Sig. (2-tailed) | .009 | .194 | .032 | .382 |
| | N | 426 | 419 | 419 | 419 |
| Loneliness | Pearson Correlation | 1 | .744** | .546** | .737** |
| | Sig. (2-tailed) | | .000 | .000 | .000 |
| | N | 426 | 419 | 419 | 419 |
| SS_A_Total | Pearson Correlation | .744** | 1 | .835** | .878** |
| | Sig. (2-tailed) | .000 | | .000 | .000 |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Family | Pearson Correlation | .546** | .835** | 1 | .520** |
| | Sig. (2-tailed) | .000 | .000 | | .000 |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Friend | Pearson Correlation | .737** | .878** | .520** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | |
| | N | 419 | 419 | 419 | 419 |
| SS_A_Others | Pearson Correlation | .674** | .905** | .611** | .804** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 |
| | N | 419 | 419 | 419 | 419 |

**Correlations**

| | | SS_A_Others |
|---|---|---|
| Hyperactivation | Pearson Correlation | .206** |
| | Sig. (2-tailed) | .000 |
| | N | 400 |
| Psychological_wellbeing | Pearson Correlation | -.671** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| Physical_wellbeing | Pearson Correlation | -.538** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| Relationship_wellbeing | Pearson Correlation | -.662** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| 10.1. How many times have you tried drugs? | Pearson Correlation | .090 |

| | | |
|---|---|---|
| | Sig. (2-tailed) | .064 |
| | N | 419 |
| 10.2. Have you ever sniffed a substance of any kind? | Pearson Correlation | .037 |
| | Sig. (2-tailed) | .453 |
| | N | 419 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Pearson Correlation | -.083 |
| | Sig. (2-tailed) | .090 |
| | N | 419 |
| 10.4.Do you smoke? | Pearson Correlation | .004 |
| | Sig. (2-tailed) | .929 |
| | N | 419 |
| Loneliness | Pearson Correlation | .674** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| SS_A_Total | Pearson Correlation | .905** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| SS_A_Family | Pearson Correlation | .611** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| SS_A_Friend | Pearson Correlation | .804** |
| | Sig. (2-tailed) | .000 |
| | N | 419 |
| SS_A_Others | Pearson Correlation | 1 |
| | Sig. (2-tailed) | |
| | N | 419 |

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

# APPENDIX I

# ONE WAY ANOVA

**Descriptives**

| | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound | | |
| Hyperactivation | Secure | 130 | 45.9846 | 18.55266 | 1.62718 | 42.7652 | 49.2040 | 12.00 | 84.00 |
| | Anxious / Ambivelant | 127 | 50.1417 | 14.18009 | 1.25828 | 47.6516 | 52.6318 | 12.00 | 82.00 |
| | Dismissing-Avoidant | 50 | 51.2400 | 18.08208 | 2.55719 | 46.1011 | 56.3789 | 12.00 | 83.00 |
| | Aviodant | 93 | 42.3011 | 15.47002 | 1.60417 | 39.1151 | 45.4871 | 12.00 | 78.00 |
| | Total | 400 | 47.1050 | 16.76250 | .83813 | 45.4573 | 48.7527 | 12.00 | 84.00 |
| Psychological_well being | Secure | 142 | 43.7746 | 8.65115 | .72599 | 42.3394 | 45.2099 | 17.00 | 60.00 |
| | Anxious / Ambivelant | 134 | 34.5821 | 10.22182 | .88303 | 32.8355 | 36.3287 | 13.00 | 57.00 |
| | Dismissing-Avoidant | 53 | 36.3774 | 10.56887 | 1.45175 | 33.4642 | 39.2905 | 16.00 | 59.00 |
| | Aviodant | 96 | 36.0729 | 10.94796 | 1.11737 | 33.8547 | 38.2912 | 12.00 | 60.00 |
| | Total | 425 | 38.2141 | 10.68652 | .51837 | 37.1952 | 39.2330 | 12.00 | 60.00 |
| Physical_wellbeing | Secure | 142 | 24.9437 | 5.52207 | .46340 | 24.0275 | 25.8598 | 9.00 | 35.00 |
| | Anxious / Ambivelant | 134 | 20.5597 | 5.52848 | .47759 | 19.6151 | 21.5044 | 7.00 | 35.00 |
| | Dismissing-Avoidant | 53 | 21.3396 | 6.53965 | .89829 | 19.5371 | 23.1422 | 7.00 | 35.00 |
| | Aviodant | 96 | 20.3438 | 6.38061 | .65122 | 19.0509 | 21.6366 | 7.00 | 35.00 |
| | Total | 425 | 22.0729 | 6.19052 | .30028 | 21.4827 | 22.6632 | 7.00 | 35.00 |
| Relationship_wellbeing | Secure | 142 | 18.7817 | 3.90874 | .32801 | 18.1332 | 19.4302 | 5.00 | 25.00 |
| | Anxious / Ambivelant | 134 | 13.7015 | 4.91435 | .42454 | 12.8618 | 14.5412 | 5.00 | 25.00 |
| | Dismissing-Avoidant | 53 | 14.7358 | 5.07691 | .69737 | 13.3365 | 16.1352 | 5.00 | 25.00 |
| | Aviodant | 96 | 14.2917 | 4.83173 | .49314 | 13.3127 | 15.2707 | 5.00 | 25.00 |
| | Total | 425 | 15.6612 | 5.10438 | .24760 | 15.1745 | 16.1479 | 5.00 | 25.00 |
| 10.1. How many times have you tried drugs? | Secure | 142 | .68 | 1.120 | .094 | .50 | .87 | 0 | 4 |
| | Anxious / Ambivelant | 134 | .93 | 1.278 | .110 | .71 | 1.14 | 0 | 4 |
| | Dismissing-Avoidant | 53 | 1.21 | 1.485 | .204 | .80 | 1.62 | 0 | 4 |
| | Aviodant | 96 | .74 | 1.233 | .126 | .49 | .99 | 0 | 4 |
| | Total | 425 | .84 | 1.253 | .061 | .72 | .96 | 0 | 4 |
| 10.2. Have you ever sniffed a substance of any kind? | Secure | 142 | .34 | .651 | .055 | .23 | .45 | 0 | 2 |
| | Anxious / Ambivelant | 134 | .46 | .772 | .067 | .32 | .59 | 0 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Dismissing-Avoidant | 53 | .58 | .887 | .122 | .34 | .83 | 0 | 2 |
| | Aviodant | 96 | .43 | .764 | .078 | .27 | .58 | 0 | 2 |
| | Total | 425 | .43 | .749 | .036 | .35 | .50 | 0 | 2 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Secure | 142 | 2.37 | 1.217 | .102 | 2.16 | 2.57 | 0 | 4 |
| | Anxious / Ambivelant | 134 | 2.19 | 1.192 | .103 | 1.99 | 2.40 | 0 | 4 |
| | Dismissing-Avoidant | 53 | 2.02 | 1.248 | .171 | 1.67 | 2.36 | 0 | 4 |
| | Aviodant | 96 | 2.13 | 1.199 | .122 | 1.88 | 2.37 | 0 | 4 |
| | Total | 425 | 2.21 | 1.211 | .059 | 2.10 | 2.33 | 0 | 4 |
| 10.4.Do you smoke? | Secure | 142 | 1.30 | 1.197 | .100 | 1.10 | 1.50 | 0 | 3 |
| | Anxious / Ambivelant | 134 | 1.31 | 1.264 | .109 | 1.09 | 1.52 | 0 | 3 |
| | Dismissing-Avoidant | 53 | 1.19 | 1.241 | .170 | .85 | 1.53 | 0 | 3 |
| | Aviodant | 96 | .92 | 1.092 | .111 | .70 | 1.14 | 0 | 3 |
| | Total | 425 | 1.20 | 1.208 | .059 | 1.09 | 1.32 | 0 | 3 |
| Loneliness | Secure | 142 | 40.5000 | 9.82019 | .82409 | 38.8708 | 42.1292 | 22.00 | 57.00 |
| | Anxious / Ambivelant | 134 | 51.6567 | 10.94147 | .94520 | 49.7871 | 53.5263 | 25.00 | 77.00 |
| | Dismissing-Avoidant | 53 | 49.7925 | 10.29630 | 1.41431 | 46.9544 | 52.6305 | 28.00 | 72.00 |
| | Aviodant | 96 | 47.2188 | 11.74035 | 1.19824 | 44.8399 | 49.5976 | 26.00 | 71.00 |
| | Total | 425 | 46.6941 | 11.63621 | .56444 | 45.5847 | 47.8036 | 22.00 | 77.00 |
| SS_A_Total | Secure | 139 | 45.2518 | 9.14781 | .77591 | 43.7176 | 46.7860 | 26.00 | 74.00 |
| | Anxious / Ambivelant | 133 | 55.5414 | 12.10904 | 1.04999 | 53.4644 | 57.6183 | 27.00 | 87.00 |
| | Dismissing-Avoidant | 51 | 53.0784 | 11.32580 | 1.58593 | 49.8930 | 56.2639 | 24.00 | 82.00 |
| | Aviodant | 96 | 52.3750 | 12.52639 | 1.27847 | 49.8369 | 54.9131 | 26.00 | 86.00 |
| | Total | 419 | 51.1026 | 11.97651 | .58509 | 49.9525 | 52.2527 | 24.00 | 87.00 |
| SS_A_Family | Secure | 139 | 15.7842 | 4.21825 | .35779 | 15.0767 | 16.4916 | 8.00 | 30.00 |
| | Anxious / Ambivelant | 133 | 19.2331 | 5.24533 | .45483 | 18.3334 | 20.1328 | 8.00 | 32.00 |
| | Dismissing-Avoidant | 51 | 18.1176 | 5.44664 | .76268 | 16.5858 | 19.6495 | 8.00 | 32.00 |
| | Aviodant | 96 | 18.0313 | 5.41820 | .55299 | 16.9334 | 19.1291 | 8.00 | 32.00 |
| | Total | 419 | 17.6778 | 5.17666 | .25290 | 17.1807 | 18.1749 | 8.00 | 32.00 |
| SS_A_Friend | Secure | 139 | 13.1655 | 3.65465 | .30998 | 12.5525 | 13.7784 | 7.00 | 24.00 |
| | Anxious / Ambivelant | 133 | 16.8496 | 4.78713 | .41510 | 16.0285 | 17.6707 | 7.00 | 28.00 |
| | Dismissing-Avoidant | 51 | 16.2941 | 4.23931 | .59362 | 15.1018 | 17.4864 | 7.00 | 26.00 |
| | Aviodant | 96 | 15.7083 | 5.01139 | .51147 | 14.6929 | 16.7237 | 7.00 | 28.00 |
| | Total | 419 | 15.2983 | 4.68422 | .22884 | 14.8485 | 15.7481 | 7.00 | 28.00 |
| SS_A_Others | Secure | 139 | 16.3022 | 2.89090 | .24520 | 15.8173 | 16.7870 | 8.00 | 25.00 |
| | Anxious / Ambivelant | 133 | 19.4586 | 4.25959 | .36935 | 18.7280 | 20.1893 | 11.00 | 32.00 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Dismissing-Avoidant | 51 | 18.6667 | 3.66424 | .51310 | 17.6361 | 19.6973 | 8.00 | 27.00 |
| | Aviodant | 96 | 18.6354 | 3.87467 | .39546 | 17.8503 | 19.4205 | 11.00 | 29.00 |
| | Total | 419 | 18.1265 | 3.90812 | .19092 | 17.7512 | 18.5018 | 8.00 | 32.00 |
| Risky_behaviour | Secure | 133 | 39.1880 | 13.38653 | 1.16076 | 36.8919 | 41.4841 | 7.00 | 70.00 |
| | Anxious / Ambivelant | 131 | 40.9847 | 13.68940 | 1.19605 | 38.6185 | 43.3510 | 10.00 | 76.00 |
| | Dismissing-Avoidant | 50 | 44.1600 | 16.02595 | 2.26641 | 39.6055 | 48.7145 | 6.00 | 75.00 |
| | Aviodant | 94 | 41.3085 | 15.52454 | 1.60123 | 38.1288 | 44.4882 | 11.00 | 78.00 |
| | Total | 408 | 40.8627 | 14.36214 | .71103 | 39.4650 | 42.2605 | 6.00 | 78.00 |

**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Hyperactivation | Between Groups | 4335.482 | 3 | 1445.161 | 5.310 | .001 |
| | Within Groups | 107776.108 | 396 | 272.162 | | |
| | Total | 112111.590 | 399 | | | |
| Psychological_wellbeing | Between Groups | 6777.187 | 3 | 2259.062 | 22.838 | .000 |
| | Within Groups | 41644.328 | 421 | 98.918 | | |
| | Total | 48421.515 | 424 | | | |
| Physical_wellbeing | Between Groups | 1792.624 | 3 | 597.541 | 17.402 | .000 |
| | Within Groups | 14456.115 | 421 | 34.338 | | |
| | Total | 16248.739 | 424 | | | |
| Relationship_wellbeing | Between Groups | 2122.782 | 3 | 707.594 | 33.380 | .000 |
| | Within Groups | 8924.427 | 421 | 21.198 | | |
| | Total | 11047.209 | 424 | | | |
| 10.1. How many times have you tried drugs? | Between Groups | 12.598 | 3 | 4.199 | 2.707 | .045 |
| | Within Groups | 653.200 | 421 | 1.552 | | |
| | Total | 665.798 | 424 | | | |
| 10.2. Have you ever sniffed a substance of any kind? | Between Groups | 2.552 | 3 | .851 | 1.521 | .208 |
| | Within Groups | 235.363 | 421 | .559 | | |
| | Total | 237.915 | 424 | | | |
| 10.3. How often do you drink beer, cider, wine or spirits? | Between Groups | 6.121 | 3 | 2.040 | 1.396 | .243 |
| | Within Groups | 615.394 | 421 | 1.462 | | |
| | Total | 621.515 | 424 | | | |
| 10.4.Do you smoke? | Between Groups | 10.717 | 3 | 3.572 | 2.474 | .061 |
| | Within Groups | 607.881 | 421 | 1.444 | | |
| | Total | 618.598 | 424 | | | |
| Loneliness | Between Groups | 9283.403 | 3 | 3094.468 | 27.070 | .000 |
| | Within Groups | 48126.832 | 421 | 114.316 | | |
| | Total | 57410.235 | 424 | | | |
| SS_A_Total | Between Groups | 7733.191 | 3 | 2577.730 | 20.484 | .000 |
| | Within Groups | 52223.396 | 415 | 125.840 | | |
| | Total | 59956.587 | 418 | | | |
| SS_A_Family | Between Groups | 842.004 | 3 | 280.668 | 11.244 | .000 |
| | Within Groups | 10359.500 | 415 | 24.963 | | |
| | Total | 11201.504 | 418 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| SS_A_Friend | Between Groups | 1019.101 | 3 | 339.700 | 17.292 | .000 |
| | Within Groups | 8152.608 | 415 | 19.645 | | |
| | Total | 9171.709 | 418 | | | |
| SS_A_Others | Between Groups | 738.391 | 3 | 246.130 | 18.092 | .000 |
| | Within Groups | 5645.905 | 415 | 13.605 | | |
| | Total | 6384.296 | 418 | | | |
| Risky_behaviour | Between Groups | 937.270 | 3 | 312.423 | 1.520 | .209 |
| | Within Groups | 83015.043 | 404 | 205.483 | | |
| | Total | 83952.314 | 407 | | | |

## Post Hoc Tests

**Multiple Comparisons**

Tukey HSD

| Dependent Variable | (I) Attachment style | (J) Attachment style | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Hyperactivation | Secure | Anxious / Ambivelant | -4.15712 | 2.05829 | .182 | -9.4675 | 1.1532 |
| | | Dismissing-Avoidant | -5.25538 | 2.74532 | .224 | -12.3382 | 1.8275 |
| | | Aviodant | 3.68354 | 2.24054 | .355 | -2.0970 | 9.4641 |
| | Anxious / Ambivelant | Secure | 4.15712 | 2.05829 | .182 | -1.1532 | 9.4675 |
| | | Dismissing-Avoidant | -1.09827 | 2.75431 | .979 | -8.2043 | 6.0078 |
| | | Aviodant | 7.84066* | 2.25155 | .003 | 2.0317 | 13.6496 |
| | Dismissing-Avoidant | Secure | 5.25538 | 2.74532 | .224 | -1.8275 | 12.3382 |
| | | Anxious / Ambivelant | 1.09827 | 2.75431 | .979 | -6.0078 | 8.2043 |
| | | Aviodant | 8.93892* | 2.89305 | .011 | 1.4749 | 16.4029 |
| | Aviodant | Secure | -3.68354 | 2.24054 | .355 | -9.4641 | 2.0970 |
| | | Anxious / Ambivelant | -7.84066* | 2.25155 | .003 | -13.6496 | -2.0317 |
| | | Dismissing-Avoidant | -8.93892* | 2.89305 | .011 | -16.4029 | -1.4749 |
| Psychological_wellbeing | Secure | Anxious / Ambivelant | 9.19256* | 1.19783 | .000 | 6.1030 | 12.2821 |
| | | Dismissing-Avoidant | 7.39729* | 1.60093 | .000 | 3.2680 | 11.5266 |
| | | Aviodant | 7.70173* | 1.31415 | .000 | 4.3121 | 11.0914 |
| | Anxious / Ambivelant | Secure | -9.19256* | 1.19783 | .000 | -12.2821 | -6.1030 |
| | | Dismissing-Avoidant | -1.79527 | 1.61387 | .682 | -5.9579 | 2.3674 |
| | | Aviodant | -1.49083 | 1.32988 | .677 | -4.9210 | 1.9394 |
| | Dismissing-Avoidant | Secure | -7.39729* | 1.60093 | .000 | -11.5266 | -3.2680 |
| | | Anxious / Ambivelant | 1.79527 | 1.61387 | .682 | -2.3674 | 5.9579 |
| | | Aviodant | .30444 | 1.70199 | .998 | -4.0855 | 4.6944 |
| | Aviodant | Secure | -7.70173* | 1.31415 | .000 | -11.0914 | -4.3121 |
| | | Anxious / Ambivelant | 1.49083 | 1.32988 | .677 | -1.9394 | 4.9210 |
| | | Dismissing-Avoidant | -.30444 | 1.70199 | .998 | -4.6944 | 4.0855 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Physical_wellbeing | Secure | Anxious / Ambivelant | 4.38396* | .70574 | .000 | 2.5636 | 6.2043 |
| | | Dismissing-Avoidant | 3.60404* | .94324 | .001 | 1.1711 | 6.0369 |
| | | Aviodant | 4.59991* | .77427 | .000 | 2.6028 | 6.5970 |
| | Anxious / Ambivelant | Secure | -4.38396* | .70574 | .000 | -6.2043 | -2.5636 |
| | | Dismissing-Avoidant | -.77992 | .95086 | .845 | -3.2325 | 1.6726 |
| | | Aviodant | .21595 | .78354 | .993 | -1.8050 | 2.2370 |
| | Dismissing-Avoidant | Secure | -3.60404* | .94324 | .001 | -6.0369 | -1.1711 |
| | | Anxious / Ambivelant | .77992 | .95086 | .845 | -1.6726 | 3.2325 |
| | | Aviodant | .99587 | 1.00278 | .753 | -1.5906 | 3.5824 |
| | Aviodant | Secure | -4.59991* | .77427 | .000 | -6.5970 | -2.6028 |
| | | Anxious / Ambivelant | -.21595 | .78354 | .993 | -2.2370 | 1.8050 |
| | | Dismissing-Avoidant | -.99587 | 1.00278 | .753 | -3.5824 | 1.5906 |
| Relationship_wellbeing | Secure | Anxious / Ambivelant | 5.08020* | .55451 | .000 | 3.6499 | 6.5104 |
| | | Dismissing-Avoidant | 4.04584* | .74111 | .000 | 2.1343 | 5.9574 |
| | | Aviodant | 4.49002* | .60836 | .000 | 2.9209 | 6.0592 |
| | Anxious / Ambivelant | Secure | -5.08020* | .55451 | .000 | -6.5104 | -3.6499 |
| | | Dismissing-Avoidant | -1.03436 | .74710 | .510 | -2.9614 | .8927 |
| | | Aviodant | -.59017 | .61564 | .773 | -2.1781 | .9978 |
| | Dismissing-Avoidant | Secure | -4.04584* | .74111 | .000 | -5.9574 | -2.1343 |
| | | Anxious / Ambivelant | 1.03436 | .74710 | .510 | -.8927 | 2.9614 |
| | | Aviodant | .44418 | .78790 | .943 | -1.5881 | 2.4764 |
| | Aviodant | Secure | -4.49002* | .60836 | .000 | -6.0592 | -2.9209 |
| | | Anxious / Ambivelant | .59017 | .61564 | .773 | -.9978 | 2.1781 |
| | | Dismissing-Avoidant | -.44418 | .78790 | .943 | -2.4764 | 1.5881 |
| 10.1. How many times have you tried drugs? | Secure | Anxious / Ambivelant | -.242 | .150 | .371 | -.63 | .14 |
| | | Dismissing-Avoidant | -.524* | .201 | .045 | -1.04 | -.01 |
| | | Aviodant | -.056 | .165 | .986 | -.48 | .37 |
| | Anxious / Ambivelant | Secure | .242 | .150 | .371 | -.14 | .63 |
| | | Dismissing-Avoidant | -.282 | .202 | .502 | -.80 | .24 |
| | | Aviodant | .186 | .167 | .680 | -.24 | .62 |
| | Dismissing-Avoidant | Secure | .524* | .201 | .045 | .01 | 1.04 |
| | | Anxious / Ambivelant | .282 | .202 | .502 | -.24 | .80 |
| | | Aviodant | .468 | .213 | .126 | -.08 | 1.02 |
| | Aviodant | Secure | .056 | .165 | .986 | -.37 | .48 |
| | | Anxious / Ambivelant | -.186 | .167 | .680 | -.62 | .24 |
| | | Dismissing-Avoidant | -.468 | .213 | .126 | -1.02 | .08 |
| 10.2. Have you ever sniffed a substance of any kind? | Secure | Anxious / Ambivelant | -.117 | .090 | .563 | -.35 | .12 |
| | | Dismissing-Avoidant | -.247 | .120 | .171 | -.56 | .06 |
| | | Aviodant | -.089 | .099 | .804 | -.34 | .17 |
| | Anxious / Ambivelant | Secure | .117 | .090 | .563 | -.12 | .35 |
| | | Dismissing-Avoidant | -.130 | .121 | .709 | -.44 | .18 |
| | | Aviodant | .028 | .100 | .992 | -.23 | .29 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Dismissing-Avoidant | Secure | .247 | .120 | .171 | -.06 | .56 |
| | | Anxious / Ambivelant | .130 | .121 | .709 | -.18 | .44 |
| | | Aviodant | .158 | .128 | .606 | -.17 | .49 |
| | Aviodant | Secure | .089 | .099 | .804 | -.17 | .34 |
| | | Anxious / Ambivelant | -.028 | .100 | .992 | -.29 | .23 |
| | | Dismissing-Avoidant | -.158 | .128 | .606 | -.49 | .17 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Secure | Anxious / Ambivelant | .172 | .146 | .638 | -.20 | .55 |
| | | Dismissing-Avoidant | .347 | .195 | .282 | -.15 | .85 |
| | | Aviodant | .241 | .160 | .432 | -.17 | .65 |
| | Anxious / Ambivelant | Secure | -.172 | .146 | .638 | -.55 | .20 |
| | | Dismissing-Avoidant | .175 | .196 | .809 | -.33 | .68 |
| | | Aviodant | .069 | .162 | .974 | -.35 | .49 |
| | Dismissing-Avoidant | Secure | -.347 | .195 | .282 | -.85 | .15 |
| | | Anxious / Ambivelant | -.175 | .196 | .809 | -.68 | .33 |
| | | Aviodant | -.106 | .207 | .956 | -.64 | .43 |
| | Aviodant | Secure | -.241 | .160 | .432 | -.65 | .17 |
| | | Anxious / Ambivelant | -.069 | .162 | .974 | -.49 | .35 |
| | | Dismissing-Avoidant | .106 | .207 | .956 | -.43 | .64 |
| 10.4.Do you smoke? | Secure | Anxious / Ambivelant | -.003 | .145 | 1.000 | -.38 | .37 |
| | | Dismissing-Avoidant | .114 | .193 | .935 | -.38 | .61 |
| | | Aviodant | .386 | .159 | .073 | -.02 | .80 |
| | Anxious / Ambivelant | Secure | .003 | .145 | 1.000 | -.37 | .38 |
| | | Dismissing-Avoidant | .117 | .195 | .932 | -.39 | .62 |
| | | Aviodant | .389 | .161 | .074 | -.03 | .80 |
| | Dismissing-Avoidant | Secure | -.114 | .193 | .935 | -.61 | .38 |
| | | Anxious / Ambivelant | -.117 | .195 | .932 | -.62 | .39 |
| | | Aviodant | .272 | .206 | .549 | -.26 | .80 |
| | Aviodant | Secure | -.386 | .159 | .073 | -.80 | .02 |
| | | Anxious / Ambivelant | -.389 | .161 | .074 | -.80 | .03 |
| | | Dismissing-Avoidant | -.272 | .206 | .549 | -.80 | .26 |
| Loneliness | Secure | Anxious / Ambivelant | -11.15672* | 1.28769 | .000 | -14.4781 | -7.8354 |
| | | Dismissing-Avoidant | -9.29245* | 1.72103 | .000 | -13.7315 | -4.8534 |
| | | Aviodant | -6.71875* | 1.41274 | .000 | -10.3627 | -3.0748 |
| | Anxious / Ambivelant | Secure | 11.15672* | 1.28769 | .000 | 7.8354 | 14.4781 |
| | | Dismissing-Avoidant | 1.86426 | 1.73493 | .705 | -2.6107 | 6.3392 |
| | | Aviodant | 4.43797* | 1.42965 | .011 | .7505 | 8.1255 |
| | Dismissing-Avoidant | Secure | 9.29245* | 1.72103 | .000 | 4.8534 | 13.7315 |
| | | Anxious / Ambivelant | -1.86426 | 1.73493 | .705 | -6.3392 | 2.6107 |
| | | Aviodant | 2.57370 | 1.82967 | .496 | -2.1456 | 7.2930 |
| | Aviodant | Secure | 6.71875* | 1.41274 | .000 | 3.0748 | 10.3627 |
| | | Anxious / Ambivelant | -4.43797* | 1.42965 | .011 | -8.1255 | -.7505 |
| | | Dismissing-Avoidant | -2.57370 | 1.82967 | .496 | -7.2930 | 2.1456 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SS_A_Total | Secure | Anxious / Ambivelant | -10.28955* | 1.36069 | .000 | -13.7994 | -6.7797 |
| | | Dismissing-Avoidant | -7.82663* | 1.83651 | .000 | -12.5639 | -3.0894 |
| | | Aviodant | -7.12320* | 1.48867 | .000 | -10.9632 | -3.2832 |
| | Anxious / Ambivelant | Secure | 10.28955* | 1.36069 | .000 | 6.7797 | 13.7994 |
| | | Dismissing-Avoidant | 2.46292 | 1.84759 | .542 | -2.3029 | 7.2287 |
| | | Aviodant | 3.16635 | 1.50233 | .152 | -.7089 | 7.0416 |
| | Dismissing-Avoidant | Secure | 7.82663* | 1.83651 | .000 | 3.0894 | 12.5639 |
| | | Anxious / Ambivelant | -2.46292 | 1.84759 | .542 | -7.2287 | 2.3029 |
| | | Aviodant | .70343 | 1.94378 | .984 | -4.3105 | 5.7173 |
| | Aviodant | Secure | 7.12320* | 1.48867 | .000 | 3.2832 | 10.9632 |
| | | Anxious / Ambivelant | -3.16635 | 1.50233 | .152 | -7.0416 | .7089 |
| | | Dismissing-Avoidant | -.70343 | 1.94378 | .984 | -5.7173 | 4.3105 |
| SS_A_Family | Secure | Anxious / Ambivelant | -3.44891* | .60603 | .000 | -5.0122 | -1.8857 |
| | | Dismissing-Avoidant | -2.33347* | .81796 | .023 | -4.4434 | -.2236 |
| | | Aviodant | -2.24708* | .66303 | .004 | -3.9574 | -.5368 |
| | Anxious / Ambivelant | Secure | 3.44891* | .60603 | .000 | 1.8857 | 5.0122 |
| | | Dismissing-Avoidant | 1.11544 | .82289 | .528 | -1.0072 | 3.2381 |
| | | Aviodant | 1.20183 | .66912 | .277 | -.5241 | 2.9278 |
| | Dismissing-Avoidant | Secure | 2.33347* | .81796 | .023 | .2236 | 4.4434 |
| | | Anxious / Ambivelant | -1.11544 | .82289 | .528 | -3.2381 | 1.0072 |
| | | Aviodant | .08640 | .86573 | 1.000 | -2.1467 | 2.3195 |
| | Aviodant | Secure | 2.24708* | .66303 | .004 | .5368 | 3.9574 |
| | | Anxious / Ambivelant | -1.20183 | .66912 | .277 | -2.9278 | .5241 |
| | | Dismissing-Avoidant | -.08640 | .86573 | 1.000 | -2.3195 | 2.1467 |
| SS_A_Friend | Secure | Anxious / Ambivelant | -3.68416* | .53762 | .000 | -5.0709 | -2.2974 |
| | | Dismissing-Avoidant | -3.12865* | .72562 | .000 | -5.0004 | -1.2569 |
| | | Aviodant | -2.54287* | .58819 | .000 | -4.0601 | -1.0257 |
| | Anxious / Ambivelant | Secure | 3.68416* | .53762 | .000 | 2.2974 | 5.0709 |
| | | Dismissing-Avoidant | .55551 | .73000 | .872 | -1.3275 | 2.4385 |
| | | Aviodant | 1.14129 | .59358 | .220 | -.3898 | 2.6724 |
| | Dismissing-Avoidant | Secure | 3.12865* | .72562 | .000 | 1.2569 | 5.0004 |
| | | Anxious / Ambivelant | -.55551 | .73000 | .872 | -2.4385 | 1.3275 |
| | | Aviodant | .58578 | .76800 | .871 | -1.3953 | 2.5668 |
| | Aviodant | Secure | 2.54287* | .58819 | .000 | 1.0257 | 4.0601 |
| | | Anxious / Ambivelant | -1.14129 | .59358 | .220 | -2.6724 | .3898 |
| | | Dismissing-Avoidant | -.58578 | .76800 | .871 | -2.5668 | 1.3953 |
| SS_A_Others | Secure | Anxious / Ambivelant | -3.15649* | .44740 | .000 | -4.3105 | -2.0024 |
| | | Dismissing-Avoidant | -2.36451* | .60385 | .001 | -3.9221 | -.8069 |
| | | Aviodant | -2.33326* | .48948 | .000 | -3.5959 | -1.0707 |
| | Anxious / Ambivelant | Secure | 3.15649* | .44740 | .000 | 2.0024 | 4.3105 |
| | | Dismissing-Avoidant | .79198 | .60749 | .561 | -.7750 | 2.3590 |
| | | Aviodant | .82323 | .49397 | .343 | -.4509 | 2.0974 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Dismissing-Avoidant | Secure | 2.36451* | .60385 | .001 | .8069 | 3.9221 |
| | | Anxious / Ambivelant | -.79198 | .60749 | .561 | -2.3590 | .7750 |
| | | Aviodant | .03125 | .63912 | 1.000 | -1.6173 | 1.6798 |
| | Aviodant | Secure | 2.33326* | .48948 | .000 | 1.0707 | 3.5959 |
| | | Anxious / Ambivelant | -.82323 | .49397 | .343 | -2.0974 | .4509 |
| | | Dismissing-Avoidant | -.03125 | .63912 | 1.000 | -1.6798 | 1.6173 |
| Risky_behaviour | Secure | Anxious / Ambivelant | -1.79676 | 1.76453 | .739 | -6.3488 | 2.7553 |
| | | Dismissing-Avoidant | -4.97203 | 2.37795 | .158 | -11.1066 | 1.1625 |
| | | Aviodant | -2.12054 | 1.93157 | .691 | -7.1035 | 2.8624 |
| | Anxious / Ambivelant | Secure | 1.79676 | 1.76453 | .739 | -2.7553 | 6.3488 |
| | | Dismissing-Avoidant | -3.17527 | 2.38290 | .543 | -9.3226 | 2.9720 |
| | | Aviodant | -.32378 | 1.93767 | .998 | -5.3225 | 4.6749 |
| | Dismissing-Avoidant | Secure | 4.97203 | 2.37795 | .158 | -1.1625 | 11.1066 |
| | | Anxious / Ambivelant | 3.17527 | 2.38290 | .543 | -2.9720 | 9.3226 |
| | | Aviodant | 2.85149 | 2.50911 | .667 | -3.6214 | 9.3244 |
| | Aviodant | Secure | 2.12054 | 1.93157 | .691 | -2.8624 | 7.1035 |
| | | Anxious / Ambivelant | .32378 | 1.93767 | .998 | -4.6749 | 5.3225 |
| | | Dismissing-Avoidant | -2.85149 | 2.50911 | .667 | -9.3244 | 3.6214 |

