Problematic versus Non-problematic Location-based Dating App Use: Exploring the Psychosocial Impact of Grindr Use Patterns Among Gay and Bisexual Men

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Abstract

The use of online dating applications (apps) among men who have sex with men (MSM) has become a common occurrence in today's digital age. One example is Grindr, the first location-based dating app of its kind, which was launched in 2009. This marked a new phase of online dating, currently facilitating connections for gay, bi, and curious men in almost every country in the world based on attraction and physical proximity. Grindr celebrated its 10th anniversary this year, yet little is known about users' motivations and usage patterns, or its potential impact on users' mental health in the United Kingdom (UK). The aim of the present research was to investigate whether problematic Grindr use existed, and if so, to explore the relationships between problematic Grindr use and psychosocial well-being based on Griffiths' (2005) six-component model of behavioural addiction. Grindr users (N = 832; M age = 34 years) anonymously self-completed questionnaires via an online survey, which was, advertised on Grindr, social networking sites (Facebook & Twitter), and specific LGBT forums. The results from the cross-sectional study highlight that those experiencing problematic Grindr use differ significantly from those who do not, and this was evident across all study variables. The participants reported lower psychological well-being, greater psychological distress, increased minority stress and neglect of social life as compared to those for whom usage was non-problematic. The most common reason for using Grindr was for sexual experience, followed by the desire to connect with other people with the same sexual orientation to pass time or for entertainment purposes. Problematic Grindr use was also strongly related to using the app for sexual encounters. The study discusses implications for practice and policy, as well as for Grindr's operators.

Chapter 1: Introduction

> *I do think its [Grindr] taking over my life a bit…. You're watching a film on Netflix and you go 'I'll just check my messages' and then you're on until like four in the morning, just chatting and chatting and trying to hook up… it feels like a massive waste of time sometimes, but I'm hooked.* (Peter, 22, a participant talking about his experiences of being addicted to Grindr) (Jaspal, 2016, p. 12).

1.1 Chapter overview

The current research uses quantitative methods to analyse and explore the relationship between Grindr usage patterns and psychosocial well-being amongst gay and bisexual men.

In this introductory chapter, I begin by defining the pertinent terminology used throughout the thesis and then I present my individual and epistemological standpoint on the subject. I provide the necessary background information that contextualises the research project. I then briefly explore the history of homosexuality in Britain, as well as gay and bisexual men's use of the Internet since its introduction, before providing more details about the mobile app Grindr, as well as the current research surrounding it and its use. I discuss Griffiths' (2005) six-component behavioural addiction model, as well as theories of social networking addiction. I will close the chapter with the rationale for undertaking the current research and state the main aims and hypotheses associated with the topic.

1.2 Definitions of key concepts

Smartphones: a class of mobile phones, which accomplish many of the functions of a computer, with highly sophisticated qualities such as Internet access and multimedia functionality, as well as a phone's primary purposes of voice calls and text messaging.

Apps: the word 'app' is a shortening of the term 'software application', and apps are designed to run on mobile devices, especially smartphones. Apps can include games, watching videos, music and geosocial networking.

Geosocial networking apps: location-based mobile apps produced to make communication easier for individuals. These often involve mobile dating or online dating purposely designed for smartphone users.

Grindr: a geosocial networking mobile dating app intended for the gay and bisexual community which provides men with the opportunity to build a profile, which is then visible on Grindr. The app enables its users to scan both the local area to see who else is near, as well as any location of paying members choice. It offers a means of instantaneous communication.

MSM: Gay, bisexual, and other men who engage in sexual activity with men, irrespective of how they identify themselves.

1.3 A personal connection to the topic

As the author of this research, I would like to give some background regarding why I am interested in this topic. I was born and raised in Turkey and completed my pre-university education in Istanbul before I arrived in England to pursue my aspiration to become a clinical psychologist. I truly adore my country, but my decision to move to the UK was in part due to growing up gay in a country engrained in masculine nationalism, which was, at some points, intolerable. I often dreamt of escaping what is still a very restrictive, homophobic and conservative society, with high levels of social stigma associated with gay identity. I wanted to get away from the most famous Turkish question, which I was constantly asked by everyone and anyone: 'Which girl are you dating at the moment?' I was very unhappy about constantly hiding my true self from my friends and family and essentially living a double life. It was an extremely isolating and exhausting experience, and as for dating… well, it was non-existent!