*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

**Hyperactivation**

Tukey HSD[a,b]

| | | Subset for alpha = 0.05 | |
|---|---|---|---|
| Attachment style | N | 1 | 2 |
| Aviodant | 93 | 42.3011 | |
| Secure | 130 | 45.9846 | 45.9846 |
| Anxious / Ambivelant | 127 | | 50.1417 |
| Dismissing-Avoidant | 50 | | 51.2400 |
| Sig. | | .458 | .157 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 86.358.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Psychological_wellbeing**

Tukey HSD[a,b]

| | | Subset for alpha = 0.05 | |
|---|---|---|---|
| Attachment style | N | 1 | 2 |
| Anxious / Ambivelant | 134 | 34.5821 | |
| Aviodant | 96 | 36.0729 | |
| Dismissing-Avoidant | 53 | 36.3774 | |

| | | | |
|---|---|---|---|
| Secure | 142 | | 43.7746 |
| Sig. | | .615 | 1.000 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Physical_wellbeing**

Tukey HSD[a,b]

| | | Subset for alpha = 0.05 | |
|---|---|---|---|
| Attachment style | N | 1 | 2 |
| Aviodant | 96 | 20.3438 | |
| Anxious / Ambivelant | 134 | 20.5597 | |
| Dismissing-Avoidant | 53 | 21.3396 | |
| Secure | 142 | | 24.9437 |
| Sig. | | .660 | 1.000 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Relationship_wellbeing**

Tukey HSD[a,b]

| | | Subset for alpha = 0.05 | |
|---|---|---|---|
| Attachment style | N | 1 | 2 |
| Anxious / Ambivelant | 134 | 13.7015 | |
| Aviodant | 96 | 14.2917 | |
| Dismissing-Avoidant | 53 | 14.7358 | |
| Secure | 142 | | 18.7817 |
| Sig. | | .427 | 1.000 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**10.1. How many times have you tried drugs?**

Tukey HSD[a,b]

| | | Subset for alpha = 0.05 | |
|---|---|---|---|
| Attachment style | N | 1 | 2 |
| Secure | 142 | .68 | |
| Aviodant | 96 | .74 | .74 |
| Anxious / Ambivelant | 134 | .93 | .93 |
| Dismissing-Avoidant | 53 | | 1.21 |
| Sig. | | .554 | .056 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**10.2. Have you ever sniffed a substance of any kind?**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 |
|---|---|---|
| | | 1 |
| Secure | 142 | .34 |
| Aviodant | 96 | .43 |
| Anxious / Ambivelant | 134 | .46 |
| Dismissing-Avoidant | 53 | .58 |
| Sig. | | .116 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**10.3. How often do you drink beer, cider, wine or spirits?**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 |
|---|---|---|
| | | 1 |
| Dismissing-Avoidant | 53 | 2.02 |
| Aviodant | 96 | 2.13 |
| Anxious / Ambivelant | 134 | 2.19 |
| Secure | 142 | 2.37 |
| Sig. | | .212 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**10.4.Do you smoke?**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 |
|---|---|---|
| | | 1 |
| Aviodant | 96 | .92 |
| Dismissing-Avoidant | 53 | 1.19 |
| Secure | 142 | 1.30 |
| Anxious / Ambivelant | 134 | 1.31 |
| Sig. | | .128 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Loneliness**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 | | |
|---|---|---|---|---|
| | | 1 | 2 | 3 |
| Secure | 142 | 40.5000 | | |
| Aviodant | 96 | | 47.2188 | |
| Dismissing-Avoidant | 53 | | 49.7925 | 49.7925 |
| Anxious / Ambivelant | 134 | | | 51.6567 |
| Sig. | | 1.000 | .365 | .641 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 91.346.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**SS_A_Total**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Secure | 139 | 45.2518 | |
| Aviodant | 96 | | 52.3750 |
| Dismissing-Avoidant | 51 | | 53.0784 |
| Anxious / Ambivelant | 133 | | 55.5414 |
| Sig. | | 1.000 | .235 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 89.410.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**SS_A_Family**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Secure | 139 | 15.7842 | |
| Aviodant | 96 | | 18.0313 |
| Dismissing-Avoidant | 51 | | 18.1176 |
| Anxious / Ambivelant | 133 | | 19.2331 |
| Sig. | | 1.000 | .375 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 89.410.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**SS_A_Friend**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Secure | 139 | 13.1655 | |
| Aviodant | 96 | | 15.7083 |
| Dismissing-Avoidant | 51 | | 16.2941 |
| Anxious / Ambivelant | 133 | | 16.8496 |
| Sig. | | 1.000 | .314 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 89.410.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**SS_A_Others**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Secure | 139 | 16.3022 | |
| Aviodant | 96 | | 18.6354 |
| Dismissing-Avoidant | 51 | | 18.6667 |
| Anxious / Ambivelant | 133 | | 19.4586 |
| Sig. | | 1.000 | .443 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 89.410.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Risky_behaviour**

Tukey HSD[a,b]

| Attachment style | N | Subset for alpha = 0.05 |
|---|---|---|
| | | 1 |
| Secure | 133 | 39.1880 |
| Anxious / Ambivelant | 131 | 40.9847 |
| Aviodant | 94 | 41.3085 |
| Dismissing-Avoidant | 50 | 44.1600 |
| Sig. | | .101 |

Means for groups in homogeneous subsets are displayed.
a. Uses Harmonic Mean Sample Size = 87.354.
b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

# APPENDIX J

# MANOVA

## General Linear Model

**Between-Subjects Factors**

| | | Value Label | N |
|---|---|---|---|
| 5. How do you currently identify? | 2 | Gay | 164 |
| | 6 | Straight or Hetrosexual | 199 |

**Tests of Between-Subjects Effects**

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Corrected Model | Hyperactivation | 41.425[a] | 1 | 41.425 | .149 | .700 |
| | Psychological_wellbeing | 51.194[b] | 1 | 51.194 | .435 | .510 |
| | Physical_wellbeing | 34.171[c] | 1 | 34.171 | .877 | .350 |
| | Relationship_wellbeing | 33.923[d] | 1 | 33.923 | 1.260 | .262 |
| | Attachment style | .229[e] | 1 | .229 | .173 | .678 |
| | 10.1. How many times have you tried drugs? | 3.713[f] | 1 | 3.713 | 2.415 | .121 |
| | 10.2. Have you ever sniffed a substance of any kind? | 13.679[g] | 1 | 13.679 | 25.014 | .000 |
| | 10.3. How often do you drink beer, cider, wine or spirits? | 1.614[h] | 1 | 1.614 | 1.108 | .293 |
| | 10.4.Do you smoke? | 5.731[i] | 1 | 5.731 | 3.982 | .047 |
| | Loneliness | 126.708[j] | 1 | 126.708 | .922 | .338 |
| | SS_A_Total | 163.545[k] | 1 | 163.545 | 1.143 | .286 |
| | SS_A_Family | 91.762[l] | 1 | 91.762 | 3.510 | .062 |
| | SS_A_Friend | 12.030[m] | 1 | 12.030 | .533 | .466 |
| | SS_A_Others | .067[n] | 1 | .067 | .004 | .947 |
| | Risky_behaviour | 122.937[o] | 1 | 122.937 | .574 | .449 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Intercept | Hyperactivation | 781139.970 | 1 | 781139.970 | 2803.448 | .000 |
| | Psychological_wellbeing | 520112.076 | 1 | 520112.076 | 4415.273 | .000 |
| | Physical_wellbeing | 175465.620 | 1 | 175465.620 | 4502.081 | .000 |
| | Relationship_wellbeing | 86085.493 | 1 | 86085.493 | 3196.279 | .000 |
| | Attachment style | 1871.634 | 1 | 1871.634 | 1414.860 | .000 |
| | 10.1. How many times have you tried drugs? | 244.903 | 1 | 244.903 | 159.320 | .000 |
| | 10.2. Have you ever sniffed a substance of any kind? | 73.249 | 1 | 73.249 | 133.944 | .000 |
| | 10.3. How often do you drink beer, cider, wine or spirits? | 1771.476 | 1 | 1771.476 | 1216.103 | .000 |
| | 10.4.Do you smoke? | 489.302 | 1 | 489.302 | 339.930 | .000 |
| | Loneliness | 784273.265 | 1 | 784273.265 | 5707.573 | .000 |
| | SS_A_Total | 937266.300 | 1 | 937266.300 | 6548.426 | .000 |
| | SS_A_Family | 112617.216 | 1 | 112617.216 | 4307.976 | .000 |
| | SS_A_Friend | 83836.471 | 1 | 83836.471 | 3717.070 | .000 |
| | SS_A_Others | 117645.555 | 1 | 117645.555 | 7670.072 | .000 |
| | Risky_behaviour | 604730.364 | 1 | 604730.364 | 2824.301 | .000 |
| Q5 | Hyperactivation | 41.425 | 1 | 41.425 | .149 | .700 |
| | Psychological_wellbeing | 51.194 | 1 | 51.194 | .435 | .510 |
| | Physical_wellbeing | 34.171 | 1 | 34.171 | .877 | .350 |
| | Relationship_wellbeing | 33.923 | 1 | 33.923 | 1.260 | .262 |
| | Attachment style | .229 | 1 | .229 | .173 | .678 |
| | 10.1. How many times have you tried drugs? | 3.713 | 1 | 3.713 | 2.415 | .121 |
| | 10.2. Have you ever sniffed a substance of any kind? | 13.679 | 1 | 13.679 | 25.014 | .000 |
| | 10.3. How often do you drink beer, cider, wine or spirits? | 1.614 | 1 | 1.614 | 1.108 | .293 |
| | 10.4.Do you smoke? | 5.731 | 1 | 5.731 | 3.982 | .047 |
| | Loneliness | 126.708 | 1 | 126.708 | .922 | .338 |
| | SS_A_Total | 163.545 | 1 | 163.545 | 1.143 | .286 |
| | SS_A_Family | 91.762 | 1 | 91.762 | 3.510 | .062 |
| | SS_A_Friend | 12.030 | 1 | 12.030 | .533 | .466 |
| | SS_A_Others | .067 | 1 | .067 | .004 | .947 |
| | Risky_behaviour | 122.937 | 1 | 122.937 | .574 | .449 |
| Error | Hyperactivation | 100587.391 | 361 | 278.635 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Psychological_wellbeing | 42525.219 | 361 | 117.798 | | |
| | Physical_wellbeing | 14069.736 | 361 | 38.974 | | |
| | Relationship_wellbeing | 9722.826 | 361 | 26.933 | | |
| | Attachment style | 477.545 | 361 | 1.323 | | |
| | 10.1. How many times have you tried drugs? | 554.921 | 361 | 1.537 | | |
| | 10.2. Have you ever sniffed a substance of any kind? | 197.417 | 361 | .547 | | |
| | 10.3. How often do you drink beer, cider, wine or spirits? | 525.862 | 361 | 1.457 | | |
| | 10.4.Do you smoke? | 519.630 | 361 | 1.439 | | |
| | Loneliness | 49604.735 | 361 | 137.409 | | |
| | SS_A_Total | 51669.386 | 361 | 143.128 | | |
| | SS_A_Family | 9437.103 | 361 | 26.142 | | |
| | SS_A_Friend | 8142.157 | 361 | 22.554 | | |
| | SS_A_Others | 5537.112 | 361 | 15.338 | | |
| | Risky_behaviour | 77296.171 | 361 | 214.117 | | |
| Total | Hyperactivation | 887992.000 | 363 | | | |
| | Psychological_wellbeing | 568574.000 | 363 | | | |
| | Physical_wellbeing | 191693.000 | 363 | | | |
| | Relationship_wellbeing | 96983.000 | 363 | | | |
| | Attachment style | 2371.000 | 363 | | | |
| | 10.1. How many times have you tried drugs? | 800.000 | 363 | | | |
| | 10.2. Have you ever sniffed a substance of any kind? | 279.000 | 363 | | | |
| | 10.3. How often do you drink beer, cider, wine or spirits? | 2326.000 | 363 | | | |
| | 10.4.Do you smoke? | 1009.000 | 363 | | | |
| | Loneliness | 839425.000 | 363 | | | |
| | SS_A_Total | 995486.000 | 363 | | | |
| | SS_A_Family | 122578.000 | 363 | | | |
| | SS_A_Friend | 92582.000 | 363 | | | |
| | SS_A_Others | 124304.000 | 363 | | | |
| | Risky_behaviour | 686147.000 | 363 | | | |
| Corrected Total | Hyperactivation | 100628.815 | 362 | | | |
| | Psychological_wellbeing | 42576.413 | 362 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Physical_wellbeing | 14103.906 | 362 | | | |
| Relationship_wellbeing | 9756.749 | 362 | | | |
| Attachment style | 477.774 | 362 | | | |
| 10.1. How many times have you tried drugs? | 558.634 | 362 | | | |
| 10.2. Have you ever sniffed a substance of any kind? | 211.096 | 362 | | | |
| 10.3. How often do you drink beer, cider, wine or spirits? | 527.477 | 362 | | | |
| 10.4.Do you smoke? | 525.361 | 362 | | | |
| Loneliness | 49731.444 | 362 | | | |
| SS_A_Total | 51832.931 | 362 | | | |
| SS_A_Family | 9528.865 | 362 | | | |
| SS_A_Friend | 8154.187 | 362 | | | |
| SS_A_Others | 5537.179 | 362 | | | |
| Risky_behaviour | 77419.107 | 362 | | | |

## Estimated Marginal Means

**1. Grand Mean**

| Dependent Variable | Mean | Std. Error | 95% Confidence Interval | |
|---|---|---|---|---|
| | | | Lower Bound | Upper Bound |
| Hyperactivation | 46.606 | .880 | 44.875 | 48.337 |
| Psychological_wellbeing | 38.030 | .572 | 36.904 | 39.155 |
| Physical_wellbeing | 22.089 | .329 | 21.441 | 22.736 |
| Relationship_wellbeing | 15.472 | .274 | 14.934 | 16.010 |
| Attachment style | 2.281 | .061 | 2.162 | 2.401 |
| 10.1. How many times have you tried drugs? | .825 | .065 | .697 | .954 |
| 10.2. Have you ever sniffed a substance of any kind? | .451 | .039 | .375 | .528 |
| 10.3. How often do you drink beer, cider, wine or spirits? | 2.219 | .064 | 2.094 | 2.345 |

| | | | | |
|---|---|---|---|---|
| 10.4.Do you smoke? | 1.166 | .063 | 1.042 | 1.291 |
| Loneliness | 46.699 | .618 | 45.484 | 47.915 |
| SS_A_Total | 51.051 | .631 | 49.811 | 52.292 |
| SS_A_Family | 17.696 | .270 | 17.166 | 18.226 |
| SS_A_Friend | 15.268 | .250 | 14.776 | 15.761 |
| SS_A_Others | 18.087 | .207 | 17.681 | 18.493 |
| Risky_behaviour | 41.007 | .772 | 39.489 | 42.524 |

**2. 5. How do you currently identify?**

| Dependent Variable | 5. How do you currently identify? | Mean | Std. Error | 95% Confidence Interval Lower Bound |
|---|---|---|---|---|
| Hyperactivation | Gay | 46.945 | 1.303 | 44.382 |
| | Straight or Hetrosexual | 46.266 | 1.183 | 43.939 |
| Psychological_wellbeing | Gay | 37.652 | .848 | 35.986 |
| | Straight or Hetrosexual | 38.407 | .769 | 36.894 |
| Physical_wellbeing | Gay | 21.780 | .487 | 20.822 |
| | Straight or Hetrosexual | 22.397 | .443 | 21.527 |
| Relationship_wellbeing | Gay | 15.165 | .405 | 14.368 |
| | Straight or Hetrosexual | 15.779 | .368 | 15.055 |
| Attachment style | Gay | 2.256 | .090 | 2.079 |
| | Straight or Hetrosexual | 2.307 | .082 | 2.146 |
| 10.1. How many times have you tried drugs? | Gay | .927 | .097 | .736 |
| | Straight or Hetrosexual | .724 | .088 | .551 |
| 10.2. Have you ever sniffed a substance of any kind? | Gay | .646 | .058 | .533 |
| | Straight or Hetrosexual | .256 | .052 | .153 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Gay | 2.152 | .094 | 1.967 |
| | Straight or Hetrosexual | 2.286 | .086 | 2.118 |
| 10.4.Do you smoke? | Gay | 1.293 | .094 | 1.108 |
| | Straight or Hetrosexual | 1.040 | .085 | .873 |
| Loneliness | Gay | 47.293 | .915 | 45.493 |
| | Straight or Hetrosexual | 46.106 | .831 | 44.471 |
| SS_A_Total | Gay | 51.726 | .934 | 49.888 |
| | Straight or Hetrosexual | 50.377 | .848 | 48.709 |
| SS_A_Family | Gay | 18.201 | .399 | 17.416 |
| | Straight or Hetrosexual | 17.191 | .362 | 16.478 |
| SS_A_Friend | Gay | 15.451 | .371 | 14.722 |
| | Straight or Hetrosexual | 15.085 | .337 | 14.423 |

| | | | | |
|---|---|---|---|---|
| SS_A_Others | Gay | 18.073 | .306 | 17.472 |
| | Straight or Hetrosexual | 18.101 | .278 | 17.555 |
| Risky_behaviour | Gay | 41.591 | 1.143 | 39.344 |
| | Straight or Hetrosexual | 40.422 | 1.037 | 38.382 |

**2. 5. How do you currently identify?**

| | | 95% Confidence Interval |
|---|---|---|
| Dependent Variable | 5. How do you currently identify? | Upper Bound |
| Hyperactivation | Gay | 49.508 |
| | Straight or Hetrosexual | 48.593 |
| Psychological_wellbeing | Gay | 39.319 |
| | Straight or Hetrosexual | 39.920 |
| Physical_wellbeing | Gay | 22.739 |
| | Straight or Hetrosexual | 23.267 |
| Relationship_wellbeing | Gay | 15.962 |
| | Straight or Hetrosexual | 16.502 |
| Attachment style | Gay | 2.433 |
| | Straight or Hetrosexual | 2.467 |
| 10.1. How many times have you tried drugs? | Gay | 1.117 |
| | Straight or Hetrosexual | .896 |
| 10.2. Have you ever sniffed a substance of any kind? | Gay | .760 |
| | Straight or Hetrosexual | .359 |
| 10.3. How often do you drink beer, cider, wine or spirits? | Gay | 2.338 |
| | Straight or Hetrosexual | 2.455 |
| 10.4.Do you smoke? | Gay | 1.477 |
| | Straight or Hetrosexual | 1.207 |
| Loneliness | Gay | 49.093 |
| | Straight or Hetrosexual | 47.740 |
| SS_A_Total | Gay | 53.563 |
| | Straight or Hetrosexual | 52.045 |
| SS_A_Family | Gay | 18.986 |
| | Straight or Hetrosexual | 17.904 |
| SS_A_Friend | Gay | 16.181 |
| | Straight or Hetrosexual | 15.747 |
| SS_A_Others | Gay | 18.675 |
| | Straight or Hetrosexual | 18.646 |
| Risky_behaviour | Gay | 43.838 |
| | Straight or Hetrosexual | 42.462 |

# APPENDIX K

## Chi square

**Attachment style * 5. How do you currently identify? Crosstabulation**

| | | | 5. How do you currently identify? | |
|---|---|---|---|---|
| | | | Gay | Straight or Hetrosexual |
| Attachment style | Secure | Count | 59 | 69 |
| | | Expected Count | 58.2 | 69.8 |
| | Anxious / Ambivelant | Count | 55 | 65 |
| | | Expected Count | 54.6 | 65.4 |
| | Dismissing-Avoidant | Count | 25 | 25 |
| | | Expected Count | 22.7 | 27.3 |
| | Aviodant | Count | 37 | 52 |
| | | Expected Count | 40.5 | 48.5 |
| Total | | Count | 176 | 211 |
| | | Expected Count | 176.0 | 211.0 |

**Attachment style * 5. How do you currently identify? Crosstabulation**

| | | | Total |
|---|---|---|---|
| Attachment style | Secure | Count | 128 |
| | | Expected Count | 128.0 |
| | Anxious / Ambivelant | Count | 120 |
| | | Expected Count | 120.0 |
| | Dismissing-Avoidant | Count | 50 |
| | | Expected Count | 50.0 |
| | Aviodant | Count | 89 |
| | | Expected Count | 89.0 |
| Total | | Count | 387 |
| | | Expected Count | 387.0 |

# APPENDIX L

## Regression - Gay

## Regression

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .285[a] | .081 | .010 | 16.41702 |

a. Predictors: (Constant), PhysicalWellbeing_gay, 10.4.Do you smoke?, 10.2. Have you ever sniffed a substance of any kind?, 10.3. How often do you drink beer, cider, wine or spirits?, Attchment Patterns, SSA_family_gay, SSA_friends_gay, 10.1. How many times have you tried drugs?, RelationshipWellbeing_gay, Loneliness_gay, SSA_others_gay, PsychologicalWellbeing_gay

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3667.984 | 12 | 305.665 | 1.134 | .337[b] |
| | Residual | 41505.872 | 154 | 269.519 | | |
| | Total | 45173.856 | 166 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 20.107 | 17.481 | | 1.150 | |
| | RelationshipWellbeing_gay | .392 | .540 | .129 | .726 | |
| | Attchment Patterns | 1.975 | 1.267 | .135 | 1.559 | |
| | 10.1. How many times have you tried drugs? | -1.135 | 1.228 | -.093 | -.925 | |
| | 10.2. Have you ever sniffed a substance of any kind? | 3.117 | 1.861 | .164 | 1.675 | |
| | 10.3. How often do you drink beer, cider, wine or spirits? | -.664 | 1.141 | -.049 | -.582 | |
| | 10.4.Do you smoke? | .307 | 1.120 | .023 | .274 | |
| | Loneliness_gay | -.179 | .201 | -.140 | -.892 | |
| | SSA_family_gay | .176 | .299 | .059 | .590 | |
| | SSA_friends_gay | -.044 | .482 | -.015 | -.092 | |
| | SSA_others_gay | 1.105 | .624 | .280 | 1.771 | |
| | PsychologicalWellbeing_gay | -.246 | .316 | -.164 | -.777 | |
| | PhysicalWellbeing_gay | .282 | .354 | .113 | .797 | |

# APPENDIX M

## Regression - Heterosexual

a. Dependent Variable: RiskyBehaviour_straight
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .369[a] | .136 | .081 | 12.38036 |

a. Predictors: (Constant), PhysicalWellbeing_straight, 10.3. How often do you drink beer, cider, wine or spirits?, 10.2. Have you ever sniffed a substance of any kind?, Attachment Patterns, SSA_family_straight, 10.4.Do you smoke?, Loneliness_straight, 10.1. How many times have you tried drugs?, SSA_friends_straight, RelationshipWellbeing_straight, SSA_others_straight, PsychologicalWellbeing_straight

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4580.485 | 12 | 381.707 | 2.490 | .005[b] |
| | Residual | 29121.909 | 190 | 153.273 | | |
| | Total | 33702.394 | 202 | | | |

a. Dependent Variable: RiskyBehaviour_straight
b. Predictors: (Constant), PhysicalWellbeing_straight, 10.3. How often do you drink beer, cider, wine or spirits?, 10.2. Have you ever sniffed a substance of any kind?, Attachment Patterns, SSA_family_straight, 10.4.Do you smoke?, Loneliness_straight, 10.1. How many times have you tried drugs?, SSA_friends_straight, RelationshipWellbeing_straight, SSA_others_straight, PsychologicalWellbeing_straight

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 40.520 | 10.533 | | 3.847 | |
| | Attachment Patterns | -.237 | .785 | -.021 | -.303 | |
| | 10.1. How many times have you tried drugs? | 1.689 | 1.098 | .150 | 1.539 | |
| | 10.2. Have you ever sniffed a substance of any kind? | 1.006 | 1.942 | .047 | .518 | |
| | 10.3. How often do you drink beer, cider, wine or spirits? | -.603 | .764 | -.056 | -.789 | |
| | 10.4.Do you smoke? | 1.977 | .857 | .180 | 2.306 | |
| | Loneliness_straight | .045 | .124 | .038 | .362 | |
| | SSA_family_straight | -.022 | .252 | -.008 | -.086 | |
| | SSA_friends_straight | .272 | .413 | .084 | .659 | |
| | SSA_others_straight | -.104 | .477 | -.030 | -.217 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | RelationshipWellbeing_straight | .406 | .362 | .156 | 1.123 | |
| | PsychologicalWellbeing_straight | -.102 | .198 | -.084 | -.514 | |
| | PhysicalWellbeing_straight | -.359 | .263 | -.164 | -1.365 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | 10.4.Do you smoke?[b] | . | Enter |

a. Dependent Variable: Hyperactivation_straight
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .163[a] | .026 | .022 | 16.53294 |

a. Predictors: (Constant), 10.4.Do you smoke?

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1465.283 | 1 | 1465.283 | 5.361 | .022[b] |
| | Residual | 53847.602 | 197 | 273.338 | | |
| | Total | 55312.884 | 198 | | | |

a. Dependent Variable: Hyperactivation_straight
b. Predictors: (Constant), 10.4.Do you smoke?

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 43.877 | 1.562 | | 28.097 | .000 |
| | 10.4.Do you smoke? | 2.297 | .992 | .163 | 2.315 | .022 |

a. Dependent Variable: Hyperactivation_straight

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Hyperactivation_straight[b] | . | Enter |

a. Dependent Variable: RiskyBehaviour_straight
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .101[a] | .010 | .005 | 12.88197 |

a. Predictors: (Constant), Hyperactivation_straight

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 337.339 | 1 | 337.339 | 2.033 | .156[b] |
| | Residual | 32691.204 | 197 | 165.945 | | |
| | Total | 33028.543 | 198 | | | |

a. Dependent Variable: RiskyBehaviour_straight
b. Predictors: (Constant), Hyperactivation_straight

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 36.809 | 2.694 | | 13.665 | |
| | Hyperactivation_straight | .078 | .055 | .101 | 1.426 | |

# APPENDIX
# STAGE TWO

# APPENDIX N

## ETHIC FORM (STAGE TWO)

**UNIVERSITY OF BEDFORDSHIRE**

**Research Bid: Ethical Issues**

Section A must be completed by the proposer and the form should then be submitted with a copy of the research proposal to your dissertation supervisor.

**Name of Student:** **Research Institute:** School of Psychology

**Mohammadrasool Yadegarfard**

**Student and Supervisor e-mail addresses**

**mohammadrasool.yadegarfard@study.bed.ac.uk**

Supervisor 1: candan.ertubey@beds.ac.uk

Supervisor 2: hossein.kaviani@beds.ac.uk

**Proposal Title: *Study three***

BIOPSYCHOSOCIAL PREDICTORS OF RISKY SEXUAL BEHAVIORS: The influence of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex on risky sexual behaviour among gay men in the UK

**SECTION A To be completed by the student**

The candidate is required to summarise within this proposal the ethical issues involved in conducting the research proposal and how they will be addressed. In addition provide:

- a clear explanation of how informed consent will be obtained,
- how will confidentiality and anonymity be observed,
- how will the nature of the research, its purpose and the means of dissemination of the outcomes be communicated to participants,
- how personal data will be stored and secured

- if participants are being placed under any form of stress (physical or mental) identify what steps are being taken to minimise risk

If protocols are being used that have already received UREC ethical approval then please specify. Roles of any collaborating institutions should be clearly identified. Reference should be made to the appropriate professional body code of practice.

5. Brief summary of project with enough information from theory/literature that the reviewer would be able to understand the rationale behind your project. Also to include aims (hypothesis/research questions)

The prevalence of HIV and STDs is higher among gay men than in any other demographic group (Public Health England, 2016, Public Health England, 2017). In the UK 54% of new HIV cases were diagnosed in gay men and men who have sex with men (Public Health England, 2017). In many cases, the spread of HIV and other STIs is due to risky sexual behaviours (RSBs), especially unprotected intercourse. However, the question that needs to be addressed is why gay individuals subsequently choose to engage in risky sexual behaviours (RSBs). This is the type of question that is typically addressed in health psychology. Whereas traditional models, such as the medical model, regard illness as originating from factors such as bacteria, which are beyond the control of the individual, health psychology focuses on the roles of external forces in illness (Marks et al., 2015). Since the mental and physical aspects of illness are considered to be two entirely separate entities, the traditional responsibility for treatment falls exclusively on healthcare professionals (Morrison & Bennett, 2016). Under health psychology, however, mental processes are considered to play a significant role in an individual's health or illness. Indeed, health psychology views the individual as being an active participant rather than a passive recipient in all stages of illness, from the cause to the progression and ultimate outcome (Abraham et al., 2016; Marks et al., 2015). The relationships between the internal and external factors of illness are illustrated in the biopsychosocial model. Under the biopsychosocial model, the many factors that contribute to an individual's health and illness are classified into three main categories: biological, psychological and social. For this reason, the biopsychosocial model is regarded by the researcher as the most relevant model to be used in this research for investigating the factors that contribute to risky sexual behaviours among gay men. Research among the general population has shown the influence of biological, psychological, and social factors on risky sexual behaviours (See Figure 1). **Biological factors** include early puberty (Baams, 2015); genetics (Zietsch et al , 2010); hyper-sexuality (Kastner & Sellbom, 2012; Winder, 2016); depression (Holmes, Foa, & Sammel, 2005); substance issues such as the use of alcohol (Standerwick et al, 2007; Connor, et al, 2015) and drugs (Tucker, et al., 2012; Castelo-Branco, et al, 2014; Ritchwood, et al, 2016); age (Sales et al, 2011; Yadegarfard et al, 2013; Kastbom et al, 2015; Janulis et al., 2018); and sexual development (Baams, 2015). **Psychological factors** include personality (Moor et al, 2016; Zietsch et al, 2010); attachment patterns (Arndt, 2007; Dumas-Koylass, 2013); social anxiety (Leary & Dobbins, 1983); stress (Folkman et al, 1992; Jackson, 2014); acculturative stress

(Jardin, et al., 2016); personal and cultural beliefs such as "using a condom is unnatural" or "using a condom decreases pleasure (Flood, 2003; Mizuno, et al., 2007); knowledge about sexual health (Vivancos et al, 2013; Bron et al, 2015); loneliness (Yadegarfard et al 2013; Lansford, et al, 2014); religiosity (Simons et al, 2009; Haglund & Fehring, 2010); well-being (Sanders, 2008); attitudes towards numbers of sexual partners (Yadegarfard et al 2013; Abousselam et al, 2015); and history of sexual abuse in childhood (Holmes et al, 2005). **Social factors** include social isolation (Taylor-Seehafer & Rew, 2000; Yadegarfard et al 2014); peer pressure (Keller et al, 1996; Crockett et al, 2006); family rejection (Yadegarfard et al 2014; Klein & Golub, 2016); communication skills (Arndt, 2007; Edgar et al, 1992); internet and media such as pornography (Wright & Randall, 2012; Sinkovic et al, 2013; Braithwaite, et al, 2015); and poverty (Madise et al, 2007; Dinkelman et al, 2008).

This study adopted a mixed method approach of both qualitative and quantitative methods. In the first stage, concurrent triangulation designed was used, as the researcher gave equal priority to both qualitative and quantitative study. The aim of the triangulation design is to collect complimentary yet distinctly different data on the same topic so that it can then be integrated, analysed and interpreted Bryman (2014).

**Research Questions (Stage one)**

*Study one*

Study one is preliminary stage and a qualitative method with an exploratory design will be utilized. The aim of this stage is to gain an insight and familiarity with the study's variables and help to develop the hypothesis of study three. A general research question for this study is, what factors do contribute to risky sexual behaviours?

*Study two*

Study two focuses on in dept exploration of the role of substance use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, on risky sexual behaviours among gay men in the UK. More specifically there are two main questions for study two as follows:

Q1: Are there significant differences in the reported levels of substance use, well-being, sexual hyperactivation, attachment patterns, social support, loneliness, and risky sexual behaviours between the gay and heterosexual men? More specifically, do gay men report significantly higher level of substance use, lower levels of well-being, higher scores for insecure attachment patterns, higher levels of lack of social support and loneliness, and higher levels of sexual hyperactivation and risky sexual behaviours than their heterosexual male counterparts?

Q2: Are the reported level of substance use, well-being, attachment patterns, experience of social support, and loneliness positively related to the level of sexual hyperactivation? Is the level of sexual hyperactivation positively related to the respondents' reported levels of risky sexual behaviours?

The researcher has passed his PP2 in August 2018 and now aiming to conduct stage two of his thesis which is the last stage and a quantitative research. The findings of stage one has informed stage two's hypothesis. A brief review of the findings is as follow:

1. As attachment patterns were shown to be a possible influential factor in an individual's sexual beliefs, as beliefs were one of the significant factors identified in the qualitative part of this research, and also as normative beliefs are one of the main factors of the Theory of Planned Behaviour (TPB), the researcher aims to measure individuals' beliefs regarding risky sexual behaviours in the next stage.
2. As loneliness was one of the significant factors in both the qualitative and quantitative studies of this study, it will also be use in the next stage. However, in stage one, quantitative study, USL Loneliness scale was used which is unidimensional. The researcher aims to use a multidimensional loneliness scale in the next stage.
3. The number of sex partners was one of the significant variables in the qualitative study, and this was hypothetically related to sexual hyperactivation. However, the number of sex partners was not measured in the quantitative study. Therefore, in the next stage, the researcher will measure the number of sex partners and identify the relationship with risky sexual behaviour, normative beliefs and perceived behavioural control.
4. Age was found to be a significant factor in the qualitative study. It is therefore recommended that the researcher investigate the relationship between age and risky sexual behaviour and whether age can predict the number of sex partners and risky sexual behaviours.
5. Adverse childhood experiences, such as sexual abuse and bullying, were found to be significant factors and so will be considered as one of the main variables in the next study.
6. Sexual experience in early adolescence was found to be associated with more frequent casual sex and more sexual partners. Therefore, in the next stage, this will be measured as one of the main variables.
7. As the results of the MANOVA test revealed, the only significant differences between the gay and heterosexual participants were sniffing substances and smoking tobacco, which means that the two groups of participants have more similarities than differences. As a result, the researcher has decided not to include heterosexual males in the next stage.

Based on the findings of study one and two (fist stage) this current study aims to research the influence of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex on risky sexual behaviour. Previous research also found a significant predictive relationship between these factors and RSB. For instance, age (e.g. Sales et al, 2011; Yadegarfard et al, 2013; Kastbom et al, 2015; Janulis et al., 2018), substance use (Tucker, et al., 2012; Castelo-Branco, et al, 2014; Ritchwood, et al, 2016, number of sex partner (Slaymaker, Walker, Zaba, & Collumbien, 2004). early sexual experiences (Epstein & Spirito, 2010), internalized homophobia (Mansergh, et al., 2015), adverse childhood experiences (Littleton, Grills, & Drum, 2014; Niehaus, Jackson, & Davies, 2010), loneliness (Yadegarfard

et al 2013; Lansford, et al, 2014); belief regarding unsafe sex (Flood, 2003; Mizuno, et al., 2007).

**Objective for study three**

It was recommended by the researcher in the latest report of "New STI figures among Gay men" published by Public Health England in 2016 that "the new statistics show STI rates are still very high among gay men and young adults". The report then continued by stating that "we need to do more to raise awareness about STIs and how they can be prevented" (Public Health England, 2016). With this in mind, the current study aims to research the influence of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex on risky sexual behaviour. It is hoped that the outcomes of this study can help professionals to develop more relevant and constructive prevention and interventions strategies that can help gay men to have respectful and satisfying social and sexual relationships.

**Research Questions (Stage two study three)**

Q1: Are age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex related to risky sexual behaviour?

Q2: Which of the predictors have stronger predictive relationships with risky sexual behaviours?

6. Brief summary of project method & procedure

Study three (Quantitative Study)

Study three (quantitative) will be based on the responses of targeted participants to a survey questionnaire designed to identify the study's variables. The study's predictors are the influence of age, substance use ***[Substance Frequency-of-Use Scale (Kimber & Sandell (2009)],*** number of sex partners, early sexual experiences***[Early Sexual Experiences Checklist created by (Alderson, Polley, & Ireland, 2014)],*** adverse childhood experiences ***[Adverse Childhood Experiences Inventory (Finkelhor, et al. 2015)],*** internalized homophobia ***[Internalized Homophobia Scale (LaPollo, Bond, and Lauby (2014)],*** loneliness ***[Social and Emotional Loneliness Scale for Adults (DiTommaso and Spinner, (1993) ]*** and belief regarding unsafe sex ***[belief toward risky sexual behaviours (Turchik, 2012)];*** the criterion is number of sexual partner and condom use inconsistency.

Personal Information

A researcher-constructed set of questions will be used to obtain the required personal information about the respondents. This first part will be consisted of items directed at the selected demographic variables of age, sex, gender identity, sexual orientation, ethnicity, education, current relationship status, and marital status.

Substance use (Carried from stage one)

This study will use the *Substance Frequency-of-Use Scale* developed by Kimber and Sandell (2009) as the tool to measure substance use. The *Substance Frequency-of-Use Scale* is a self-report scale that measures the frequency of substance use through 4 questions and employs 3-, 4-, and 5-point frequency scales for respondents' answers (Kimber & Sandell, 2009). The substances covered in the scale are drugs (hard and soft), volatile substances (sniffing), alcohol, and tobacco (smoking). As reporting substance use by participants might be including a report of illegal drugs the researcher make sure that special safeguards to be in place such as first of all the nature, purpose of the research will be clearly explained and also in the inform consent will be clearly explained that participation in this research is completely voluntarily, data collection is completely anonymous and they can withdraw anytime without any consequences and also at the debriefing enough information about drug and alcohol organizations will be provided in case they participants need support or they have any concerns or question regarding their substance use.

Number of sex partner (New variable)

To measure number of sex partner, the researcher will ask participants a direct question "In the past 12 months, how many sex partners have you had? (Indicate the number)" and also give the participants an option in case they did not have any sex in the past 12 months; "I have not had sex in the past 12 months"..

Condom use

To measure condom use consistency, the researcher will ask participants a direct question " "In the last 12 months, have you used condoms when you had anal sex? (4-point scale ranging from "Always" to "Never").

Early sexual experience (New variable)

To measure early sexual experience, the Early Sexual Experiences Checklist created by (Alderson, Polley, & Ireland, 2014) will be used in this research. The test includes 13 items which varies, with some requiring a yes–no response, some requiring written input (age), and a selection of several predetermined options. Although in the inform consent the aim and objectives of the research are clearly explained and participants who are arrived to this section already given their consent to participate, some participants still might find the content of this particular questionnaire distressing; so in the description the researcher will be explicitly asking participants that if they are offended by the description of early sexual experience , or if this makes them uncomfortable in any way, they must not continue to read and participate (Please see page 29).

Adverse childhood experience (New variable)

To measure adverse childhood experience, the Adverse Childhood Experiences Inventory created by Finkelhor, et al. (2015) will be used in this research. The test includes 14 items which assess the absence or presence of the childhood experiences of physical, sexual and emotional abuse. The responses scored 1 (presence of the experience) or 0 (absence of the experience) Although in the inform consent the aim and objectives of the research are clearly explained and participants who are arrived to this section already given their consent to participate, some participants still might find the content of this particular questionnaire distressing; so in the description the researcher will be explicitly asking participants that if they are offended by the description of adverse childhood experience, or if this makes them uncomfortable in any way, they must not continue to read.

Internalized homophobia (New variable)

To measure internalized homophobia, the Internalized Homophobia Scale created by LaPollo, Bond, and Lauby (2014) will be used in this research. The test includes 8 items which assess the level of internalized homophobia in individuals. The responses scored from 1 to 4 with a higher score equalling greater internalized homophobia. Although in the inform consent the aim and objectives of the research are clearly explained and participants who get to this section already given their consent to participate, some participants still might find the content of this particular questionnaire distressing; so in the description the researcher will be explicitly asking participants that if they are offended by the description of the questionnaire, or if this makes them uncomfortable in any way, they must not continue to read.