I experienced homophobic bullying and social exclusion throughout my school years and was always made to feel 'different' in heterosexual contexts. These experiences, understandably, led to me feeling devalued and partly invisible. I must say, however, I have had a very privileged upbringing, but at a huge cost and I have had to make sacrifices as a result, by denying who I really was and generally feeling ashamed of my sexuality. Looking back, the best thing I ever did was to leave and to go on a journey of finding who the real me was, even though this came with the expense of leaving my loved ones behind.

Trying to date men was something very new to me when I first came to England. I was still in the closet during most of my undergraduate years, but I made sure I explored my gay identity, even though it was a terrifying process, through the help of the Internet. My first dating experience was with a boy I met through an online dating website called Gaydar. I recall feeling ecstatic that I was finally connecting with other gay men and arranging meet-ups with different

degrees of out-ness. Through meet-ups, I also quickly realised how others were still experiencing prejudice and hate crimes, as I was. Talking about these experiences felt very therapeutic and safe and also facilitated the exploration of my sexual identity as a young man.

As technology has advanced, online dating platforms have also significantly altered and enabled even easier access to online users with the help of smartphones and specific mobile dating apps which use geo-location features. This meant that I could connect with other gay men 24/7, wherever I was. It was very seductive, as I felt as if I had a gateway to the gay community sitting in my hand. As a user of Grindr, however, I began to notice that I was investing a lot of my time using these dating apps, to the point where it impacted on my relationships with others as well as interfering with my day-to-day activities. From discussions with my friends about this, it soon became apparent to me that others had also struggled with the 'addictive' nature of these dating apps.

Therefore, my curiosity and enthusiasm in undertaking this research stemmed from my own personal experiences as well as in-depth discussions with many friends (both straight and gay), who had also raised adverse experiences due to problematic use of these apps. In the many articles I have read in the academic literature, in mainstream media and in online forums, people have raised concerns regarding the 'addictive' nature of some social networking sites and this emerging issue motivated me to analyse usage patterns related to Grindr and its potential impact on mental health and well-being.

1.4 My epistemological position

I completed my primary and secondary school education in an 'Anatolian-type' Turkish school. The Turkish national education system is primarily based on Ataturk's (the founder of the

Republic of Turkey) philosophy of education, with an emphasis on pragmatism, reason and science (Kucuk, 2015). This meant from a very young age, I have been exposed to the ideas that education needs to be scientific and that theoretical knowledge should be derived from practice and experience.

Before I started my clinical psychology training, I had been practising as a cognitive-behavioural psychotherapist in the NHS for many years. As a result, I consider research evidence and science as integral in shaping our knowledge. My clinical training at Herts, however, also has exposed me to a different view of the world. I came to understand the importance of needing to take a critical position in terms of what we know as knowledge and evidence-base. I believe in the importance of needing to take a reflexive, honest and transparent attitude towards research (Henderson, 2011).

My epistemological position is therefore closely affiliated to post-positivism or critical realism (Guba & Lincoln, 1994). I work with the position that there are objective realities that science can study. However, I also recognise that in many situations, truth is also fallible and probabilistic at best (Phillips & Burbules, 2000). I accept that we cannot fully discover the absolute 'truth' of certain types of knowledge when investigating the behaviour of humans (Creswell, 2014). Therefore, in order to gain a better understanding of the world, I believe that all theories should be open to revision in light of new evidence. I believe in being critical when considering our capability of knowing reality with certainty (Trochim, 2006), including the need to consider how the experience of the researcher may influence predisposition to interpret data in particular ways. Within this framework, I believe in using approaches such as triangulating multiple perspectives where possible in order to get close to approximation to 'truth' so that our knowledge is refined and up to date.