Multidimensional Loneliness scale (Carried from stage one)

To measure loneliness, the Social and Emotional Loneliness Scale for Adults created by DiTommaso and Spinner, (1993) will be used in this research. The test includes 58 items which assess three aspects of loneliness, romantic (21 items), family (23 items) and social (14 items). Although in the inform consent the aim and objectives of the research are clearly explained and participants who get to this section already given their consent to participate, some participants still might find the content of this particular questionnaire distressing; so in the description the researcher will be explicitly asking participants that if they are offended by the description of the questionnaire, or if this makes them uncomfortable in any way, they must not continue to read

Belief regarding unsafe sex (New variable)

To measure participants belief toward risky sexual behaviour a measure developed by Turchik (2012). It assesses a person's social group's beliefs towards condom use with casual and relationship partners, dual use with casual and relationship partners, and casual sex in accordance with guidelines from Ajzen (1991). This questionnaire does not contain any sensitive item

**7. Who are the participants? INCLUDING sampling method**

For study three the research requires a sample of gay males aged 18 years old and over who live in the UK.

The data collection process consists of the following procedural steps:

An online survey will be created on the Qualtrics online software. The link to the online survey will be sent to the universities' social network pages, such as Facebook, Instagram and Twitter. Based on the snowball sampling method, interested people will be asked to send the link to other gay men who are also students. Also known as chain sampling or referral sampling, snowball sampling is a non-probability sampling technique that can be applied when it is difficult to find an appropriate sample due to the specificity of their characteristics (Thompson, 2012). Once a small number of suitable subjects have been found, these subjects then identify and nominate other appropriate subjects from their networks. Through this chain of referrals, the size of the sample grows (snowballs) while still including only subjects with the relevant characteristics needed for the study (Thompson, 2012).

***Exponential non-discriminative snowball sampling*** will be used in the present study. In this way, the researcher recruits a subject who then refers additional subjects. The researcher then vets the new referrals to determine their suitability to the research until a sufficient amount of primary data can be collected (Thompson, 2012).

Snowball sampling provides various advantages, including access to hidden populations. It is also a cost-effective and time-efficient process for the researcher (Thompson, 2012). Another advantage is that it requires minimal planning before the process of collecting primary data can begin. However, there are also certain disadvantages to the snowball sampling method. First of all, there is the issue of ethics when relying on untrained individuals to refer individuals who may even be from a vulnerable group or minority (Thompson, 2012). Also, if too many samples are drawn from one specific network, this can create information bias. On the other hand, there is also a chance that the initial subjects may be reluctant to nominate acquaintances from within their network. Finally, there is the question of how closely the referred subjects fit the required characteristics of the sample group (Thompson, 2012).

Upon receipt of the completed questionnaires, the researcher will inspect every questionnaire so that only the valid ones will be subjected to statistical analysis. One of the inspection strategy will be data cleaning (Field, 2013). Cleaning data involves searching for scores that are outside the range of the scale of an item(s) and dealing with missing data. Out range scores can be found through a visual inspection or through running some descriptive statistics. For example, if the one of questionnaire with Lickert scale such as Internalized Homophobia Scale of 1-4 and one item has a standard deviation of 7 it is an indication that something is wrong because the standard deviation cannot be larger than the range.

8. Does the procedure involve any possible distress, discomfort or harm to participants? (Please consider all possible causes of distress carefully, including likely reactions to the subject matter, debriefing or deception. If yes, please give details and say what steps are to be taken to protect the participants.

The participants of this study will be all required to be 18 years old and above. Participation in this study will be done so completely voluntarily and anonymously. All prospective participants will be required to complete an informed consent form before they will be allowed to participate in the study. The informed consent form included clarification of the aim and objectives of this study, while a debrief page will be also provided with further information and helplines. The researcher is fully aware of the ethical aspect of this study and

adhered to the BPS Code of Human Research Ethics 2014 throughout the course of the study. In addition, the researcher follows the University of Bedfordshire Research Ethics Guidelines and will be seeking ethical approval through the university's Research Ethics Committee. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher will be conscious that participants might not be comfortable answering questions that may be considered too personal. So, a major challenge that the researcher will be facing regarding creating a survey on sexual behaviour will be to ensure that it will be unbiased while also providing precise measures of the behaviour patterns. It has been pointed out by Gullette and Lyons (2006) that participants often make mistakes, mainly when recalling their sexual activities and reporting condom use. Moreover, in the very act of scrutinising sensitive topics such as sexual behaviour, there exists a strong possibility that information bias will manifest itself in the form of social desirability bias (Kaminska & Foulsham, 2013). The definition of social desirability is an individual's tendency to provide answers that the individual believes will be accepted and viewed favourably by the individual's peers (Kaminska & Foulsham, 2013). Social desirability can manifest itself either as the over-reporting of desirable behaviours or the under-reporting of undesirable behaviours, both of which lead to confusing associations between variables by moderating or weakening relationships (Kaminska & Foulsham, 2013). Therefore, to tackle this issue, sufficient explanation and acknowledgment will be provided before the participants will be required to answer the questions related to their sexual activities and substance misuse. Furthermore, the participants will be made aware through the informed consent page that they can choose not to answer some questions and they could withdraw their participation at any time or they could contact the researcher after providing their answers if they decided that they did not want their data to be used in the study. In addition, contact numbers of the relevant organisations were provided on the debriefing page in the event that the participants required help and support (Please see page 23). In addition, as reporting substance use by participants might be including a report of illegal drugs the researcher is fully aware that asking these questions might have some potential discomfort or stress for the participants, so the researcher make sure that special safeguards is in place. First of all the researcher has selected an standard questionnaire [***Substance Frequency-of-Use Scale (Kimber & Sandell (2009)]***with high reliability and validity. Also, the use of language in the questionnaire to be general, simple and straight forward for instance one of the questions is "How many times have you tried drugs?". Also, in this questionnaire the researcher is interested in the frequency of use of drugs not the type of drugs, so answering this question does not necessarily forced participants to disclose if they are using any illegal substances. Second of all, in the inform consent the nature and the purpose of the research will be clearly explained and also it will be explicitly explained that participation in this research is completely voluntarily, data collection is completely anonymous and they can withdraw anytime without any consequences and also at the debriefing enough information about drugs and alcohol organizations will be provided in case they need support or they have any concerns or question regarding their substance use. Nevertheless, the researchers had approval from the ethic committee at the previous stage for

using this questionnaire; subsequently he used it and has received no objection from the 440 participants.

**SECTION B To be completed by the candidate**

Answer the following question by ringing/deleting **yes** or **no** as appropriate:

8. Does the study involve vulnerable participants or those unable to give informed consent (e.g. children, people with learning disabilities, your own students)?

**No**

9. Will the study require permission of a gatekeeper for access to participants (e.g. schools, self-help groups, residential homes)?

**No**

10. Will it be necessary for participants to be involved without consent (e.g. covert observation in non-public places)?

**No**

11. Will the study involve sensitive topics (e.g. sexual activity, substance abuse)?

**Yes**

12. Will blood or tissue samples be taken from participants?

**No**

13. Will the research involve intrusive interventions (e.g. drugs, hypnosis, physical exercise)?

**No**

14. Will financial or other inducements be offered to participants (except reasonable expenses)? **No**

8. Will the research investigate any aspect of illegal activity?

**No**

11. Will participants be stressed beyond what is normal for them?

**No**

12. Will the study involve participants from the NHS (e.g. patients or staff)?

**No**

If you have answered yes to any of the above questions or if you consider that there are other significant ethical issues then details should be included in your summary above. If you have answered yes to Question 1 then a clear justification for the importance of the research must be provided.

*Please note if the answer to Question 10 is yes then the proposal should be submitted through **NHS research ethics approval procedures** to the appropriate **COREC**. The University Research Ethics Committee should be informed of the outcome

**Reg. question 4:**

The participants of this study were all required to be 18 years old and above and to the best of the researcher's knowledge none of the participants is drawn from vulnerable group and population. Participation in this study was done so completely voluntarily and anonymously. All prospective participants were required to complete an informed consent form before they were allowed to participate in the study. The informed consent form included clarification of the aim and objectives of this study, while a debrief page was also provided with further information and helplines. The researcher was fully aware of the ethical aspect of this study and adhered to the BPS Code of Human Research Ethics 2014 throughout the course of the study. In addition, the researcher followed the University of Bedfordshire Research Ethics Guidelines and has sought ethical approval through the university's Research Ethics Committee. According to the BPS code of Human Research Ethics, sexual activity is considered to be a sensitive subject and researchers should be aware of this fact. As risky sexual behaviour is one of the main variables in this study, the researcher was conscious that participants might not be comfortable answering questions that may be considered too personal.

It is important to mention that stage one of the current thesis which included a quantitative and a qualitative research was approved by the same ethic committee in March 2018 and the research has overcome the challenges of the study, the major challenge that the researcher faced regarding creating a survey on sexual behaviour was to ensure that it was unbiased while also providing precise measures of the behaviour patterns. It has been pointed out by Gullette and Lyons (2006) that participants often make mistakes, mainly when recalling their sexual activities and reporting condom use. Moreover, in the very act of scrutinising sensitive topics such as sexual behaviour, there exists a strong possibility that information bias will manifest itself in the form of social desirability bias (Please see page 4) (Kaminska & Foulsham, 2013). Furthermore, the participants were made aware through the informed consent page and debrief page that they could withdraw their participation at any time or they could contact the researcher after providing their answers if they decided that they did not want their data to be used in the study. In addition, contact numbers of the relevant organisations were provided on the debriefing page in the event that the participants required help and support.

Signature of student: *Mohammadrasool Yadegarfard*

Note to student: Signing this form certifies that you agree to carry out your research in the manner specified. If you wish to deviate from the approved method at any time, you should discuss any proposed change with your supervisor, and, if they think it necessary, a new ethics form should be completed.

Date ……03/01/2019…….
Signature of supervisor ……..…..
Countersigned by member of ethics committee
…….…….……...……

Note to counter signatories: Signing this form certifies that, in your opinion as an independent reviewer, the project is ethical under BPS guidelines.

Please pass completed forms to your supervisor.

**Student: please tick to show that you feel that you have included the following:**

| | |
|---|---|
| General aim of study | Y |
| Research questions/hypothesis | Y |
| Research Design | Y |
| Participants (including sampling method) | Y |
| Any materials that you will use | Y |
| Consent Form | Y |
| Brief/Debrief forms | Y |
| Letter from organization (if required) | |
| Have included information regarding sensitive/ethical issues/vulnerable groups (e.g. deception, giving rewards, those that are unable to provide their own consent, relating to very personal issues) | Y |

# APPENDIX O

## SURVEY QUESTIONNAIRE (SAGE TWO)

**Inform consent**

Dear Participant, You are invited to participate in a post graduate school research which is carried out by Mohammadrasool (Arya) Yadegarfard from the University of Bedfordshire, UK with the student number of 1229298 and under the supervision of Dr. Candan Ertubey and Dr. Hoseyn Kaviani. This Study aims to assess influences of substance use, attachment patterns, well-being, loneliness, social support on risky sexual behaviours among the British gay men. Your participation in this study is voluntary and you are free to refuse or to take part and as well you may withdraw your participation at any time and also you can choose not to answer some of questions. Please be aware that some questions are of a sensitive nature, including questions of a sexual nature, substance use, internalized homophobia, and Social and Emotional Loneliness. Some people may find the content of this questionnaire distressing and participants should be aware that they will be also asked about their own sexual experiences under the age of 16 years. If you are offended by descriptions of sexual behaviour and substance use, or if this makes you uncomfortable in any way, please do not continue and choose the second option that you DO NOT want to participate.

If you agree to participate, please complete this survey questionnaire. All the information provided by you will be kept strictly confidential according to the British Psychological Society (BPS) code of ethics and conduct. There are no right or wrong answers. Please answer all the questions as honestly as you can. It will take you about 20 min to fill in all questionnaires.

1.I have read and understood the above information including the aims of the study. I give my consent to take part in this study ( )

2.I have read and understood the above information including the aims of the study. I DO NOT want to participate in this study( )

Thank you for your help and cooperation.

Mohammadrasool Yadegarfard The University of Bedfordshire, Luton

Mohammadrasool.yadegarfard@study.beds.ac.uk

**Substance Frequency-of-Use Scale (Sandell, 2009)**

Please read each statement and indicate the extent it applies to you, using the following scale:

| Questions | Response categories | Designations |
|---|---|---|
| 1. How many times have you tried drugs?<br>0<br>1<br>2<br>3<br>4 | Never<br>once<br>2-10<br>11-50<br>>50 | Non-user<br>Light user<br>Moderate user<br>Heavy user<br>Heavy user |
| 2. Have you ever sniffed a substance of any kind?<br>0<br>1<br>2 | No<br>Yes, once<br>Yes several times | Non-user<br>Light user<br>Moderate/heavy user |
| 3. How often do you drink beer, cider, wine or spirits?<br>0<br>1<br>2<br>3<br>4 | Do not drink<br>1–6 times a year<br>1–2 times a month<br>1–2 times a week<br>Every day or every other day | Non-user<br>Light user<br>Moderate user<br>Moderate/heavy user |
| 4. Do you smoke?<br>0<br>1<br>2<br>3 | No, have never<br>Have tried, but stopped<br>Yes, but only occasionally, at weekends, or parties<br>Yes, every day or almost every day | Non-user<br>Non-user<br>Light user<br>Moderate/ heavy user |

In this section, we'd like to ask you questions about sex, specifically, who you're having sex with, what types of sex you're having, if any, and how you feel about your sex life and sexuality. We understand that these can be sensitive topics but we wanted to include these questions because sex and relationships can be important parts of our lives and can have a big impact on how we feel about ourselves.

We're asking you to please recall your sexual experiences over the last year and your lifetime. By "sex partners," please include everyone you've had sexual contact with, even once, including anal, oral, or genital sex.

In the past 12 months, how many sex partners have you had?

- ○ Indicate the number (1) _____
- ○ I have not had sex in the past 12 months (2)

In the last 12 months, have you used condoms when you had anal sex?

- ○ Never
- ○ Rarely
- ○ Often
- ○ Always

## Early Sexual Experiences Checklist created by (Alderson, Polley, & Ireland, 2014)

The following questions are designed to explore some of your early sexual experiences, i.e. below the age of 16. These questions are of a sensitive nature, including questions of a sexual nature. Some people may find the content of this questionnaire distressing and participants should be aware that they will be asked about their own sexual experiences under the age of 16 years. If you are offended by descriptions of sexual behaviour, or if this makes you uncomfortable in any way, please do not continue to read. Please select your response ("Yes "or "No") to each question below. Please remember that all of these questions relate to your experiences when **under the age of 16**

| | Yes | No |
|---|---|---|
| 1. Prior to the age of 16, had a friend ever introduced you to a friend or acquaintance you believed to be over 18 who had then made sexual advances towards you? | | |
| 2. Below the age of 16, did you ever feel you were expected to perform sexual acts as a result of someone you believed to be over the age of 18 giving you gifts (jewellery, mobile phone, clothes, money)? | | |
| 3. Below the age of 16, have you ever felt you were expected to perform sexual acts as a result of someone you believed to be over the age of 18 giving you lifts in their car or taking you out on trip. | | |
| 4. Below the age of 16, have you ever felt you were expected to perform sexual acts as a result of someone you believe to be over the age of 18 buying you drinks or giving you drugs? | | |
| 5. Below the age of 16, have you ever felt you were expected to perform sexual acts as a result of accepting accommodation from someone you believe was over 18? | | |
| 6. Below the age of 16, has a person you believed to be over 18 ever made sexual suggestions to you or tried to engage you in sexual discussions by telephone, via text, or over the internet? | | |
| 7. Below the age of 16, has a person you believed to be over 18 years old ever asked you to send pictures or video recordings of yourself over the internet or mobile phone in a state of undress or in a sexual or suggestive pose? | | |
| 8. Below the age of 16, have you ever been sent pictures or video images of nudity or someone performing a sexual act by someone you believe to have been over 18? | | |
| 9. Below the age of 16 have you ever had a sexual relationship with someone you believed to be over the age of 18? | | |
| 10. Below the age of 16, has someone over the age of 18 ever asked you to have sexual contact with another person with whom you are not in a partner type relationship with? [Sexual contact means sexual touching of you by the person, you touching the person sexually, or oral sex]. | | |
| 11. Below the age of 16, has someone over the age of 18 ever asked you to have sexual intercourse with someone? | | |
| 12. Below the age of 16, have you ever had sexual contact with someone because you were afraid you would be harmed if you didn't? | | |

**Internalized Homophobia Scale (LaPollo, Bond, & Lauby , 2014)**

The following questions are designed to explore some of your feelings and thoughts about your sexuality. Some of the questions are of a sensitive nature and some people may find the content of this questionnaire distressing and participants should be aware that they will be asked about their feeling and thoughts about their homosexuality. If you are offended by descriptions of this question, or if this makes you uncomfortable in any way, please do not continue to read.

| | Strongly agree | Agree | Disagree | Strongly disagree |
|---|---|---|---|---|
| 1. Sometimes I dislike myself for being gay/bisexual/attracted to men. | ○ | ○ | ○ | ○ |
| 2. I feel stress and conflicted within myself over having sex with men. | ○ | ○ | ○ | ○ |
| 3. Sometimes I wish I were not gay/bisexual/attracted to men. | ○ | ○ | ○ | ○ |
| 4. I sometimes feel guilty after having sex with men. | ○ | ○ | ○ | ○ |
| 5. A gay man can have just as fulfilling a life as a straight man. | ○ | ○ | ○ | ○ |
| 6. I have no regrets about my desire for men. | ○ | ○ | ○ | ○ |
| 7. I am confident that my desire for men does not make me inferior. | ○ | ○ | ○ | ○ |
| 8. It is important to me to have gay or bisexual friends. | ○ | ○ | ○ | ○ |

**Adverse Childhood Experiences Inventory created- Finkelhor, et al. (2015)**

The following questions are designed to explore some of your early relationship with other especially with your parents, step-parents or care givers. Some people may find the content of this questionnaire distressing. If you are offended by any of the following statement, or if this makes you uncomfortable in any way, please do not continue to read. Please select your response ("Yes "or "No") to each question below. Please remember that all of these questions relate to your experiences when **prior to your age of 18.**

| | Yes | No |
|---|---|---|
| 1. Did a parent or other adult in the household often or very often… Swear at you, insulted you, put you down, or humiliated you? Or act in a way that made you afraid that you might be physically hurt? | | |
| 2. Did a parent or other adult in the household often or very often… push, grab, slap, or throw something at you? Or ever hit so hard that you had marks or were injured? | | |
| 3. Did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? Or attempt or actually have oral, anal, intercourse with you? | | |
| 4. Did you often or very often feel that… no one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other? | | |
| 5. Did you often very often feel that… You didn't have enough to eat, had to wear dirty clothes, and had no one 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 it? | | |
| 6. Was a biological parent ever lost to you through divorce, abandonment, or other reason? | | |
| 7. Was you mother or stepmother, father or stepfather or your care giver(s): often or very often, pushed grabbed, slapped, or had something thrown at her/him? Or sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife? | | |
| 8. Did you live with anyone who was a problem drinking or alcoholic, or who used street drugs? | | |
| 9. Was a household member depressed or mentally ill, or did a household member attempt suicide? | | |
| 10. Did a household member go to prison? | | |
| 11. Did other kids, including brothers or sisters, often or very often hit you, threaten you, pick on you or insult you? | | |
| 12. Did you often or very often feel lonely, rejected or that nobody liked you? | | |
| 13. Did you live for 2 or more years in a neighbourhood that was dangerous, or where you saw people being assaulted? | | |
| 14. Was there a period of 2 or more years when your family was very poor or on public assistance? | | |

**Social and Emotional Loneliness Scale for Adults (DiTommaso and Spinner, 1993)**

The following questions are designed to explore some of your feelings and thoughts about your experience of social and emotional Loneliness. Some of the questions are of a sensitive nature and some people may find the content of this questionnaire distressing and participants should be aware that they will be asked about their feelings and thoughts of their experience of social and emotional loneliness. If this makes you uncomfortable in any way, please do not continue to read.

| | Strongly agree | Agree | Somewhat agree | Neither agree nor disagree | Somewhat disagree | Disagree | Strongly disagree |
|---|---|---|---|---|---|---|---|
| 1. I am an important part of someone else's life. | | | | | | | |
| 2. I feel alone when I'm with my family. | | | | | | | |
| 3. No one in my family really cares about me. | | | | | | | |
| 4. I have a romantic partner with whom I share my most intimate thoughts and feelings. | | | | | | | |
| 5. There is no one in my family I can depend upon for support and encouragement, but I wish there were. | | | | | | | |
| 6. I really care about my family. | | | | | | | |
| 7. There is someone who wants to share their life with me. | | | | | | | |
| 8. I have a romantic or marital partner who gives me the support and encouragement I need. | | | | | | | |
| 9. I really belong in my family. | | | | | | | |
| 10. I have an unmet need for a close romantic relationship. | | | | | | | |
| 11. I wish I could tell someone who I am in love with, that I love them. | | | | | | | |
| 12. I find myself wishing for someone with whom to share my life. | | | | | | | |
| 13. I wish my family was more concerned about my welfare. | | | | | | | |
| 14. I'm in love with someone who is in love with me. | | | | | | | |
| 15. I wish I had a more satisfying romantic relationship. | | | | | | | |
| 16. I have someone who fulfills my needs for intimacy. | | | | | | | |
| 17. I feel part of my family. | | | | | | | |
| 18. I have someone who fulfills my emotional needs. | | | | | | | |
| 19. My family really cares about me. | | | | | | | |
| 20. There is no one in my family I feel close to, but I wish there were. | | | | | | | |
| 21. I have a romantic partner to whose happiness I contribute. | | | | | | | |
| 22. My family is important to me. | | | | | | | |
| 23. I feel close to my family. | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. What's important to me doesn't seem important to the people I know. | | | | | | | |
| 25. I don't have a friend(s) who shares my views, but I wish I did. | | | | | | | |
| 26. I feel part of a group of friends. | | | | | | | |
| 27. My friends understand my motives and reasoning. | | | | | | | |
| 28. I feel 'in tune' with others. | | | | | | | |
| 29. I have a lot in common with others. | | | | | | | |
| 30. I have friends that I can turn to for information. | | | | | | | |
| 31. I like the people I hang out with. | | | | | | | |
| 32. I can depend upon my friends for help. | | | | | | | |
| 33. I have friends to whom I can talk about the pressures in my life. | | | | | | | |
| 34. I don't have a friend(s) who understands me, but I wish I did. | | | | | | | |
| 35. I do not feel satisfied with the friends that I have. | | | | | | | |
| 36. I have a friend(s) with whom I can share my views. | | | | | | | |
| 37. I'm not part of a group of friends and I wish I were. | | | | | | | |

***TPB proximal factors (Turchik, 2012)***

**Directions**: The following questions will ask about various aspects of sexual relationships and behaviours with **casual sex partners**, or a partner with whom you do not know well and do not intend to have a committed romantic relationship. Please read each question carefully and try to answer each question as honestly as possible. If you feel that a question is irrelevant or does not apply to you, please try to answer it as best as you can.

**ATTITUDES**

**1. Having casual sex with different partners (multiple partners) is:**

a.) 1 2 3 4 5 6 7
Very Pleasant (for me) Very Unpleasant (for me)

b.) .) 1 2 3 4 5 6 7
Very Healthy Very Unhealthy

c.) .) 1 2 3 4 5 6 7
Very Bad Very Good

d.) .) 1 2 3 4 5 6 7
Very Beneficial Very Harmful

e.) .) 1 2 3 4 5 6 7

Very Pleasurable Not Pleasurable At All

**2. Using condom during anal sex with casual partners is:**

a.) 1 2 3 4 5 6 7
Very Pleasant (for me) Very Unpleasant (for me)

b.) 1 2 3 4 5 6 7
Very Healthy Very Unhealthy

c.) 1 2 3 4 5 6 7
Very Bad Very Good

d.)1 2 3 4 5 6 7
Very Beneficial Very Harmful

e.) 1 2 3 4 5 6 7
Very Pleasurable Not Pleasurable At All

## SUBJECTIVE NORMS

**1. Most people who are important to me think that _____have casual sex with different partners (multiple partners)**
1 2 3 4 5 6 7
I Should I Should Not

**2. It is expected of me that I avoid casual sex with different partners (multiple partners)**
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**3. People who are important to me want me to avoid casual sex with different partners (multiple partners)**
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**4. Most people who are important to me think that _____ use condom during anal sex with different partners (multiple partners)**
1 2 3 4 5 6 7
I Should I Should Not

**5. It is expected of me that I use a condom during anal sex with casual partners**
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**6. People who are important to me want me to use a contraceptive method during anal sex with casual partners**
1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**7. Most people who are important to me think that _____ use a condom during anal sex with casual partners**

1 2 3 4 5 6 7
I Should I Should Not

**8. It is expected of me that I use a condom during anal sex with a casual partners**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**9. People who are important to me want me to use a condom during anal sex with casual partners**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

## Perceived Behavioural Control

**1. For me to avoid casual sex is ----with different partners (multiple partners)**

1 2 3 4 5 6 7
Easy Difficult

**2. I am confident that I would avoid casual sex with different partners (multiple partners) if I wanted to**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**3. How much control do you feel you have concerning whether or not you engage in casual sex with different partners (multiple partners)**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**4. For me to use condom during anal sex with a casual partner is**

1 2 3 4 5 6 7
Easy Difficult

**5. I am confident that I would use condom during anal sex with a casual partner if I wanted to**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**6. How much control do you feel you have concerning the use of condom during anal sex with a casual partner**

1 2 3 4 5 6 7
No Control A Lot of Control

**7. For me to use a condom during anal sex with a casual partner is**

1 2 3 4 5 6 7
Easy Difficult

**8. I am confident that I would use a condom during anal sex with a casual**

**partner if I wanted to**

1 2 3 4 5 6 7
Strongly Disagree Strongly Agree

**9. How much control do you feel you have concerning the use of a condom during anal sex with a casual partner**

1 2 3 4 5 6 7
No Control A Lot of Control

## INTENTIONS & INTENTION CERTAINTY

1. Over the next 2 months, do you intend to have sex **with different partners (multiple partners)**?

1 2 3 4 5 6 7
Definitely Definitely Not

2. Over the next 2 months, do you expect to have sex **with different partners (multiple partners)**?

1 2 3 4 5 6 7
Definitely Definitely Not

3. How likely is it that you will have sex **with different partners (multiple partners)** in the next 2 months?

1 2 3 4 5 6 7
Very Unlikely Very Likely

4. How certain are you about your intentions you just indicated above (items 1-3) about engaging in casual sex in the next 2 months?

1 2 3 4 5 6 7
Very Uncertain Very Certain

5. If you have anal sex with a casual partner over the next 2 months, do you intend to use condom?

1 2 3 4 5 6 7
Never Always

6. If you have anal sex with a casual partner over the next 2 months, do you expect to use condom?

1 2 3 4 5 6 7
Never Always

7. How likely is it that you will use a condom if you have anal sex with a casual partner in the next 2 months?

1 2 3 4 5 6 7
Very Unlikely Very Likely

8. How certain are you about your intentions you just indicated above (items 5-7) about

using a contraceptive if you have anal sex with a casual partner in the next 2 months?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very Uncertain | | | | | | Very Certain |

9. If you have anal sex with a casual partner over the next 2 months, do you intend to use a condom?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Never | | | | | | Always |

10. If you have anal and/or anal sex with a casual partner over the next 2 months, do you expect to use a condom?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Never | | | | | | Always |

11. How likely is it that you will use a condom if you have anal sex with a casual partner in the next 2 months?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very Unlikely | | | | | | Very Likely |

12. How certain are you about your intentions you just indicated above (items 10-12) about using a condom if you have anal sex with a casual partner in the next 2 months?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Very Uncertain | | | | | | Very Certain |

13. If you have anal sex with a casual partner over the next 2 months, do you intend to use both a condom and another contraceptive method?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| Never | | | | | | Always |

## DEBRIEFING FORM

For Study entitled: **The influences of Are age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex related to risky sexual behavior on risky sexual behaviors among men in the UK**

Dear Participant;

Thank you for agreeing to participate in this study. The general purpose of this research is to measure the influences of age, substance use, number of sex partners, early sexual experiences, adverse childhood experiences, internalized homophobia, loneliness, and belief regarding unsafe sex related to risky sexual behavior on risky sexual behaviors among men

in the UK. Your participation in this study was voluntary. If you have any concern about your participation or the data you provided in light of this disclosure, please discuss this with us. We will be glad to provide any information to answer your questions about this study. If your concerns are such that you would like to have your data withdrawn, and data is identifiable, we will do so, please email mohammadrasool.yadegarfard@study.beds.ac.uk

If you have any concern regarding your sexual health, substance misuse or if you were a victim of sexual abuse or rape, you can contact your GP or any organizations that offers relevant supports. Here are the contact details of some relevant organizations.

NHS sexual health services
Find **Sexual health services** near you
http://www.nhs.uk/Service-Search/Sexual%20health%20services/LocationSearch/1847

UK LGBT organizations (for advice support and information)

**Stonewall UK** Tel: 020 7593 1850
email: info@stonewall.org.uk address : 192 St John Street
London, EC1V 4JY website :
www.stonewall.org.uk

**LGBT foundation** Tel: 03453303030 email: info@lgbt.foundation. address: LGBT Foundation
5 Richmond Street,
Manchester
M1 3HF

**LGBT Drug and Alcohol services**

**London Friend** www.londonfriend.org.uk 86 Caledonian Rd, Kings Cross, London N1 9DN 020 7833 1674 (10am-6pm, Monday to Friday). Ask for one of the Antidote Team.

**Club Drug Clinic** www.clubdrugclinic.cnwl.nhs.uk For confidential advice call 020 3315 6111 or email clubdrugclinic.cnwl@nhs.net 69 Warwick Road, Earls Court, London SW5 9HB

**UK Organization for men of sexual abuse and rape**

**Survivors UK**
11 Sovereign Cl, St Katharine's & Wapping,
London
E1W 3HW
02035983898
Email: help@survivorsuk.org
Website: https://www.survivorsuk.org/

**Safe line**
6a New Street,
Warwick,
Warwickshire,
CV34 4RX
0808 800 5005
Email: support@safeline.org.uk
Website: https://www.safeline.org.uk/contact-us/

**Rape Crisis England and Wales**
Suite E4, Josephs Well, Hanover Walk,
Leeds,
LS3 1AB
Email: rcewinfo@rapecrisis.org.uk
Website: https://rapecrisis.org.uk/

# APPENDIX P

## Demographic frequencies

**How do you currently identify?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Gay | 177 | 47.8 | 47.8 | 47.8 |
| | Straight or Heterosexual | 193 | 52.2 | 52.2 | 100.0 |
| | Total | 370 | 100.0 | 100.0 | |

**Which of the following reflect your ethno-racial background? - Selected Choice**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | White – British | 301 | 81.4 | 81.4 | 81.4 |
| | White – Irish | 12 | 3.2 | 3.2 | 84.6 |
| | Any other White background (Please specify) | 12 | 3.2 | 3.2 | 87.8 |
| | Black | 3 | .8 | .8 | 88.6 |
| | Black – British | 17 | 4.6 | 4.6 | 93.2 |
| | Mixed - White and Black Caribbean | 7 | 1.9 | 1.9 | 95.1 |
| | Mixed - White and Black African | 2 | .5 | .5 | 95.7 |
| | Mixed - White and Asian | 1 | .3 | .3 | 95.9 |
| | Subcontinent (Indian, Bangladeshi, Pakistani,...) | 11 | 3.0 | 3.0 | 98.9 |
| | Far East (Chinese, Indonesian, Korean,...) | 4 | 1.1 | 1.1 | 100.0 |
| | Total | 370 | 100.0 | 100.0 | |

**At this point, what level of education have you completed?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Post graduate Degree | 35 | 9.5 | 9.5 | 9.5 |
| | Undergraduate Degree | 82 | 22.2 | 22.2 | 31.6 |
| | Some university credits | 10 | 2.7 | 2.7 | 34.3 |
| | A-Level or equivalent | 67 | 18.1 | 18.1 | 52.4 |
| | College or trade school graduate | 32 | 8.6 | 8.6 | 61.1 |
| | Some college credits or trade school | 19 | 5.1 | 5.1 | 66.2 |
| | G.C.S.Es | 106 | 28.6 | 28.6 | 94.9 |
| | Did not graduate from high school | 7 | 1.9 | 1.9 | 96.8 |
| | No qualification | 12 | 3.2 | 3.2 | 100.0 |
| | Total | 370 | 100.0 | 100.0 | |

**What is your current relationship status?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Single and not dating | 93 | 25.1 | 25.1 | 25.1 |
| | Single and dating | 84 | 22.7 | 22.7 | 47.8 |
| | In a monogamous relationship | 164 | 44.3 | 44.3 | 92.2 |
| | In a non-monogamous (open) relationship | 24 | 6.5 | 6.5 | 98.6 |
| | In a polyamorous (multiple people) relationship | 5 | 1.4 | 1.4 | 100.0 |
| | Total | 370 | 100.0 | 100.0 | |

**What is your legal marital status right now?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Never married | 181 | 48.9 | 49.2 | 49.2 |
| | Separated | 11 | 3.0 | 3.0 | 52.2 |
| | Divorced | 21 | 5.7 | 5.7 | 57.9 |
| | Widowed | 7 | 1.9 | 1.9 | 59.8 |
| | Living common-law | 30 | 8.1 | 8.2 | 67.9 |
| | Married | 108 | 29.2 | 29.3 | 97.3 |
| | Civil partnership | 10 | 2.7 | 2.7 | 100.0 |
| | Total | 368 | 99.5 | 100.0 | |
| Missing | System | 2 | .5 | | |
| Total | | 370 | 100.0 | | |

**How Old are you?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 18-23 | 48 | 13.0 | 13.1 | 13.1 |
| | 24-29 | 44 | 11.9 | 12.0 | 25.1 |
| | 30-35 | 60 | 16.2 | 16.3 | 41.4 |
| | 36-41 | 58 | 15.7 | 15.8 | 57.2 |
| | 42-47 | 40 | 10.8 | 10.9 | 68.1 |
| | 48-53 | 32 | 8.6 | 8.7 | 76.8 |
| | 54-59 | 48 | 13.0 | 13.1 | 89.9 |
| | +60 | 37 | 10.0 | 10.1 | 100.0 |
| | Total | 367 | 99.2 | 100.0 | |
| Missing | System | 3 | .8 | | |
| Total | | 370 | 100.0 | | |

# APPENDIX Q

## Reliability

## Scale: Attitude_Multi_Partner

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .964 | 5 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 20.18 | 90.350 | 9.505 | 5 |

## Scale: Attitude_Condom_Use

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .947 | 5 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 21.16 | 91.643 | 9.573 | 5 |

## Scale: SubjNorm_Multi

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .892 | 3 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 14.55 | 28.600 | 5.348 | 3 |

## Scale: SubjNorm_ConUse

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .878 | 6 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 30.7452 | 90.613 | 9.51911 | 6 |

## Scale: PBC_Muti

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .799 | 3 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 15.0055 | 24.198 | 4.91912 | 3 |

## Scale: PBC_ConUse

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .912 | 6 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 30.9945 | 92.401 | 9.61255 | 6 |

## Scale: Intention_Multi

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |

| | | | |
|---|---|---|---|
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .859 | 4 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 20.0986 | 47.540 | 6.89490 | 4 |

## Scale: Intention_ConUse

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 364 | 98.4 |
| | Excluded[a] | 6 | 1.6 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .950 | 9 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 47.17 | 218.718 | 14.789 | 9 |

## Scale: Advers_Childh

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 354 | 95.7 |
| | Excluded[a] | 16 | 4.3 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .874 | 14 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 25.87 | 9.513 | 3.084 | 14 |

## Scale: RSB

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 365 | 98.6 |
| | Excluded[a] | 5 | 1.4 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .972 | 38 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 67.4603 | 478.941 | 21.88473 | 38 |

## Scale: Lone_Roman

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 327 | 88.4 |
| | Excluded[a] | 43 | 11.6 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .916 | 12 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 15.4801 | 80.097 | 8.94969 | 12 |

## Scale: Lone_Fam

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 326 | 88.1 |

| | | | |
|---|---|---|---|
| | Excluded[a] | 44 | 11.9 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .938 | 11 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 11.4233 | 66.079 | 8.12888 | 11 |

## Scale: Lone_Social

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 325 | 87.8 |
| | Excluded[a] | 45 | 12.2 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .938 | 14 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 16.1292 | 91.514 | 9.56630 | 14 |

## Scale: Inter_Homophobia

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 318 | 85.9 |
| | Excluded[a] | 52 | 14.1 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .894 | 8 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 18.7075 | 70.952 | 8.42330 | 8 |

## Scale: Early_Sexual_Exper

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 319 | 86.2 |
| | Excluded[a] | 51 | 13.8 |
| | Total | 370 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .935 | 12 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 22.56 | 9.372 | 3.061 | 12 |

# APPENDIX R
# CORRELATION

**Descriptive Statistics**

| | | | Bootstrap[a] | | | |
|---|---|---|---|---|---|---|
| | | | | | 95% Confidence Interval | |
| | | Statistic | Bias | Std. Error | Lower | Upper |
| Number of Sex partner | Mean | 1.7211 | .0003 | .0625 | 1.6017 | 1.8526 |
| | Std. Deviation | .98077 | -.00190 | .04642 | .88209 | 1.07232 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Condom use (Last 12 month) | Mean | 2.71 | .00 | .11 | 2.47 | 2.92 |
| | Std. Deviation | 1.782 | -.004 | .031 | 1.708 | 1.832 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Attitude_Multi_SPartner | Mean | 19.8287 | .0220 | .6052 | 18.6894 | 21.0476 |
| | Std. Deviation | 9.39098 | -.02592 | .29069 | 8.75771 | 9.90935 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Attitude_Condom_Use | Mean | 20.5219 | .0156 | .6084 | 19.3745 | 21.7170 |
| | Std. Deviation | 9.48570 | -.00721 | .29304 | 8.86529 | 10.01619 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Subj_Norm_Multi | Mean | 15.0159 | .0074 | .3279 | 14.3905 | 15.6971 |
| | Std. Deviation | 5.08485 | -.02075 | .18452 | 4.70444 | 5.43313 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Subj_Norm_Con | Mean | 31.8845 | .0129 | .5673 | 30.7293 | 33.0119 |
| | Std. Deviation | 8.87776 | -.02908 | .32647 | 8.20896 | 9.49063 |
| | N | 251 | 0 | 0 | 251 | 251 |
| PBC_Multi | Mean | 15.2550 | -.0001 | .3038 | 14.6215 | 15.8760 |
| | Std. Deviation | 4.76558 | -.00630 | .15960 | 4.45616 | 5.10038 |
| | N | 251 | 0 | 0 | 251 | 251 |
| PBC_Con | Mean | 31.9044 | -.0092 | .5777 | 30.7691 | 33.0473 |
| | Std. Deviation | 9.02789 | -.02076 | .34118 | 8.33974 | 9.75695 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Intention_Multi | Mean | 20.0598 | .0031 | .4185 | 19.2591 | 20.8997 |
| | Std. Deviation | 6.72015 | -.01312 | .19756 | 6.30782 | 7.11820 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Intention_Con | Mean | 48.1753 | -.0043 | .9126 | 46.4108 | 50.0832 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Std. Deviation | 14.21609 | -.03313 | .56505 | 13.13073 | 15.38969 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Lone_Roman | Mean | 14.2789 | -.0037 | .5526 | 13.2510 | 15.3585 |
| | Std. Deviation | 8.73258 | -.03188 | .31303 | 8.02971 | 9.31836 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Lone_Fam | Mean | 10.8088 | -.0139 | .4854 | 9.8846 | 11.7526 |
| | Std. Deviation | 7.85845 | -.02616 | .31497 | 7.22499 | 8.46595 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Lone_Social | Mean | 15.9402 | .0110 | .5710 | 14.8606 | 17.0876 |
| | Std. Deviation | 9.50918 | -.02162 | .40895 | 8.68991 | 10.26021 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Inter_Homophobia | Mean | 18.6135 | .0123 | .5293 | 17.5657 | 19.6732 |
| | Std. Deviation | 8.41653 | -.03035 | .29097 | 7.80701 | 8.94796 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Advers_Child_Exp | Mean | 2.3705 | -.0016 | .2127 | 1.9881 | 2.8127 |
| | Std. Deviation | 3.23885 | -.01722 | .21366 | 2.80286 | 3.64886 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Early_Sexual_Exper | Mean | 1.4183 | .0088 | .1928 | 1.0599 | 1.8166 |
| | Std. Deviation | 3.00205 | -.00764 | .24197 | 2.52657 | 3.48834 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Drug use | Mean | 1.79 | .00 | .07 | 1.65 | 1.93 |
| | Std. Deviation | 1.176 | -.005 | .065 | 1.043 | 1.296 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Sniffed a substance | Mean | 1.56 | .00 | .05 | 1.46 | 1.66 |
| | Std. Deviation | .815 | -.002 | .028 | .754 | .864 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Alcohol use | Mean | 3.20 | .00 | .08 | 3.04 | 3.35 |
| | Std. Deviation | 1.239 | -.004 | .042 | 1.150 | 1.317 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Actual_Beh_Contrl_1 | Mean | 4.66 | .00 | .07 | 4.53 | 4.80 |
| | Std. Deviation | 1.051 | -.003 | .067 | .918 | 1.178 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Actual_Beh_Contrl_2 | Mean | 5.03 | .00 | .08 | 4.87 | 5.18 |
| | Std. Deviation | 1.232 | -.003 | .049 | 1.131 | 1.328 |
| | N | 251 | 0 | 0 | 251 | 251 |
| Smoke | Mean | 2.18 | .00 | .08 | 2.02 | 2.33 |
| | Std. Deviation | 1.204 | -.003 | .029 | 1.142 | 1.258 |
| | N | 251 | 0 | 0 | 251 | 251 |

# APPENDIX S

# MANOVA

## General Linear Model

**Between-Subjects Factors**

| | | Value Label | N |
|---|---|---|---|
| 3. How do you currently identify? | 2 | Gay | 106 |
| | 3 | Straight or Heterosexual | 145 |

**Multivariate Tests[a]**

| Effect | | Value | F | Hypothesis df | Error df |
|---|---|---|---|---|---|
| Intercept | Pillai's Trace | .993 | 1425.306[b] | 23.000 | 227.000 |
| | Wilks' Lambda | .007 | 1425.306[b] | 23.000 | 227.000 |
| | Hotelling's Trace | 144.414 | 1425.306[b] | 23.000 | 227.000 |
| | Roy's Largest Root | 144.414 | 1425.306[b] | 23.000 | 227.000 |
| Sexual_Orientation | Pillai's Trace | .295 | 4.137[b] | 23.000 | 227.000 |
| | Wilks' Lambda | .705 | 4.137[b] | 23.000 | 227.000 |
| | Hotelling's Trace | .419 | 4.137[b] | 23.000 | 227.000 |
| | Roy's Largest Root | .419 | 4.137[b] | 23.000 | 227.000 |

**Multivariate Tests[a]**

| Effect | | Sig. |
|---|---|---|
| Intercept | Pillai's Trace | .000 |
| | Wilks' Lambda | .000 |
| | Hotelling's Trace | .000 |
| | Roy's Largest Root | .000 |
| Sexual_Orientation | Pillai's Trace | .000 |
| | Wilks' Lambda | .000 |
| | Hotelling's Trace | .000 |
| | Roy's Largest Root | .000 |