1.5 Orientation

This section will provide the necessary background information that contextualises the research project.

1.5.1 The smartphone society

In the last two decades, technology has grown exponentially (King University, 2019). More recently, the increased demand for interpersonal, mass communication technology has advanced smartphone development, which has led to a revolutionary change in today's society (Billieux, 2012; Pearson & Hussain, 2015). In the UK, smartphones have become the most popular mobile phones, with 78% of adults currently owning one (Ofcom, 2018). According to Ofcom Communications Market Report (2018) as a part of their study on smartphone usage in the UK only, people reported spending a total of one day a week online, more than double the amount of time reported in 2011. Today's smartphones are seen as a must-have device in developed cultures (Kwon et al., 2013).

Humans are effectively social beings, who share a common appetite to form connections with others. Modern improvements in communication technology have allowed billions of people throughout the world to sate this appetite by means of mobile phones (Przybylski & Weinstein, 2013). With the dramatic spread of smartphones, 70% of UK adult Internet users use their smartphones to go online daily (Ofcom, 2018). As the Internet becomes more mobile, social networking is becoming one of the most popular smartphone activities (Ofcom, 2018). Social networking sites (SNSs) can be defined as 'virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests' (Kuss & Griffiths, 2011, p.3529). Since their launch, SNSs (Facebook being the most successful one at present) have been immensely popular among many people worldwide and have become an inextricable part of our lives (Boyd & Ellison, 2007).

With advancements in technology, there are countless social networking apps and with many still being developed they aim to support a wide range of interests and activities. While certain

SNSs and apps are tailored to diverse audiences (e.g. Facebook), others are developed to cater for specific groups of individuals based on commonalities such as shared religious (Tangle is a social media community for Christians aimed at providing a place to meet others), racial (MoorUs is an app for African-Americans to connect with each other) or sexual identities (Grindr is a dating app intended to help men meet other men) (Boyd & Ellison, 2007). With this in mind, certain marginalised groups may gain a unique benefit as these sites can offer a safe and secure spaces where individuals can meet with others, share experiences and be part of a community (Griffiths, Kuss, & Demetrovics, 2014). Among these socially marginalised groups are gay, bisexual, queer and questioning men. Research has revealed that sexual minority men can hugely benefit from online dating, as they have a restricted pool of available partners and opportunities for identifying them (Rosenfeld & Thomas, 2012).

The current research explores Grindr, designed for MSM, as they have adopted online dating and chat communities in 'disproportionate numbers compared to other social groups' (Mowlabocus, 2010, p.3). Branded as 'modern-day gay bars' (Miller, 2015, p.479), location-based dating apps are very popular amongst MSM in the UK. It is estimated that gay, bisexual and other MSM form 2.6% of the male population in the UK (Mercer et al., 2013).

In order to fully understand the rise of online dating and location-based dating apps, I will explore gay and bisexual men's relationship with online technologies. Before doing this, however, it is also imperative to step outside of the virtual online culture and recognise the wider socio-political contexts and discourses that frame gay culture and that have helped shape the identities represented in online dating profiles (Mowlabocus, 2010). A rich and detailed discussion of these contexts is outside the scope of this thesis, but a few points are pertinent.

1.6 A short history of homosexuality in Britain

In Britain, from the Middle Ages until relatively recently, religious objections to male homosexuality remained strong and same-sex attraction was considered sinful or abnormal (Davenport-Hines, 1990; Weeks, 1989). Under the Buggery Act 1533, homosexuality was made illegal and, for the first time in the UK, convictions were punishable by death (King, 2003). Although the death penalty for buggery was abolished in 1861, the Criminal Law Amendment Act of 1885 once again criminalised any homosexual act. However, in 1967, homosexual acts in private between consenting men over 21 years of age became decriminalised by the Sexual Offences Act, and British gay men were legally recognised people within the UK (Mowlabocus, 2010).