a. Design: Intercept + Sexual_Orientation
b. Exact statistic

**Tests of Between-Subjects Effects**

| Source | Dependent Variable | Type III Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Corrected Model | RSB | 1549.218[a] | 1 | 1549.218 | 3.632 | .058 |
| | Number of Sex partner | 28.209[b] | 1 | 28.209 | 33.090 | .000 |
| | Condom use (Last 12 month) | 2.038[c] | 1 | 2.038 | .641 | .424 |
| | Attitude_Multi_SPartner | 11.765[d] | 1 | 11.765 | .133 | .716 |
| | Attitude_Condom_Use | 278.869[e] | 1 | 278.869 | 3.126 | .078 |
| | Subj_Norm_Multi | 677.542[f] | 1 | 677.542 | 29.156 | .000 |
| | Subj_Norm_Con | 416.771[g] | 1 | 416.771 | 5.381 | .021 |
| | PBC_Multi | 311.124[h] | 1 | 311.124 | 14.436 | .000 |
| | PBC_Con | 733.021[i] | 1 | 733.021 | 9.292 | .003 |
| | Intention_Multi | 959.027[j] | 1 | 959.027 | 23.115 | .000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Intention_Con | 2820.412[k] | 1 | 2820.412 | 14.722 | .000 |
| | Lone_Roman | 951.945[l] | 1 | 951.945 | 13.087 | .000 |
| | Lone_Fam | 1472.402[m] | 1 | 1472.402 | 26.251 | .000 |
| | Lone_Social | 154.716[n] | 1 | 154.716 | 1.716 | .191 |
| | Inter_Homophobia | 1004.682[o] | 1 | 1004.682 | 14.976 | .000 |
| | Advers_Child_Exp | 101.211[p] | 1 | 101.211 | 9.995 | .002 |
| | Early_Sexual_Exper | 88.600[q] | 1 | 88.600 | 10.192 | .002 |
| | Drug use | 7.466[r] | 1 | 7.466 | 5.495 | .020 |
| | Sniffed a substance | 9.310[s] | 1 | 9.310 | 14.803 | .000 |
| | Alcohol use | 2.809[t] | 1 | 2.809 | 1.835 | .177 |
| | Actual_Beh_Contrl_1 | 6.465[u] | 1 | 6.465 | 5.967 | .015 |
| | Actual_Beh_Contrl_2 | 3.985[v] | 1 | 3.985 | 2.641 | .105 |
| | Smoke | 1.449[w] | 1 | 1.449 | 1.000 | .318 |
| Intercept | RSB | 1173319.943 | 1 | 1173319.943 | 2750.960 | .000 |
| | Number of Sex partner | 770.711 | 1 | 770.711 | 904.074 | .000 |
| | Condom use (Last 12 month) | 1778.994 | 1 | 1778.994 | 559.495 | .000 |
| | Attitude_Multi_SPartner | 95974.315 | 1 | 95974.315 | 1084.487 | .000 |
| | Attitude_Condom_Use | 104829.785 | 1 | 104829.785 | 1174.959 | .000 |
| | Subj_Norm_Multi | 53344.123 | 1 | 53344.123 | 2295.503 | .000 |
| | Subj_Norm_Con | 245855.178 | 1 | 245855.178 | 3174.072 | .000 |
| | PBC_Multi | 55699.969 | 1 | 55699.969 | 2584.393 | .000 |
| | PBC_Con | 245138.758 | 1 | 245138.758 | 3107.495 | .000 |
| | Intention_Multi | 95564.350 | 1 | 95564.350 | 2303.296 | .000 |
| | Intention_Con | 556096.763 | 1 | 556096.763 | 2902.659 | .000 |
| | Lone_Roman | 52105.650 | 1 | 52105.650 | 716.317 | .000 |
| | Lone_Fam | 30668.928 | 1 | 30668.928 | 546.780 | .000 |
| | Lone_Social | 63205.202 | 1 | 63205.202 | 700.985 | .000 |
| | Inter_Homophobia | 82017.830 | 1 | 82017.830 | 1222.547 | .000 |
| | Advers_Child_Exp | 1494.836 | 1 | 1494.836 | 147.626 | .000 |
| | Early_Sexual_Exper | 559.803 | 1 | 559.803 | 64.399 | .000 |
| | Drug use | 807.753 | 1 | 807.753 | 594.459 | .000 |
| | Sniffed a substance | 617.724 | 1 | 617.724 | 982.189 | .000 |
| | Alcohol use | 2480.929 | 1 | 2480.929 | 1620.413 | .000 |
| | Actual_Beh_Contrl_1 | 5379.915 | 1 | 5379.915 | 4966.068 | .000 |
| | Actual_Beh_Contrl_2 | 6250.774 | 1 | 6250.774 | 4142.121 | .000 |
| | Smoke | 1171.807 | 1 | 1171.807 | 808.617 | .000 |
| Sexual_Orientation | RSB | 1549.218 | 1 | 1549.218 | 3.632 | .058 |
| | Number of Sex partner | 28.209 | 1 | 28.209 | 33.090 | .000 |
| | Condom use (Last 12 month) | 2.038 | 1 | 2.038 | .641 | .424 |
| | Attitude_Multi_SPartner | 11.765 | 1 | 11.765 | .133 | .716 |
| | Attitude_Condom_Use | 278.869 | 1 | 278.869 | 3.126 | .078 |
| | Subj_Norm_Multi | 677.542 | 1 | 677.542 | 29.156 | .000 |
| | Subj_Norm_Con | 416.771 | 1 | 416.771 | 5.381 | .021 |
| | PBC_Multi | 311.124 | 1 | 311.124 | 14.436 | .000 |
| | PBC_Con | 733.021 | 1 | 733.021 | 9.292 | .003 |
| | Intention_Multi | 959.027 | 1 | 959.027 | 23.115 | .000 |
| | Intention_Con | 2820.412 | 1 | 2820.412 | 14.722 | .000 |
| | Lone_Roman | 951.945 | 1 | 951.945 | 13.087 | .000 |
| | Lone_Fam | 1472.402 | 1 | 1472.402 | 26.251 | .000 |
| | Lone_Social | 154.716 | 1 | 154.716 | 1.716 | .191 |
| | Inter_Homophobia | 1004.682 | 1 | 1004.682 | 14.976 | .000 |
| | Advers_Child_Exp | 101.211 | 1 | 101.211 | 9.995 | .002 |
| | Early_Sexual_Exper | 88.600 | 1 | 88.600 | 10.192 | .002 |
| | Drug use | 7.466 | 1 | 7.466 | 5.495 | .020 |
| | Sniffed a substance | 9.310 | 1 | 9.310 | 14.803 | .000 |
| | Alcohol use | 2.809 | 1 | 2.809 | 1.835 | .177 |
| | Actual_Beh_Contrl_1 | 6.465 | 1 | 6.465 | 5.967 | .015 |
| | Actual_Beh_Contrl_2 | 3.985 | 1 | 3.985 | 2.641 | .105 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Smoke | 1.449 | 1 | 1.449 | 1.000 | .318 |
| Error | RSB | 106201.714 | 249 | 426.513 | | |
| | Number of Sex partner | 212.269 | 249 | .852 | | |
| | Condom use (Last 12 month) | 791.731 | 249 | 3.180 | | |
| | Attitude_Multi_SPartner | 22035.869 | 249 | 88.497 | | |
| | Attitude_Condom_Use | 22215.761 | 249 | 89.220 | | |
| | Subj_Norm_Multi | 5786.395 | 249 | 23.239 | | |
| | Subj_Norm_Con | 19286.878 | 249 | 77.457 | | |
| | PBC_Multi | 5366.557 | 249 | 21.552 | | |
| | PBC_Con | 19642.684 | 249 | 78.886 | | |
| | Intention_Multi | 10331.076 | 249 | 41.490 | | |
| | Intention_Con | 47703.874 | 249 | 191.582 | | |
| | Lone_Roman | 18112.533 | 249 | 72.741 | | |
| | Lone_Fam | 13966.419 | 249 | 56.090 | | |
| | Lone_Social | 22451.388 | 249 | 90.166 | | |
| | Inter_Homophobia | 16704.832 | 249 | 67.088 | | |
| | Advers_Child_Exp | 2521.331 | 249 | 10.126 | | |
| | Early_Sexual_Exper | 2164.476 | 249 | 8.693 | | |
| | Drug use | 338.342 | 249 | 1.359 | | |
| | Sniffed a substance | 156.603 | 249 | .629 | | |
| | Alcohol use | 381.231 | 249 | 1.531 | | |
| | Actual_Beh_Contrl_1 | 269.750 | 249 | 1.083 | | |
| | Actual_Beh_Contrl_2 | 375.760 | 249 | 1.509 | | |
| | Smoke | 360.838 | 249 | 1.449 | | |
| Total | RSB | 1296560.000 | 251 | | | |
| | Number of Sex partner | 984.000 | 251 | | | |
| | Condom use (Last 12 month) | 2636.000 | 251 | | | |
| | Attitude_Multi_SPartner | 120735.000 | 251 | | | |
| | Attitude_Condom_Use | 128203.000 | 251 | | | |
| | Subj_Norm_Multi | 63059.000 | 251 | | | |
| | Subj_Norm_Con | 274875.000 | 251 | | | |
| | PBC_Multi | 64089.000 | 251 | | | |
| | PBC_Con | 275866.000 | 251 | | | |
| | Intention_Multi | 112291.000 | 251 | | | |
| | Intention_Con | 633060.000 | 251 | | | |
| | Lone_Roman | 70240.000 | 251 | | | |
| | Lone_Fam | 44763.000 | 251 | | | |
| | Lone_Social | 86383.000 | 251 | | | |
| | Inter_Homophobia | 104672.000 | 251 | | | |
| | Advers_Child_Exp | 4033.000 | 251 | | | |
| | Early_Sexual_Exper | 2758.000 | 251 | | | |
| | Drug use | 1149.000 | 251 | | | |
| | Sniffed a substance | 775.000 | 251 | | | |
| | Alcohol use | 2953.000 | 251 | | | |
| | Actual_Beh_Contrl_1 | 5730.000 | 251 | | | |
| | Actual_Beh_Contrl_2 | 6735.000 | 251 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Smoke | 1550.000 | 251 | | | |
| Corrected Total | RSB | 107750.932 | 250 | | | |
| | Number of Sex partner | 240.478 | 250 | | | |
| | Condom use (Last 12 month) | 793.769 | 250 | | | |
| | Attitude_Multi_SPartner | 22047.633 | 250 | | | |
| | Attitude_Condom_Use | 22494.629 | 250 | | | |
| | Subj_Norm_Multi | 6463.936 | 250 | | | |
| | Subj_Norm_Con | 19703.649 | 250 | | | |
| | PBC_Multi | 5677.681 | 250 | | | |
| | PBC_Con | 20375.705 | 250 | | | |
| | Intention_Multi | 11290.104 | 250 | | | |
| | Intention_Con | 50524.287 | 250 | | | |
| | Lone_Roman | 19064.478 | 250 | | | |
| | Lone_Fam | 15438.821 | 250 | | | |
| | Lone_Social | 22606.104 | 250 | | | |
| | Inter_Homophobia | 17709.514 | 250 | | | |
| | Advers_Child_Exp | 2622.542 | 250 | | | |
| | Early_Sexual_Exper | 2253.076 | 250 | | | |
| | Drug use | 345.809 | 250 | | | |
| | Sniffed a substance | 165.912 | 250 | | | |
| | Alcohol use | 384.040 | 250 | | | |
| | Actual_Beh_Contrl_1 | 276.215 | 250 | | | |
| | Actual_Beh_Contrl_2 | 379.745 | 250 | | | |
| | Smoke | 362.287 | 250 | | | |

## Estimated Marginal Means

**1. Grand Mean**

| Dependent Variable | Mean | Std. Error | 95% Confidence Interval | |
|---|---|---|---|---|
| | | | Lower Bound | Upper Bound |
| RSB | 69.211 | 1.320 | 66.613 | 71.810 |
| Number of Sex partner | 1.774 | .059 | 1.658 | 1.890 |
| Condom use (Last 12 month) | 2.695 | .114 | 2.471 | 2.919 |
| Attitude_Multi_SPartner | 19.795 | .601 | 18.611 | 20.978 |
| Attitude_Condom_Use | 20.688 | .604 | 19.499 | 21.876 |
| Subj_Norm_Multi | 14.758 | .308 | 14.151 | 15.364 |
| Subj_Norm_Con | 31.682 | .562 | 30.574 | 32.789 |
| PBC_Multi | 15.080 | .297 | 14.496 | 15.664 |
| PBC_Con | 31.636 | .568 | 30.518 | 32.753 |
| Intention_Multi | 19.752 | .412 | 18.942 | 20.563 |
| Intention_Con | 47.648 | .884 | 45.906 | 49.390 |
| Lone_Roman | 14.585 | .545 | 13.512 | 15.659 |
| Lone_Fam | 11.190 | .479 | 10.247 | 12.132 |
| Lone_Social | 16.064 | .607 | 14.869 | 17.259 |
| Inter_Homophobia | 18.299 | .523 | 17.268 | 19.330 |
| Advers_Child_Exp | 2.470 | .203 | 2.070 | 2.871 |
| Early_Sexual_Exper | 1.512 | .188 | 1.141 | 1.883 |
| Drug use | 1.816 | .074 | 1.669 | 1.963 |

| | | | | |
|---|---|---|---|---|
| Sniffed a substance | 1.588 | .051 | 1.488 | 1.688 |
| Alcohol use | 3.183 | .079 | 3.027 | 3.338 |
| Actual_Beh_Contrl_1 | 4.687 | .067 | 4.556 | 4.818 |
| Actual_Beh_Contrl_2 | 5.052 | .078 | 4.897 | 5.206 |
| Smoke | 2.187 | .077 | 2.036 | 2.339 |

**2. 3. How do you currently identify?**

| Dependent Variable | 3. How do you currently identify? | Mean | Std. Error | 95% Confidence Interval | |
|---|---|---|---|---|---|
| | | | | Lower Bound | Upper Bound |
| RSB | Gay | 71.726 | 2.006 | 67.776 | 75.677 |
| | Straight or Heterosexual | 66.697 | 1.715 | 63.319 | 70.074 |
| Number of Sex partner | Gay | 2.113 | .090 | 1.937 | 2.290 |
| | Straight or Heterosexual | 1.434 | .077 | 1.283 | 1.585 |
| Condom use (Last 12 month) | Gay | 2.604 | .173 | 2.263 | 2.945 |
| | Straight or Heterosexual | 2.786 | .148 | 2.495 | 3.078 |
| Attitude_Multi_SPartner | Gay | 19.575 | .914 | 17.776 | 21.375 |
| | Straight or Heterosexual | 20.014 | .781 | 18.475 | 21.552 |
| Attitude_Condom_Use | Gay | 21.755 | .917 | 19.948 | 23.562 |
| | Straight or Heterosexual | 19.621 | .784 | 18.076 | 21.166 |
| Subj_Norm_Multi | Gay | 13.094 | .468 | 12.172 | 14.017 |
| | Straight or Heterosexual | 16.421 | .400 | 15.632 | 17.209 |
| Subj_Norm_Con | Gay | 30.377 | .855 | 28.694 | 32.061 |
| | Straight or Heterosexual | 32.986 | .731 | 31.547 | 34.426 |
| PBC_Multi | Gay | 13.953 | .451 | 13.065 | 14.841 |
| | Straight or Heterosexual | 16.207 | .386 | 15.448 | 16.966 |
| PBC_Con | Gay | 29.906 | .863 | 28.207 | 31.605 |
| | Straight or Heterosexual | 33.366 | .738 | 31.913 | 34.818 |
| Intention_Multi | Gay | 17.774 | .626 | 16.541 | 19.006 |
| | Straight or Heterosexual | 21.731 | .535 | 20.677 | 22.785 |
| Intention_Con | Gay | 44.255 | 1.344 | 41.607 | 46.903 |
| | Straight or Heterosexual | 51.041 | 1.149 | 48.777 | 53.305 |
| Lone_Roman | Gay | 16.557 | .828 | 14.925 | 18.188 |
| | Straight or Heterosexual | 12.614 | .708 | 11.219 | 14.009 |
| Lone_Fam | Gay | 13.642 | .727 | 12.209 | 15.074 |
| | Straight or Heterosexual | 8.738 | .622 | 7.513 | 9.963 |
| Lone_Social | Gay | 16.858 | .922 | 15.042 | 18.675 |
| | Straight or Heterosexual | 15.269 | .789 | 13.716 | 16.822 |
| Inter_Homophobia | Gay | 16.274 | .796 | 14.707 | 17.840 |
| | Straight or Heterosexual | 20.324 | .680 | 18.984 | 21.664 |
| Advers_Child_Exp | Gay | 3.113 | .309 | 2.504 | 3.722 |
| | Straight or Heterosexual | 1.828 | .264 | 1.307 | 2.348 |
| Early_Sexual_Exper | Gay | 2.113 | .286 | 1.549 | 2.677 |
| | Straight or Heterosexual | .910 | .245 | .428 | 1.393 |
| Drug use | Gay | 1.991 | .113 | 1.768 | 2.214 |
| | Straight or Heterosexual | 1.641 | .097 | 1.451 | 1.832 |
| Sniffed a substance | Gay | 1.783 | .077 | 1.631 | 1.935 |
| | Straight or Heterosexual | 1.393 | .066 | 1.263 | 1.523 |
| Alcohol use | Gay | 3.075 | .120 | 2.839 | 3.312 |
| | Straight or Heterosexual | 3.290 | .103 | 3.087 | 3.492 |
| Actual_Beh_Contrl_1 | Gay | 4.849 | .101 | 4.650 | 5.048 |
| | Straight or Heterosexual | 4.524 | .086 | 4.354 | 4.694 |
| Actual_Beh_Contrl_2 | Gay | 5.179 | .119 | 4.944 | 5.414 |
| | Straight or Heterosexual | 4.924 | .102 | 4.723 | 5.125 |
| Smoke | Gay | 2.264 | .117 | 2.034 | 2.494 |
| | Straight or Heterosexual | 2.110 | .100 | 1.913 | 2.307 |

# APPENDIX T-1

## Regression – Mediation testing -Gay male participants

## Number of sexual Partners

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Smoking , Lone_Roman, Inter_Homophobia, Sniffed a substance of any kind, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam[b] | . | Enter |

a. Dependent Variable: Intention_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .474[a] | .225 | .149 | 6.15789 |

a. Predictors: (Constant), Smoking , Lone_Roman, Inter_Homophobia, Sniffed a substance of any kind, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1241.376 | 11 | 112.852 | 2.976 | .002[b] |
| | Residual | 4284.912 | 113 | 37.920 | | |
| | Total | 5526.288 | 124 | | | |

a. Dependent Variable: Intention_Multi

b. Predictors: (Constant), Smoking , Lone_Roman, Inter_Homophobia, Sniffed a substance of any kind, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 20.457 | 2.930 | | 6.983 | |
| | Age | -.027 | .281 | -.008 | -.096 | |
| | Lone_Roman | -.129 | .087 | -.152 | -1.495 | |
| | Lone_Fam | -.073 | .096 | -.083 | -.766 | |
| | Lone_Social | .025 | .072 | .034 | .342 | |
| | Inter_Homophobia | .207 | .074 | .255 | 2.796 | |
| | Advrs_Child_Exp | -.056 | .175 | -.032 | -.317 | |
| | Early_Sexual_Exper | -.038 | .196 | -.019 | -.193 | |
| | Drug use | -.441 | .549 | -.079 | -.804 | |
| | Sniffed a substance of any kind | -1.993 | .702 | -.260 | -2.840 | |
| | Alcohol use | .020 | .483 | .004 | .042 | |
| | Smoking | .829 | .514 | .148 | 1.612 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia[b] | . | Enter |

a. Dependent Variable: Attitude_Multi_SPartner
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .265[a] | .070 | .056 | 9.47566 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 900.406 | 2 | 450.203 | 5.014 | .008[b] |
| | Residual | 11941.829 | 133 | 89.788 | | |
| | Total | 12842.235 | 135 | | | |

a. Dependent Variable: Attitude_Multi_SPartner
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 20.116 | 2.483 | | 8.100 | |
| | Inter_Homophobia | .203 | .098 | .173 | 2.070 | |
| | Sniffed a substance of any kind | -2.293 | .963 | -.199 | -2.381 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia[b] | . | Enter |

a. Dependent Variable: Subj_Norm_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .293[a] | .086 | .072 | 5.10313 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 326.238 | 2 | 163.119 | 6.264 | .003[b] |
| | Residual | 3463.578 | 133 | 26.042 | | |
| | Total | 3789.816 | 135 | | | |

a. Dependent Variable: Subj_Norm_Multi
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 12.805 | 1.337 | | 9.574 | |
| | Inter_Homophobia | .129 | .053 | .203 | 2.446 | |
| | Sniffed a substance of any kind | -1.317 | .519 | -.211 | -2.539 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia[b] | . | Enter |

a. Dependent Variable: PBC_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .350[a] | .123 | .109 | 4.80059 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 428.455 | 2 | 214.228 | 9.296 | .000[b] |
| | Residual | 3065.074 | 133 | 23.046 | | |
| | Total | 3493.529 | 135 | | | |

a. Dependent Variable: PBC_Multi

b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 14.327 | 1.258 | | 11.387 | |
| | Inter_Homophobia | .130 | .050 | .212 | 2.608 | |
| | Sniffed a substance of any kind | -1.666 | .488 | -.277 | -3.414 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | PBC_Multi, Attitude_Multi_SPartner, Subj_Norm_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .886[a] | .786 | .782 | 3.36583 |

a. Predictors: (Constant), PBC_Multi, Attitude_Multi_SPartner, Subj_Norm_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7062.913 | 3 | 2354.304 | 207.816 | .000[b] |
| | Residual | 1925.897 | 170 | 11.329 | | |
| | Total | 8988.810 | 173 | | | |

a. Dependent Variable: Intention_Multi
b. Predictors: (Constant), PBC_Multi, Attitude_Multi_SPartner, Subj_Norm_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 1.370 | .732 | | 1.871 | |
| | Attitude_Multi_SPartner | .168 | .043 | .235 | 3.904 | |
| | Subj_Norm_Multi | .182 | .081 | .142 | 2.254 | |
| | PBC_Multi | .794 | .078 | .581 | 10.208 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia, Attitude_Multi_SPartner[b] | . | Enter |

a. Dependent Variable: Intention_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .736[a] | .542 | .532 | 4.77596 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, Attitude_Multi_SPartner

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3562.988 | 3 | 1187.663 | 52.068 | .000[b] |
| | Residual | 3010.895 | 132 | 22.810 | | |
| | Total | 6573.882 | 135 | | | |

a. Dependent Variable: Intention_Multi
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, Attitude_Multi_SPartner

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 9.070 | 1.530 | | 5.930 | |
| | Attitude_Multi_SPartner | .453 | .044 | .633 | 10.358 | |
| | Inter_Homophobia | .142 | .050 | .170 | 2.836 | |
| | Sniffed a substance of any kind | -1.440 | .496 | -.175 | -2.906 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia, Subj_Norm_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .723[a] | .523 | .512 | 4.87405 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, Subj_Norm_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3438.038 | 3 | 1146.013 | 48.240 | .000[b] |
| | Residual | 3135.844 | 132 | 23.756 | | |
| | Total | 6573.882 | 135 | | | |

a. Dependent Variable: Intention_Multi
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, Subj_Norm_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 7.692 | 1.660 | | 4.633 | |
| | Subj_Norm_Multi | .819 | .083 | .622 | 9.887 | |
| | Inter_Homophobia | .129 | .052 | .153 | 2.492 | |
| | Sniffed a substance of any kind | -1.400 | .507 | -.170 | -2.760 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia, PBC_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .822[a] | .676 | .669 | 4.01692 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, PBC_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4443.978 | 3 | 1481.326 | 91.805 | .000[b] |
| | Residual | 2129.905 | 132 | 16.136 | | |
| | Total | 6573.882 | 135 | | | |

a. Dependent Variable: Intention_Multi
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia, PBC_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 3.247 | 1.479 | | 2.195 | |
| | PBC_Multi | 1.042 | .073 | .760 | 14.362 | |
| | Inter_Homophobia | .099 | .043 | .118 | 2.330 | |
| | Sniffed a substance of any kind | -.743 | .426 | -.090 | -1.744 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Sniffed a substance of any kind, Inter_Homophobia[b] | . | Enter |

a. Dependent Variable: Number of Sex partner
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .513[a] | .263 | .252 | 1.13299 |

a. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 61.030 | 2 | 30.515 | 23.772 | .000[b] |
| | Residual | 170.728 | 133 | 1.284 | | |
| | Total | 231.757 | 135 | | | |

a. Dependent Variable: Number of Sex partner
b. Predictors: (Constant), Sniffed a substance of any kind, Inter_Homophobia

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 1.303 | .297 | | 4.388 | |
| | Inter_Homophobia | -.032 | .012 | -.200 | -2.691 | |
| | Sniffed a substance of any kind | .729 | .115 | .471 | 6.328 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Intention_Multi, Inter_Homophobia, Sniffed a substance of any kind, Subj_Norm_Multi, Attitude_Multi_SPartner, PBC_Multi[b] | . | Enter |

a. Dependent Variable: Number of Sex partner
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .681[a] | .464 | .439 | .98121 |

a. Predictors: (Constant), Intention_Multi, Inter_Homophobia, Sniffed a substance of any kind, Subj_Norm_Multi, Attitude_Multi_SPartner, PBC_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 107.559 | 6 | 17.926 | 18.620 | .000[b] |
| | Residual | 124.198 | 129 | .963 | | |
| | Total | 231.757 | 135 | | | |

a. Dependent Variable: Number of Sex partner
b. Predictors: (Constant), Intention_Multi, Inter_Homophobia, Sniffed a substance of any kind, Subj_Norm_Multi, Attitude_Multi_SPartner, PBC_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 3.035 | .372 | | 8.167 | |
| | Inter_Homophobia | -.010 | .011 | -.064 | -.954 | |
| | Sniffed a substance of any kind | .499 | .105 | .322 | 4.737 | |
| | Attitude_Multi_SPartner | -.003 | .013 | -.022 | -.222 | |
| | Subj_Norm_Multi | -.003 | .025 | -.013 | -.132 | |
| | PBC_Multi | -.011 | .029 | -.044 | -.391 | |
| | Intention_Multi | -.081 | .024 | -.430 | -3.405 | |

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Intention_Multi[b] | . | Enter |

a. Dependent Variable: Number of Sex partner

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .600[a] | .360 | .357 | 1.02460 |

a. Predictors: (Constant), Intention_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 101.737 | 1 | 101.737 | 96.910 | .000[b] |
| | Residual | 180.567 | 172 | 1.050 | | |
| | Total | 282.305 | 173 | | | |

a. Dependent Variable: Number of Sex partner

b. Predictors: (Constant), Intention_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 3.868 | .211 | | 18.331 | .000 |
| | Intention_Multi | -.106 | .011 | -.600 | -9.844 | .000 |

a. Dependent Variable: Number of Sex partner

**APPENDIX T-2**

**Sobel test – Gay male participants**

**IH and sniff a substance on intention when proximal factors are mediators**

IH and ATB

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | .203 | Sobel test: | 1.83011647 | 0.01863488 | 0.06723252 |
| *b* | .168 | Aroian test: | 1.78504452 | 0.01910541 | 0.0742541 |
| $s_a$ | .098 | Goodman test: | 1.87878459 | 0.01815216 | 0.06027391 |
| $s_b$ | .043 | Reset all | Calculate | | |

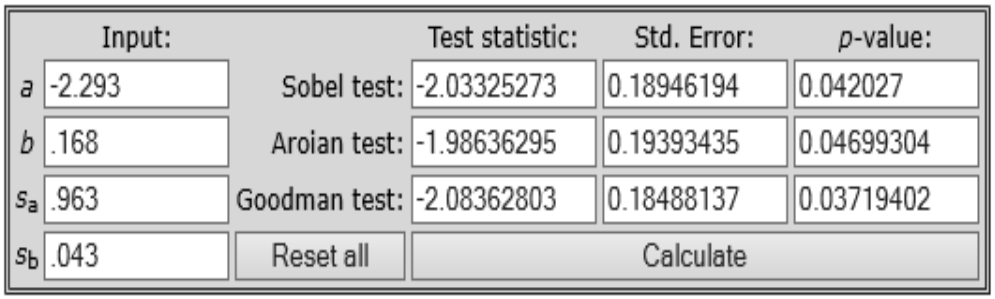
IH and SN

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | .129 | Sobel test: | 1.65097926 | 0.01422065 | 0.09874281 |
| *b* | .182 | Aroian test: | 1.58052902 | 0.01485452 | 0.11398577 |
| $s_a$ | .053 | Goodman test: | 1.73177637 | 0.01355718 | 0.08331339 |
| $s_b$ | .081 | Reset all | Calculate | | |

IH and PBC

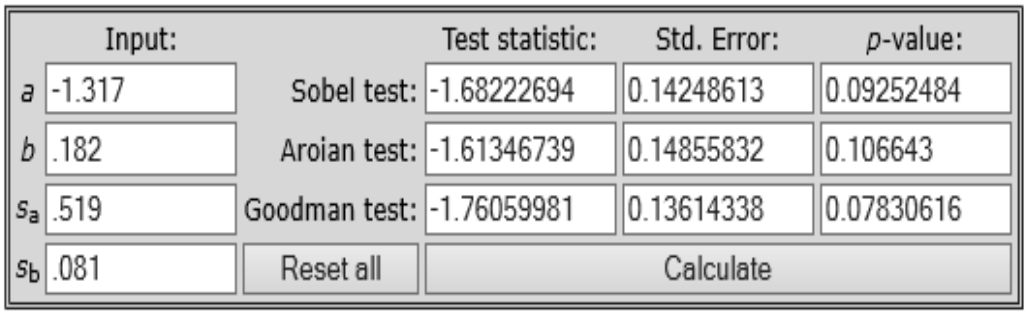
| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | .130 | Sobel test: | 2.51912779 | 0.0409745 | 0.0117646 |
| *b* | .794 | Aroian test: | 2.50779378 | 0.04115968 | 0.01214875 |
| $s_a$ | .050 | Goodman test: | 2.53061687 | 0.04078847 | 0.01138621 |
| $s_b$ | .078 | Reset all | Calculate | | |

Sniff a substance and ATB



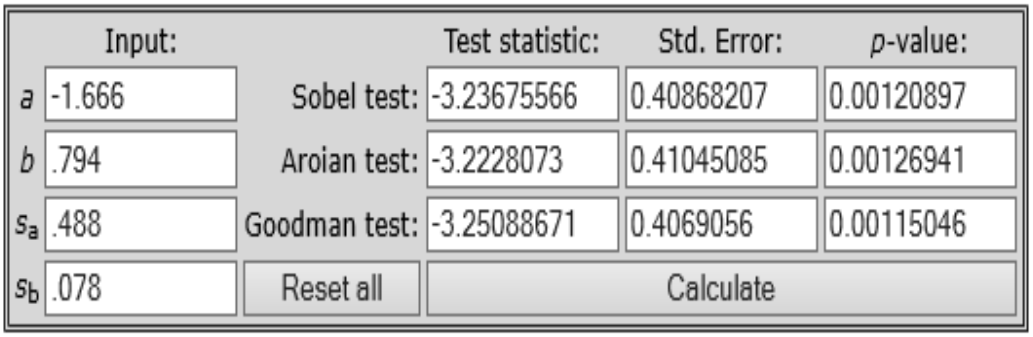
| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -2.293 | Sobel test: | -2.03325273 | 0.18946194 | 0.042027 |
| *b* | .168 | Aroian test: | -1.98636295 | 0.19393435 | 0.04699304 |
| $s_a$ | .963 | Goodman test: | -2.08362803 | 0.18488137 | 0.03719402 |
| $s_b$ | .043 | Reset all | Calculate | | |

Sniff a substance and SN



| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -1.317 | Sobel test: | -1.68222694 | 0.14248613 | 0.09252484 |
| *b* | .182 | Aroian test: | -1.61346739 | 0.14855832 | 0.106643 |
| $s_a$ | .519 | Goodman test: | -1.76059981 | 0.13614338 | 0.07830616 |
| $s_b$ | .081 | Reset all | Calculate | | |

Sniff a substance and PBC



| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -1.666 | Sobel test: | -3.23675566 | 0.40868207 | 0.00120897 |
| *b* | .794 | Aroian test: | -3.2228073 | 0.41045085 | 0.00126941 |
| $s_a$ | .488 | Goodman test: | -3.25088671 | 0.4069056 | 0.00115046 |
| $s_b$ | .078 | Reset all | Calculate | | |

**APPENDIX T-3**

**The serial analysis, the PROCESS macro for SPSS (model 6) - between Sniff a substance/ IH and DV when proximal factors and intention are mediators- Gay male participants**

## Matrix

```
**************** PROCESS Procedure for SPSS Version 3.4.1 ****************

      Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
  Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 6
   Y  : Behv_Num
   X  : Sniffed_
  M1  : PBC_Mult
  M2  : Intentio

Sample
Size:  174

**************************************************************************
OUTCOME VARIABLE:
 PBC_Mult

Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .2909     .0846   25.6316   15.8977    1.0000   172.0000     .0001

Model
          coeff       se         t         p       LLCI      ULCI
constant   17.0066     .8797    19.3325     .0000    15.2702    18.7430
Sniffed_   -1.8064     .4531    -3.9872     .0001    -2.7007     -.9122

**************************************************************************
OUTCOME VARIABLE:
 Intentio

Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .8598     .7393   13.7043   242.4548    2.0000   171.0000     .0000

Model
          coeff       se         t         p       LLCI      ULCI
constant    3.3605    1.1458     2.9329     .0038    1.0988    5.6222
```

```
Sniffed_    -.5949     .3463    -1.7183     .0876    -1.2784     .0885
PBC_Mult    1.1432     .0558    20.5045     .0000     1.0332    1.2533

************************************************************************
OUTCOME VARIABLE:
 Behv_Num

Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .6798     .4622     .8931    48.6980    3.0000   170.0000     .0000

Model
          coeff       se         t         p       LLCI      ULCI
constant    2.6533     .2998    8.8513     .0000     2.0616    3.2451
Sniffed_    .5048     .0892    5.6623     .0000     .3288     .6808
PBC_Mult    -.0023     .0265    -.0875     .9304    -.0546     .0499
Intentio    -.0863     .0195   -4.4196     .0000    -.1248    -.0477

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
    Effect       se         t         p       LLCI      ULCI
    .5048     .0892    5.6623     .0000     .3288     .6808

Indirect effect(s) of X on Y:
        Effect    BootSE   BootLLCI   BootULCI
TOTAL     .2337     .0616     .1195     .3555
Ind1      .0042     .0443    -.0856     .0944
Ind2      .0513     .0338    -.0170     .1216
Ind3      .1782     .0588     .0735     .3084

Indirect effect key:
Ind1 Sniffed_   ->   PBC_Mult   ->   Behv_Num
Ind2 Sniffed_   ->   Intentio   ->   Behv_Num
Ind3 Sniffed_   ->   PBC_Mult   ->   Intentio   ->   Behv_Num

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Variables names longer than eight characters can produce incorrect output.
    Shorter variable names are recommended.

------ END MATRIX -----
```

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Sniffed_
M1 : Subj_Nor
M2 : Intentio

Sample
Size: 174

**********

OUTCOME VARIABLE:
Subj_Nor

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2308 | .0533 | 29.9484 | 9.6776 | 1.0000 | 172.0000 | .0022 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 15.6789 | .9509 | 16.4888 | .0000 | 13.8020 | 17.5559 |
| Sniffed_ | -1.5235 | .4897 | -3.1109 | .0022 | -2.4901 | -.5568 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7736 | .5985 | 21.1059 | 127.4455 | 2.0000 | 171.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 8.1545 | 1.2824 | 6.3589 | .0000 | 5.6232 | 10.6858 |
| Sniffed_ | -1.2368 | .4225 | -2.9270 | .0039 | -2.0708 | -.4027 |
| Subj_Nor | .9343 | .0640 | 14.5954 | .0000 | .8079 | 1.0606 |

**********

OUTCOME VARIABLE:
Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6799 | .4622 | .8930 | 48.7088 | 3.0000 | 170.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 2.6535 | .2933 | 9.0466 | .0000 | 2.0745 | 3.2325 |
| Sniffed_ | .5053 | .0891 | 5.6739 | .0000 | .3295 | .6811 |
| Subj_Nor | -.0031 | .0197 | -.1584 | .8743 | -.0421 | .0358 |
| Intentio | -.0859 | .0157 | -5.4586 | .0000 | -.1169 | -.0548 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| .5053 | .0891 | 5.6739 | .0000 | .3295 | .6811 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | .2332 | .0610 | .1188 | .3589 |
| Ind1 | .0048 | .0330 | -.0618 | .0748 |
| Ind2 | .1062 | .0434 | .0270 | .1966 |
| Ind3 | .1222 | .0484 | .0372 | .2301 |

Indirect effect key:
Ind1 Sniffed_ -> Subj_Nor -> Behv_Num
Ind2 Sniffed_ -> Intentio -> Behv_Num
Ind3 Sniffed_ -> Subj_Nor -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Sniffed_
M1 : Attitude
M2 : Intentio

Sample
Size: 174

**********

OUTCOME VARIABLE:
Attitude

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2199 | .0484 | 97.8081 | 8.7438 | 1.0000 | 172.0000 | .0035 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 24.9860 | 1.7184 | 14.5401 | .0000 | 21.5941 | 28.3779 |
| Sniffed_ | -2.6170 | .8850 | -2.9570 | .0035 | -4.3639 | -.8701 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7801 | .6085 | 20.5801 | 132.8862 | 2.0000 | 171.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 9.7571 | 1.1769 | 8.2906 | .0000 | 7.4340 | 12.0802 |
| Sniffed_ | -1.2937 | .4162 | -3.1087 | .0022 | -2.1152 | -.4722 |
| Attitude | .5221 | .0350 | 14.9277 | .0000 | .4531 | .5912 |

**********

OUTCOME VARIABLE:
Behv_Num

```
Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .6803     .4628     .8920   48.8279    3.0000   170.0000     .0000

Model
          coeff       se         t         p       LLCI      ULCI
constant   2.6482     .2901    9.1283     .0000     2.0755    3.2209
Sniffed_    .5065     .0891    5.6878     .0000     .3307     .6823
Attitude   -.0052     .0111    -.4661     .6417    -.0270     .0167
Intentio   -.0821     .0159   -5.1592     .0000    -.1136    -.0507

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ****************

Direct effect of X on Y
    Effect        se         t         p       LLCI      ULCI
     .5065     .0891    5.6878     .0000     .3307     .6823

Indirect effect(s) of X on Y:
        Effect    BootSE   BootLLCI   BootULCI
TOTAL     .2320     .0615     .1189     .3594
Ind1      .0135     .0355    -.0543     .0925
Ind2      .1063     .0451     .0285     .2037
Ind3      .1122     .0480     .0308     .2204

Indirect effect key:
Ind1 Sniffed_   ->   Attitude   ->   Behv_Num
Ind2 Sniffed_   ->   Intentio   ->   Behv_Num
Ind3 Sniffed_   ->   Attitude   ->   Intentio   ->   Behv_Num

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.

------ END MATRIX -----
```

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********
Model : 6
Y : Behv_Num
X : Inter_Ho
M1 : Attitude
M2 : Intentio

Sample
Size: 136

**********
OUTCOME VARIABLE:
Attitude

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .1746 | .0305 | 92.9173 | 4.2114 | 1.0000 | 134.0000 | .0421 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 15.9902 | 1.8097 | 8.8356 | .0000 | 12.4108 | 19.5696 |
| Inter_Ho | .2048 | .0998 | 2.0522 | .0421 | .0074 | .4022 |

**********
OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7160 | .5127 | 24.0869 | 69.9617 | 2.0000 | 133.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 6.0680 | 1.1592 | 5.2348 | .0000 | 3.7753 | 8.3608 |
| Inter_Ho | .1383 | .0516 | 2.6803 | .0083 | .0362 | .2404 |
| Attitude | .4784 | .0440 | 10.8765 | .0000 | .3914 | .5654 |

**********
OUTCOME VARIABLE:
Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6072 | .3686 | 1.1085 | 25.6916 | 3.0000 | 132.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 4.1566 | .2731 | 15.2209 | .0000 | 3.6164 | 4.6968 |
| Inter_Ho | -.0058 | .0114 | -.5094 | .6114 | -.0283 | .0167 |
| Attitude | -.0034 | .0130 | -.2596 | .7956 | -.0290 | .0223 |
| Intentio | -.1085 | .0186 | -5.8351 | .0000 | -.1453 | -.0717 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| -.0058 | .0114 | -.5094 | .6114 | -.0283 | .0167 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | -.0263 | .0080 | -.0427 | -.0111 |
| Ind1 | -.0007 | .0030 | -.0084 | .0039 |
| Ind2 | -.0150 | .0062 | -.0284 | -.0042 |
| Ind3 | -.0106 | .0053 | -.0213 | -.0004 |

Indirect effect key:

Ind1 Inter_Ho -> Attitude -> Behv_Num
Ind2 Inter_Ho -> Intentio -> Behv_Num
Ind3 Inter_Ho -> Attitude -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Inter_Ho
M1 : Subj_Nor
M2 : Intentio

Sample
Size: 136

**********

OUTCOME VARIABLE:
Subj_Nor

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2044 | .0418 | 27.1007 | 5.8418 | 1.0000 | 134.0000 | .0170 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 10.4353 | .9774 | 10.6769 | .0000 | 8.5022 | 12.3683 |
| Inter_Ho | .1303 | .0539 | 2.4170 | .0170 | .0237 | .2369 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7039 | .4954 | 24.9388 | 65.3003 | 2.0000 | 133.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 4.6596 | 1.2755 | 3.6532 | .0004 | 2.1367 | 7.1825 |
| Inter_Ho | .1232 | .0528 | 2.3329 | .0212 | .0187 | .2277 |
| Subj_Nor | .8680 | .0829 | 10.4744 | .0000 | .7041 | 1.0319 |

**********

OUTCOME VARIABLE:

Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6074 | .3689 | 1.1080 | 25.7200 | 3.0000 | 132.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 4.1753 | .2820 | 14.8049 | .0000 | 3.6174 | 4.7331 |
| Inter_Ho | -.0056 | .0114 | -.4962 | .6206 | -.0281 | .0168 |
| Subj_Nor | -.0082 | .0236 | -.3481 | .7283 | -.0549 | .0385 |
| Intentio | -.1076 | .0183 | -5.8859 | .0000 | -.1437 | -.0714 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| -.0056 | .0114 | -.4962 | .6206 | -.0281 | .0168 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | -.0265 | .0081 | -.0431 | -.0114 |
| Ind1 | -.0011 | .0031 | -.0088 | .0040 |
| Ind2 | -.0133 | .0054 | -.0247 | -.0035 |
| Ind3 | -.0122 | .0053 | -.0231 | -.0024 |

Indirect effect key:

Ind1 Inter_Ho -> Subj_Nor -> Behv_Num

Ind2 Inter_Ho -> Intentio -> Behv_Num

Ind3 Inter_Ho -> Subj_Nor -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Inter_Ho
M1 : PBC_Mult
M2 : Intentio

Sample
Size: 136

**********

OUTCOME VARIABLE:
PBC_Mult

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2139 | .0457 | 24.8785 | 6.4237 | 1.0000 | 134.0000 | .0124 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 11.3298 | .9364 | 12.0987 | .0000 | 9.4777 | 13.1819 |
| Inter_Ho | .1309 | .0516 | 2.5345 | .0124 | .0287 | .2330 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .8176 | .6685 | 16.3835 | 134.1251 | 2.0000 | 133.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 1.5042 | 1.0992 | 1.3684 | .1735 | -.6701 | 3.6784 |
| Inter_Ho | .0952 | .0429 | 2.2192 | .0282 | .0103 | .1801 |
| PBC_Mult | 1.0780 | .0701 | 15.3772 | .0000 | .9393 | 1.2167 |

**********

OUTCOME VARIABLE:

Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6088 | .3707 | 1.1049 | 25.9155 | 3.0000 | 132.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 4.2160 | .2875 | 14.6658 | .0000 | 3.6474 | 4.7847 |
| Inter_Ho | -.0059 | .0113 | -.5197 | .6042 | -.0283 | .0165 |
| PBC_Mult | -.0213 | .0303 | -.7011 | .4845 | -.0813 | .0387 |
| Intentio | -.0992 | .0225 | -4.4064 | .0000 | -.1438 | -.0547 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| -.0059 | .0113 | -.5197 | .6042 | -.0283 | .0165 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | -.0262 | .0083 | -.0435 | -.0107 |
| Ind1 | -.0028 | .0039 | -.0126 | .0032 |
| Ind2 | -.0094 | .0046 | -.0196 | -.0019 |
| Ind3 | -.0140 | .0065 | -.0277 | -.0023 |

Indirect effect key:

Ind1 Inter_Ho -> PBC_Mult -> Behv_Num
Ind2 Inter_Ho -> Intentio -> Behv_Num
Ind3 Inter_Ho -> PBC_Mult -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

[DataSet1] C:\Users\aryay\Documents\PhD\Gay.sav

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Sniffed_
M1 : Attitude
M2 : Intentio

Sample
Size: 174

**********

OUTCOME VARIABLE:
Attitude

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2199 | .0484 | 97.8081 | 8.7438 | 1.0000 | 172.0000 | .0035 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 24.9860 | 1.7184 | 14.5401 | .0000 | 21.5941 | 28.3779 |
| Sniffed_ | -2.6170 | .8850 | -2.9570 | .0035 | -4.3639 | -.8701 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7801 | .6085 | 20.5801 | 132.8862 | 2.0000 | 171.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 9.7571 | 1.1769 | 8.2906 | .0000 | 7.4340 | 12.0802 |
| Sniffed_ | -1.2937 | .4162 | -3.1087 | .0022 | -2.1152 | -.4722 |
| Attitude | .5221 | .0350 | 14.9277 | .0000 | .4531 | .5912 |

```
**************************************************************************
OUTCOME VARIABLE:
 Behv_Num

Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .6803     .4628     .8920   48.8279    3.0000   170.0000     .0000

Model
          coeff       se         t         p      LLCI      ULCI
constant   2.6482     .2901    9.1283     .0000    2.0755    3.2209
Sniffed_    .5065     .0891    5.6878     .0000     .3307     .6823
Attitude   -.0052     .0111    -.4661     .6417    -.0270     .0167
Intentio   -.0821     .0159   -5.1592     .0000    -.1136    -.0507

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
    Effect       se         t         p      LLCI      ULCI
     .5065     .0891    5.6878     .0000     .3307     .6823

Indirect effect(s) of X on Y:
        Effect    BootSE   BootLLCI   BootULCI
TOTAL     .2320     .0608     .1194     .3572
Ind1      .0135     .0352    -.0537     .0895
Ind2      .1063     .0454     .0270     .2058
Ind3      .1122     .0471     .0334     .2181

Indirect effect key:
Ind1 Sniffed_   ->   Attitude   ->   Behv_Num
Ind2 Sniffed_   ->   Intentio   ->   Behv_Num
Ind3 Sniffed_   ->   Attitude   ->   Intentio   ->   Behv_Num

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Variables names longer than eight characters can produce incorrect output.
    Shorter variable names are recommended.

------ END MATRIX -----
```

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behv_Num
X : Sniffed_
M1 : Subj_Nor
M2 : Intentio

Sample
Size: 174

**********

OUTCOME VARIABLE:
Subj_Nor

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2308 | .0533 | 29.9484 | 9.6776 | 1.0000 | 172.0000 | .0022 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 15.6789 | .9509 | 16.4888 | .0000 | 13.8020 | 17.5559 |
| Sniffed_ | -1.5235 | .4897 | -3.1109 | .0022 | -2.4901 | -.5568 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7736 | .5985 | 21.1059 | 127.4455 | 2.0000 | 171.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 8.1545 | 1.2824 | 6.3589 | .0000 | 5.6232 | 10.6858 |
| Sniffed_ | -1.2368 | .4225 | -2.9270 | .0039 | -2.0708 | -.4027 |
| Subj_Nor | .9343 | .0640 | 14.5954 | .0000 | .8079 | 1.0606 |

**********

OUTCOME VARIABLE:

Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6799 | .4622 | .8930 | 48.7088 | 3.0000 | 170.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 2.6535 | .2933 | 9.0466 | .0000 | 2.0745 | 3.2325 |
| Sniffed_ | .5053 | .0891 | 5.6739 | .0000 | .3295 | .6811 |
| Subj_Nor | -.0031 | .0197 | -.1584 | .8743 | -.0421 | .0358 |
| Intentio | -.0859 | .0157 | -5.4586 | .0000 | -.1169 | -.0548 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| .5053 | .0891 | 5.6739 | .0000 | .3295 | .6811 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | .2332 | .0604 | .1205 | .3597 |
| Ind1 | .0048 | .0335 | -.0596 | .0776 |
| Ind2 | .1062 | .0439 | .0269 | .1964 |
| Ind3 | .1222 | .0481 | .0378 | .2285 |

Indirect effect key:
Ind1 Sniffed_ -> Subj_Nor -> Behv_Num
Ind2 Sniffed_ -> Intentio -> Behv_Num
Ind3 Sniffed_ -> Subj_Nor -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********
Model : 6
Y : Behv_Num
X : Sniffed_
M1 : PBC_Mult
M2 : Intentio

Sample
Size: 174

**********
OUTCOME VARIABLE:
PBC_Mult

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2909 | .0846 | 25.6316 | 15.8977 | 1.0000 | 172.0000 | .0001 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 17.0066 | .8797 | 19.3325 | .0000 | 15.2702 | 18.7430 |
| Sniffed_ | -1.8064 | .4531 | -3.9872 | .0001 | -2.7007 | -.9122 |

**********
OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .8598 | .7393 | 13.7043 | 242.4548 | 2.0000 | 171.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 3.3605 | 1.1458 | 2.9329 | .0038 | 1.0988 | 5.6222 |
| Sniffed_ | -.5949 | .3463 | -1.7183 | .0876 | -1.2784 | .0885 |
| PBC_Mult | 1.1432 | .0558 | 20.5045 | .0000 | 1.0332 | 1.2533 |

**********
OUTCOME VARIABLE:
Behv_Num

```
Model Summary
        R      R-sq       MSE         F       df1       df2         p
    .6798     .4622     .8931    48.6980    3.0000   170.0000     .0000

Model
          coeff       se         t         p      LLCI      ULCI
constant   2.6533    .2998    8.8513    .0000    2.0616    3.2451
Sniffed_    .5048    .0892    5.6623    .0000    .3288     .6808
PBC_Mult   -.0023    .0265    -.0875    .9304   -.0546     .0499
Intentio   -.0863    .0195   -4.4196    .0000   -.1248    -.0477

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
    Effect       se         t         p      LLCI      ULCI
     .5048    .0892    5.6623    .0000    .3288     .6808

Indirect effect(s) of X on Y:
       Effect    BootSE   BootLLCI   BootULCI
TOTAL    .2337    .0616    .1182     .3595
Ind1     .0042    .0439   -.0818     .0953
Ind2     .0513    .0341   -.0153     .1199
Ind3     .1782    .0602    .0759     .3088

Indirect effect key:
Ind1 Sniffed_   ->   PBC_Mult   ->   Behv_Num
Ind2 Sniffed_   ->   Intentio   ->   Behv_Num
Ind3 Sniffed_   ->   PBC_Mult   ->   Intentio   ->   Behv_Num

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
 5000

NOTE: Variables names longer than eight characters can produce incorrect output.
    Shorter variable names are recommended.


------ END MATRIX -----
```