In the late 19th century, homosexuality was regarded as a pathological medical or psychological condition, which led to prejudice, shame, isolation, and fear for many men (Porter, Hall, & Robson, 1995). At the time, the social construction of the diagnosis of homosexuality arose within the context of dominant socio-political forces against any variation from the heterosexual norm, and continued to exist for much of the 20th century (Hall, 2012). Between the 1950s and early 1980s, many gay men undertook psychoanalysis or psychiatric 'treatments' such as behavioural aversion therapy with electric shocks to 'cure' male homosexuality (King, 2003; Smith, Bartlett, & King, 2004). These treatments had major negative outcomes for gay men's sense of self, mental health, and well-being (Smith et al., 2004). Eventually, the validity of homosexuality as a mental illness was directly challenged in psychological research and, as LGBT people became increasingly visible in Western society, these studies led to American psychiatrists' decision in 1973 that homosexuality should no longer be regarded as a psychiatric disorder (King, 2003). Nevertheless, the World Health Organisation (WHO) only

removed homosexuality from the International Classification of Diseases (ICD) in 1992 (King, 2003).

Widespread negative attitudes toward homosexuality were still prominent in the early 1970s, and, in 1972, American psychologist George Weinberg coined the term 'homophobia', an expression which became a significant tool for gay activists and advocates all around the world (Herek, 2004). Through the late 1980s to the early 1990s, in Britain, the political battle for equality very much continued with the campaign to repeal Section 28 of the Local Government Act 1988, which stated: 'local authorities shall not intentionally promote homosexuality or promote the teaching in any maintained school of the acceptability of homosexuality as a pretended family relationship'. Devoted activists across Britain began pushing for LGBT rights, protection from discrimination and to raise awareness among the public (Mowlabocus, 2010).

The arrival of HIV and AIDS in Britain in the mid-1980s led to an increase in anxiety about homosexuality and to the further marginalisation of homosexual people (Clements & Field, 2014). AIDS was viewed predominantly as a 'gay disease', which played an important role in further inducing shame related to gay intimacy (Herek & Capitanio, 1999). Mainstream media reports also referred to it variously as 'gay cancer' or 'gay plague', which demonised the LGBT community (Herek & Capitanio, 1999). However, the gay press in Britain at the time played a significant role, not only in criticising the government's management of the escalating crisis, but also in providing monthly updates on the disease and giving the correct information in the face of the hysterical reporting found elsewhere (Mowlabocus, 2010).

More recently, the Marriage (Same Sex Couples) Act 2013 signified a milestone in gay rights in Great Britain by legalising same-sex marriage (Clements & Field, 2014). In addition to this, in April 2019, the government approved plans for compulsory and LGBT-inclusive Relationships and Sex Education (RSE) lessons in primary and secondary schools from 2020 onwards in every school in Britain (Phillips, 2019). This is one of the greatest triumphs since the legalisation of the same-sex marriage and the implication of this cannot be overlooked. Unlike some countries, such as the Gulf States, where homosexuality is still punishable by death (e.g. recently five gay men were beheaded by Saudi Arabia (Wharton, 2019)), the UK is now one of the leading countries in the world in providing increasing visibility and equality of homosexuality (Ahmad & Bhugra, 2010). However, this journey has been neither smooth nor without difficulties.

The fight for equality among the gay community still continues today whilst homophobic attitudes and hate crime still persist in British society (Bachmann & Gooch, 2019). For instance, a large-scale study conducted in the UK in 2008 found that one in five lesbian and gay people had experienced a homophobic hate crime or incidents related to their sexuality in the previous three years (Dick, 2009). Like many ostracised groups (e.g., racial/ethnic minorities), the LGBT population experience discrimination and marginalisation (Bachmann & Gooch, 2019). The social and cultural oppression faced by LGBT people has been termed 'heterosexism', and its effect on individual LGBT people has been conceptualised as 'minority stress' (Balsam, Beadnell, & Molina, 2013). According to Meyer (2003), minority stress is 'excess stress to which individuals from stigmatised social categories are exposed as a result of their social, often a minority, position' (p. 676). Research suggests that the experience of negative labels and the stigma of homosexuality can have a negative effect on the mental health and quality of life of LGBT individuals (Berghe, Dewaele, Cox, & Vincke, 2010; Meyer,