# APPENDIX U-1

## Regression – Heterosexual male participants

## Number of sexual Partners

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use[b] | . | Enter |

a. Dependent Variable: Intention_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .387[a] | .149 | .094 | 5.82069 |

a. Predictors: (Constant), Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1012.312 | 11 | 92.028 | 2.716 | .003[b] |
| | Residual | 5759.666 | 170 | 33.880 | | |
| | Total | 6771.978 | 181 | | | |

a. Dependent Variable: Intention_Multi

b. Predictors: (Constant), Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 25.796 | 2.644 | | 9.757 | .000 |
| | 8. How Old are you? | .192 | .229 | .064 | .837 | .404 |
| | Lone_Roman | -.139 | .058 | -.210 | -2.386 | .018 |
| | Lone_Fam | -.068 | .076 | -.086 | -.893 | .373 |
| | Lone_Social | .057 | .056 | .092 | 1.022 | .308 |
| | Inter_Homophobia | .034 | .058 | .045 | .591 | .555 |
| | Advrs_Child_Exp | .129 | .191 | .054 | .677 | .500 |
| | Early_Sexual_Exper | -.160 | .203 | -.060 | -.789 | .431 |
| | Drugs Use | -.581 | .517 | -.105 | -1.124 | .263 |
| | Sniffed_Substance | -1.282 | .813 | -.144 | -1.576 | .117 |
| | Alcohol use | -.139 | .355 | -.029 | -.393 | .695 |
| | Smoking | -.497 | .367 | -.100 | -1.356 | .177 |

a. Dependent Variable: Intention_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Roman[b] | . | Enter |

a. Dependent Variable: Attitude_Multi_SPartner

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .073[a] | .005 | .000 | 8.99298 |

a. Predictors: (Constant), Lone_Roman

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 78.827 | 1 | 78.827 | .975 | .325[b] |
| | Residual | 14638.123 | 181 | 80.874 | | |
| | Total | 14716.951 | 182 | | | |

a. Dependent Variable: Attitude_Multi_SPartner

b. Predictors: (Constant), Lone_Roman

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 20.975 | 1.205 | | 17.413 | .000 |
| | Lone_Roman | -.072 | .072 | -.073 | -.987 | .325 |

a. Dependent Variable: Attitude_Multi_SPartner

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Roman[b] | . | Enter |

a. Dependent Variable: Subj_Norm_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .275[a] | .076 | .071 | 4.52442 |

a. Predictors: (Constant), Lone_Roman

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 303.798 | 1 | 303.798 | 14.841 | .000[b] |
| | Residual | 3705.131 | 181 | 20.470 | | |
| | Total | 4008.929 | 182 | | | |

a. Dependent Variable: Subj_Norm_Multi

b. Predictors: (Constant), Lone_Roman

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 18.023 | .606 | | 29.741 | .000 |
| | Lone_Roman | -.140 | .036 | -.275 | -3.852 | .000 |

a. Dependent Variable: Subj_Norm_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Roman[b] | . | Enter |

a. Dependent Variable: PBC_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .214[a] | .046 | .041 | 4.24426 |

a. Predictors: (Constant), Lone_Roman

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 156.532 | 1 | 156.532 | 8.690 | .004[b] |
| | Residual | 3260.484 | 181 | 18.014 | | |
| | Total | 3417.016 | 182 | | | |

a. Dependent Variable: PBC_Multi

b. Predictors: (Constant), Lone_Roman

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 17.545 | .568 | | 30.863 | .000 |
| | Lone_Roman | -.101 | .034 | -.214 | -2.948 | .004 |

a. Dependent Variable: PBC_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | PBC_Multi, Subj_Norm_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .712[a] | .508 | .502 | 4.30019 |

a. Predictors: (Constant), PBC_Multi, Subj_Norm_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3583.307 | 2 | 1791.654 | 96.890 | .000[b] |
| | Residual | 3476.420 | 188 | 18.492 | | |
| | Total | 7059.728 | 190 | | | |

a. Dependent Variable: Intention_Multi

b. Predictors: (Constant), PBC_Multi, Subj_Norm_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 4.530 | 1.315 | | 3.445 | .001 |
| | Subj_Norm_Multi | .225 | .078 | .173 | 2.902 | .004 |
| | PBC_Multi | .856 | .084 | .607 | 10.158 | .000 |

a. Dependent Variable: Intention_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Roman, Subj_Norm_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .480[a] | .231 | .222 | 5.38392 |

a. Predictors: (Constant), Lone_Roman, Subj_Norm_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 1563.405 | 2 | 781.703 | 26.968 | .000[b] |
| | Residual | 5217.589 | 180 | 28.987 | | |
| | Total | 6780.995 | 182 | | | |

a. Dependent Variable: Intention_Multi

b. Predictors: (Constant), Lone_Roman, Subj_Norm_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 13.842 | 1.750 | | 7.911 | .000 |
| | Subj_Norm_Multi | .570 | .088 | .438 | 6.447 | .000 |
| | Lone_Roman | -.072 | .045 | -.109 | -1.606 | .110 |

a. Dependent Variable: Intention_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Roman, PBC_Multi[b] | . | Enter |

a. Dependent Variable: Intention_Multi

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .692[a] | .479 | .473 | 4.43201 |

a. Predictors: (Constant), Lone_Roman, PBC_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3245.300 | 2 | 1622.650 | 82.608 | .000[b] |
| | Residual | 3535.694 | 180 | 19.643 | | |
| | Total | 6780.995 | 182 | | | |

a. Dependent Variable: Intention_Multi

b. Predictors: (Constant), Lone_Roman, PBC_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 7.611 | 1.486 | | 5.123 | .000 |
| | PBC_Multi | .941 | .078 | .668 | 12.123 | .000 |
| | Lone_Roman | -.058 | .037 | -.087 | -1.578 | .116 |

a. Dependent Variable: Intention_Multi

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Intention_Multi[b] | . | Enter |

a. Dependent Variable: Number of Sex partner

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .407[a] | .166 | .162 | .81081 |

a. Predictors: (Constant), Intention_Multi

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 24.733 | 1 | 24.733 | 37.621 | .000[b] |
| | Residual | 124.252 | 189 | .657 | | |
| | Total | 148.984 | 190 | | | |

a. Dependent Variable: Number of Sex partner

b. Predictors: (Constant), Intention_Multi

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 2.420 | .219 | | 11.049 | .000 |
| | Intention_Multi | -.059 | .010 | -.407 | -6.134 | .000 |

a. Dependent Variable: Number of Sex partner

# APPENDIX U-2

## Sobel test – Heterosexual male participants

### Romantic loneliness on intention when proximal factors are mediators

**Romantic loneliness and SN**

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -.101 | Sobel test: | -2.85188759 | 0.03031536 | 0.00434605 |
| *b* | .856 | Aroian test: | -2.83931531 | 0.03044959 | 0.00452105 |
| $s_a$ | .034 | Goodman test: | -2.86462838 | 0.03018053 | 0.00417499 |
| $s_b$ | .084 | Reset all | Calculate | | |

**Romantic loneliness and PBC**

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -.140 | Sobel test: | -2.31682541 | 0.01359619 | 0.02051324 |
| *b* | .225 | Aroian test: | -2.268941 | 0.01388313 | 0.02327191 |
| $s_a$ | .036 | Goodman test: | -2.36787539 | 0.01330306 | 0.01789056 |
| $s_b$ | .078 | Reset all | Calculate | | |

**APPENDIX U-3**

**The serial analysis, the PROCESS macro for SPSS (model 6) - between Romantic loneliness and DV when proximal factors and intention are mediators- Heterosexual male participants**

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********
Model : 6
Y : Behv_Num
X : Lone_Rom
M1 : Subj_Nor
M2 : Intentio

Sample
Size: 183

**********
OUTCOME VARIABLE:
Subj_Nor

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2753 | .0758 | 20.4703 | 14.8409 | 1.0000 | 181.0000 | .0002 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 18.0234 | .6060 | 29.7408 | .0000 | 16.8276 | 19.2191 |
| Lone_Rom | -.1404 | .0364 | -3.8524 | .0002 | -.2123 | -.0685 |

**********
OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .4802 | .2306 | 28.9866 | 26.9677 | 2.0000 | 180.0000 | .0000 |

Model
| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 13.8421 | 1.7497 | 7.9112 | .0000 | 10.3896 | 17.2947 |
| Lone_Rom | -.0724 | .0451 | -1.6060 | .1100 | -.1614 | .0166 |
| Subj_Nor | .5703 | .0884 | 6.4474 | .0000 | .3957 | .7448 |

**********
OUTCOME VARIABLE:
Behv_Num

Model Summary
| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .4872 | .2374 | .5978 | 18.5710 | 3.0000 | 179.0000 | .0000 |

Model
| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 2.6968 | .2917 | 9.2454 | .0000 | 2.1212 | 3.2724 |
| Lone_Rom | -.0115 | .0065 | -1.7640 | .0794 | -.0244 | .0014 |
| Subj_Nor | .0184 | .0141 | 1.3077 | .1926 | -.0094 | .0462 |
| Intentio | -.0769 | .0107 | -7.1811 | .0000 | -.0980 | -.0557 |

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ******************

Direct effect of X on Y
| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| -.0115 | .0065 | -1.7640 | .0794 | -.0244 | .0014 |

Indirect effect(s) of X on Y:
| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | .0091 | .0044 | .0015 | .0188 |
| Ind1 | -.0026 | .0026 | -.0077 | .0029 |
| Ind2 | .0056 | .0038 | -.0015 | .0136 |
| Ind3 | .0062 | .0022 | .0026 | .0114 |

Indirect effect key:
Ind1 Lone_Rom -> Subj_Nor -> Behv_Num
Ind2 Lone_Rom -> Intentio -> Behv_Num
Ind3 Lone_Rom -> Subj_Nor -> Intentio -> Behv_Num

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

## Matrix

Run MATRIX procedure:

**********  PROCESS Procedure for SPSS Version 3.4.1 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model : 6
Y : Behv_Num
X : Lone_Rom
M1 : PBC_Mult
M2 : Intentio

Sample
Size: 183

**************************************************************************
OUTCOME VARIABLE:
PBC_Mult

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2140 | .0458 | 18.0137 | 8.6896 | 1.0000 | 181.0000 | .0036 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 17.5450 | .5685 | 30.8625 | .0000 | 16.4233 | 18.6667 |
| Lone_Rom | -.1008 | .0342 | -2.9478 | .0036 | -.1682 | -.0333 |

**************************************************************************
OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .6918 | .4786 | 19.6427 | 82.6081 | 2.0000 | 180.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 7.6112 | 1.4856 | 5.1234 | .0000 | 4.6798 | 10.5426 |
| Lone_Rom | -.0577 | .0365 | -1.5783 | .1163 | -.1298 | .0144 |
| PBC_Mult | .9410 | .0776 | 12.1230 | .0000 | .7878 | 1.0941 |

**************************************************************************
OUTCOME VARIABLE:
Behv_Num

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .4797 | .2301 | .6034 | 17.8360 | 3.0000 | 179.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 2.8703 | .2787 | 10.2983 | .0000 | 2.3203 | 3.4203 |
| Lone_Rom | -.0131 | .0064 | -2.0332 | .0435 | -.0258 | -.0004 |
| PBC_Mult | .0021 | .0183 | .1122 | .9108 | -.0341 | .0382 |
| Intentio | -.0718 | .0131 | -5.4947 | .0000 | -.0976 | -.0460 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| -.0131 | .0064 | -2.0332 | .0435 | -.0258 | -.0004 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | .0107 | .0041 | .0039 | .0196 |
| Ind1 | -.0002 | .0021 | -.0045 | .0042 |
| Ind2 | .0041 | .0026 | -.0005 | .0094 |
| Ind3 | .0068 | .0028 | .0022 | .0129 |

Indirect effect key:
Ind1 Lone_Rom -> PBC_Mult -> Behv_Num
Ind2 Lone_Rom -> Intentio -> Behv_Num
Ind3 Lone_Rom -> PBC_Mult -> Intentio -> Behv_Num

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----

# APPENDIX V

## Regression – Gay male participants

## Condom use

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Smoking , Lone_Roman, Sniffed a substance of any kind, Inter_Homophobia, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam[b] | . | Enter |

a. Dependent Variable: Intention_Con
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .444[a] | .197 | .118 | 13.75959 |

a. Predictors: (Constant), Smoking , Lone_Roman, Sniffed a substance of any kind, Inter_Homophobia, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5208.173 | 11 | 473.470 | 2.501 | .008[b] |
| | Residual | 21204.560 | 112 | 189.326 | | |
| | Total | 26412.734 | 123 | | | |

a. Dependent Variable: Intention_Con
b. Predictors: (Constant), Smoking , Lone_Roman, Sniffed a substance of any kind, Inter_Homophobia, Age, Alcohol use, Advrs_Child_Exp, Lone_Social, Drug use, Early_Sexual_Exper, Lone_Fam

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | |
| 1 | (Constant) | 53.878 | 6.580 | | 8.189 | |
| | Age | .069 | .628 | .010 | .109 | |
| | Lone_Roman | .035 | .193 | .019 | .183 | |
| | Lone_Fam | -.025 | .214 | -.013 | -.117 | |
| | Lone_Social | -.281 | .161 | -.177 | -1.746 | |
| | Inter_Homophobia | .109 | .166 | .061 | .656 | |
| | Advrs_Child_Exp | -.378 | .398 | -.097 | -.951 | |
| | Early_Sexual_Exper | -.610 | .443 | -.142 | -1.378 | |
| | Drug use | -2.220 | 1.241 | -.177 | -1.788 | |
| | Sniffed a substance of any kind | -2.006 | 1.570 | -.119 | -1.278 | |
| | Alcohol use | .123 | 1.082 | .010 | .114 | |
| | Smoking | 1.207 | 1.151 | .098 | 1.049 | |

# APPENDIX W-1

## Regression – Heterosexual male participants

## Condom use

## Regression

[DataSet1] C:\Users\aryay\Documents\PhD\Str8.sav

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use[b] | . | Enter |

a. Dependent Variable: Intention_Con

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .363[a] | .132 | .075 | 12.37459 |

a. Predictors: (Constant), Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3944.193 | 11 | 358.563 | 2.342 | .010[b] |
| | Residual | 26032.186 | 170 | 153.131 | | |
| | Total | 29976.379 | 181 | | | |

a. Dependent Variable: Intention_Con

b. Predictors: (Constant), Smoking, Lone_Fam, 8. How Old are you?, Early_Sexual_Exper, Alcohol use, Sniffed_Substance, Inter_Homophobia, Advrs_Child_Exp, Lone_Roman, Lone_Social, Drugs Use

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 54.592 | 5.621 | | 9.713 | .000 |
| | 8. How Old are you? | .056 | .487 | .009 | .115 | .909 |
| | Lone_Roman | .150 | .124 | .107 | 1.204 | .230 |
| | Lone_Fam | -.613 | .163 | -.365 | -3.770 | .000 |
| | Lone_Social | .060 | .120 | .046 | .502 | .617 |
| | Inter_Homophobia | .043 | .123 | .027 | .347 | .729 |
| | Advrs_Child_Exp | .676 | .405 | .135 | 1.667 | .097 |
| | Early_Sexual_Exper | .047 | .431 | .009 | .110 | .912 |
| | Drugs Use | -.981 | 1.099 | -.084 | -.893 | .373 |
| | Sniffed_Substance | -2.146 | 1.729 | -.114 | -1.241 | .216 |
| | Alcohol use | .698 | .755 | .068 | .925 | .356 |
| | Smoking | -.669 | .779 | -.064 | -.859 | .392 |

a. Dependent Variable: Intention_Con

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Fam[b] | . | Enter |

a. Dependent Variable: Attitude_Condom_Use
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .078[a] | .006 | .001 | 9.64498 |

a. Predictors: (Constant), Lone_Fam

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 103.674 | 1 | 103.674 | 1.114 | .293[b] |
| | Residual | 16744.612 | 180 | 93.026 | | |
| | Total | 16848.286 | 181 | | | |

a. Dependent Variable: Attitude_Condom_Use
b. Predictors: (Constant), Lone_Fam

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 19.230 | 1.122 | | 17.143 | .000 |
| | Lone_Fam | .099 | .093 | .078 | 1.056 | .293 |

a. Dependent Variable: Attitude_Condom_Use

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Fam[b] | . | Enter |

a. Dependent Variable: Subj_Norm_Con
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .234[a] | .055 | .049 | 8.15178 |

a. Predictors: (Constant), Lone_Fam

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 690.235 | 1 | 690.235 | 10.387 | .002[b] |
| | Residual | 11961.260 | 180 | 66.451 | | |
| | Total | 12651.495 | 181 | | | |

a. Dependent Variable: Subj_Norm_Con
b. Predictors: (Constant), Lone_Fam

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 34.860 | .948 | | 36.769 | .000 |
| | Lone_Fam | -.255 | .079 | -.234 | -3.223 | .002 |

a. Dependent Variable: Subj_Norm_Con

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Fam[b] | . | Enter |

a. Dependent Variable: PBC_Con
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .278[a] | .077 | .072 | 8.12271 |

a. Predictors: (Constant), Lone_Fam

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 997.348 | 1 | 997.348 | 15.116 | .000[b] |
| | Residual | 11876.102 | 180 | 65.978 | | |
| | Total | 12873.451 | 181 | | | |

a. Dependent Variable: PBC_Con
b. Predictors: (Constant), Lone_Fam

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 35.885 | .945 | | 37.985 | .000 |
| | Lone_Fam | -.306 | .079 | -.278 | -3.888 | .000 |

a. Dependent Variable: PBC_Con

# Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | PBC_Con, Subj_Norm_Con[b] | . | Enter |

a. Dependent Variable: Intention_Con

b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .845[a] | .714 | .711 | 6.92610 |

a. Predictors: (Constant), PBC_Con, Subj_Norm_Con

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 22542.926 | 2 | 11271.463 | 234.965 | .000[b] |
| | Residual | 9018.530 | 188 | 47.971 | | |
| | Total | 31561.455 | 190 | | | |

a. Dependent Variable: Intention_Con
b. Predictors: (Constant), PBC_Con, Subj_Norm_Con

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 6.029 | 2.145 | | 2.811 | .005 |
| | Subj_Norm_Con | .330 | .086 | .216 | 3.834 | .000 |
| | PBC_Con | 1.030 | .086 | .676 | 11.990 | .000 |

a. Dependent Variable: Intention_Con

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Fam, Subj_Norm_Con [b] | . | Enter |

a. Dependent Variable: Intention_Con
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .701[a] | .492 | .486 | 9.22397 |

a. Predictors: (Constant), Lone_Fam, Subj_Norm_Con

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 14746.778 | 2 | 7373.389 | 86.663 | .000[b] |
| | Residual | 15229.602 | 179 | 85.082 | | |
| | Total | 29976.379 | 181 | | | |

a. Dependent Variable: Intention_Con
b. Predictors: (Constant), Lone_Fam, Subj_Norm_Con

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 19.696 | 3.130 | | 6.293 | .000 |
| | Subj_Norm_Con | 1.018 | .084 | .661 | 12.071 | .000 |
| | Lone_Fam | -.211 | .092 | -.126 | -2.291 | .023 |

a. Dependent Variable: Intention_Con

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Lone_Fam, PBC_Con[b] | . | Enter |

a. Dependent Variable: Intention_Con
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .825[a] | .680 | .677 | 7.31668 |

a. Predictors: (Constant), Lone_Fam, PBC_Con

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 20393.830 | 2 | 10196.915 | 190.476 | .000[b] |
| | Residual | 9582.549 | 179 | 53.534 | | |
| | Total | 29976.379 | 181 | | | |

a. Dependent Variable: Intention_Con
b. Predictors: (Constant), Lone_Fam, PBC_Con

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 10.953 | 2.555 | | 4.286 | .000 |
| | PBC_Con | 1.233 | .067 | .808 | 18.359 | .000 |
| | Lone_Fam | -.093 | .074 | -.055 | -1.254 | .212 |

a. Dependent Variable: Intention_Con

## Regression

**Variables Entered/Removed[a]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Intention_Con[b] | . | Enter |

a. Dependent Variable: Condom use
b. All requested variables entered.

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .329[a] | .108 | .102 | 1.788 |

a. Predictors: (Constant), Intention_Con

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 57.185 | 1 | 57.185 | 17.881 | .000[b] |
| | Residual | 470.117 | 147 | 3.198 | | |
| | Total | 527.302 | 148 | | | |

a. Dependent Variable: Condom use
b. Predictors: (Constant), Intention_Con

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Unstandardized Coefficients Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 5.225 | .601 | | 8.688 | .000 |
| | Intention_Con | -.048 | .011 | -.329 | -4.229 | .000 |

a. Dependent Variable: Condom use

**APPENDIX W-2**

**Sobel test – Heterosexual male participants**

**Loneliness from family on intention when proximal factors are mediators**

**Loneliness from family and SN**

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -.255 | Sobel test: | -2.47321601 | 0.03412763 | 0.01339032 |
| *b* | .331 | Aroian test: | -2.42561778 | 0.03479732 | 0.01528236 |
| $s_a$ | .079 | Goodman test: | -2.523731 | 0.03344453 | 0.01161167 |
| $s_b$ | .086 | Reset all | Calculate | | |

**Loneliness from family and PCB**

| Input: | | | Test statistic: | Std. Error: | *p*-value: |
|---|---|---|---|---|---|
| *a* | -.306 | Sobel test: | -3.68681738 | 0.08582036 | 0.00022708 |
| *b* | 1.034 | Aroian test: | -3.67531847 | 0.08608887 | 0.00023755 |
| $s_a$ | .079 | Goodman test: | -3.69842489 | 0.08555101 | 0.00021694 |
| $s_b$ | .086 | Reset all | Calculate | | |

**APPENDIX W-3**

**The serial analysis, the PROCESS macro for SPSS (model 6) - between Loneliness from family and DV when proximal factors and intention are mediators- Heterosexual male participants**

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********
Model : 6
Y : Behaviou
X : Lone_Fam
M1 : Subj_Nor
M2 : Intentio

Sample
Size: 145

**********
OUTCOME VARIABLE:
Subj_Nor

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .1845 | .0340 | 71.3858 | 5.0403 | 1.0000 | 143.0000 | .0263 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 34.8157 | 1.0753 | 32.3765 | .0000 | 32.6901 | 36.9413 |
| Lone_Fam | -.2094 | .0933 | -2.2451 | .0263 | -.3937 | -.0250 |

**********
OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .7100 | .5042 | 83.5572 | 72.1938 | 2.0000 | 142.0000 | .0000 |

```
Model
         coeff       se        t        p      LLCI      ULCI
constant   19.5612    3.3579    5.8255     .0000   12.9233   26.1991
Lone_Fam    -.2250     .1027   -2.1919     .0300    -.4280    -.0221
Subj_Nor    1.0139     .0905   11.2072     .0000     .8351    1.1928

**************************************************************************
OUTCOME VARIABLE:
 Behaviou

Model Summary
       R      R-sq       MSE         F       df1       df2         p
    .3569     .1274    3.1956    6.8621    3.0000   141.0000     .0002

Model
         coeff       se        t        p      LLCI      ULCI
constant    5.4856     .7309    7.5048     .0000    4.0405    6.9306
Lone_Fam     .0080     .0204     .3907     .6966    -.0324     .0483
Subj_Nor    -.0255     .0243   -1.0486     .2961    -.0735     .0225
Intentio    -.0378     .0164   -2.3027     .0228    -.0702    -.0053

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
    Effect       se        t        p      LLCI      ULCI
     .0080     .0204     .3907     .6966    -.0324     .0483

Indirect effect(s) of X on Y:
        Effect    BootSE   BootLLCI   BootULCI
TOTAL     .0219     .0093     .0056     .0426
Ind1      .0053     .0062    -.0058     .0201
Ind2      .0085     .0055    -.0010     .0206
Ind3      .0080     .0058    -.0001     .0222

Indirect effect key:
Ind1 Lone_Fam   ->   Subj_Nor   ->   Behaviou
Ind2 Lone_Fam   ->   Intentio   ->   Behaviou
Ind3 Lone_Fam   ->   Subj_Nor   ->   Intentio   ->   Behaviou

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.
------ END MATRIX -----
```

## Matrix

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 3.4.1 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**********

Model : 6
Y : Behaviou
X : Lone_Fam
M1 : PBC_Con
M2 : Intentio

Sample
Size: 145

**********

OUTCOME VARIABLE:
PBC_Con

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .2428 | .0589 | 68.9248 | 8.9573 | 1.0000 | 143.0000 | .0033 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 35.7620 | 1.0566 | 33.8450 | .0000 | 33.6733 | 37.8506 |
| Lone_Fam | -.2743 | .0916 | -2.9929 | .0033 | -.4554 | -.0931 |

**********

OUTCOME VARIABLE:
Intentio

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .8227 | .6768 | 54.4683 | 148.6667 | 2.0000 | 142.0000 | .0000 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 11.2991 | 2.8196 | 4.0074 | .0001 | 5.7254 | 16.8729 |
| Lone_Fam | -.1032 | .0840 | -1.2292 | .2210 | -.2692 | .0628 |
| PBC_Con | 1.2181 | .0743 | 16.3864 | .0000 | 1.0712 | 1.3651 |

**********

OUTCOME VARIABLE:
Behaviou

Model Summary

| R | R-sq | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .3569 | .1274 | 3.1958 | 6.8603 | 3.0000 | 141.0000 | .0002 |

Model

| | coeff | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 5.4476 | .7205 | 7.5603 | .0000 | 4.0231 | 6.8721 |
| Lone_Fam | .0069 | .0204 | .3369 | .7367 | -.0335 | .0473 |
| PBC_Con | -.0320 | .0306 | -1.0464 | .2972 | -.0926 | .0285 |
| Intentio | -.0324 | .0203 | -1.5929 | .1134 | -.0726 | .0078 |

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

| Effect | se | t | p | LLCI | ULCI |
|---|---|---|---|---|---|
| .0069 | .0204 | .3369 | .7367 | -.0335 | .0473 |

Indirect effect(s) of X on Y:

| | Effect | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| TOTAL | .0229 | .0091 | .0067 | .0424 |
| Ind1 | .0088 | .0098 | -.0092 | .0310 |
| Ind2 | .0033 | .0043 | -.0050 | .0125 |
| Ind3 | .0108 | .0089 | -.0034 | .0319 |

Indirect effect key:
Ind1 Lone_Fam -> PBC_Con -> Behaviou
Ind2 Lone_Fam -> Intentio -> Behaviou
Ind3 Lone_Fam -> PBC_Con -> Intentio -> Behaviou

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

NOTE: Variables names longer than eight characters can produce incorrect output.
Shorter variable names are recommended.

------ END MATRIX -----