2013). For instance, in comparison with heterosexual men, gay and bisexual men are five and a half times more likely to have purposely self-harmed (Guasp, 2011), to experience higher rates of anxiety and/or depression (McFall, 2012; Sandfort et al., 2001) and are twice as likely to use drugs and alcohol (Guasp, 2011; Marshal et al., 2008). Additionally, a third of MSM who presented to health services have had a negative experience (i.e. discrimination) due to their sexuality (Bachmann & Gooch, 2019; Guasp, 2011). Therefore, inequalities about health and well-being still persists in the UK, despite noteworthy improvements in laws and rights of gay and bisexual men (Bachmann & Gooch, 2019; PHE, 2014).

1.7 A brief history of gay and bisexual men's uses of the Internet

> *'The need for a safe space is probably the single most important factor that underlies the formation of digital queer spaces…' (*Dasgupta, 2012, p.116*).*

With the introduction of the Internet in the 1990s, the gay minority became able to find one another and, as Mowlabocus (2010) argues, 'British gay men have integrated platforms such as the Internet into their everyday lives as a direct consequence of the immediate history of gay male subculture' (p.24).

Gay and bisexual men have traditionally been among the early adopters of online technologies (Grov, Breslow, Newcomb, Rosenberger, & Bauermeister, 2014; McGlotten, 2013; Nash & Gorman-Murray, 2016). The rising transformation and growth of the Internet over the last two decades unquestionably provided MSM with a unique, protected forum in which to make social relations, find romantic relationships and explore their sexual identities with minimal fears of being 'outed' (Baams, Jonas, Utz, Bos, & Van Der Vuurst, 2011; Hammack & Cohler, 2009; Raj, 2011).

Before the emergence of the Internet and smartphone apps, MSM were restricted to forming romantic and sexual connections with other men in gay bars and community hubs, and visiting public sex venues such as adult bookstores, bathhouses, or cruising parks (Frankis & Flowers, 2009; Grov et al., 2014). For men who were less out or those who were still discovering their sexuality, these public spaces posed a significant challenge and, for many, there was also the risk of being attacked, robbed or arrested (Weinrich, 1997). Additionally, these spaces were less accessible for those men living in more rural areas or small towns (Grov et al., 2014). In contrast, the Internet offered gay and bisexual men a 'much-needed way to connect in an always-accessible, publicly available, anonymous space' (Van De Wiele & Tong, 2014, p.619).

1.7.1 The digital invasion: the 1990s

With the advancements of the Internet during the 1990s, MSM started to share erotic materials with other online users in chat rooms in addition to arranging offline sexual encounters (Grov et al., 2014). However, due to a lack of research at that time, it is not known exactly what these men's patterns of use of chat rooms were (Grov et al., 2014). Nevertheless, retrospective qualitative accounts of interview data from 2001 indicate that, for some men, frequent time spent searching for sex partners through online chat rooms was associated with negative outcomes in their personal lives (Grov et al., 2008). One participant said:

> *It's not necessarily the act [using the internet to meet sex partners] that bothers me, it's the time wasted. It's like wasting four hours for like a 20-minute [sexual] encounter with someone. It's like, 'Alright that was a big waste of my afternoon' when I could have been writing or reading or doing something for my job* (Grov et al., 2008, p.115).

1.7.2 2005–2009

During the mid-2000s, the Internet continued to be a big part of MSM's day-to-day lives. However, the move to online spaces for men to interact with other gay men led to the decrease

of physical gay venues (Simon Rosser, West, & Weinmeyer, 2008; Weatherburn, Reid, Hickson, Hammond, & Stephens, 2005). At the time, young gay and bisexual men specifically reported using the Internet excessively on a day-to-day basis (Mustanski, Lyons, & Garcia, 2011). The motives of gay and bisexual men for their use of the Internet varied from wanting to make connections with the LGBT community to looking for sexual health information, or seeking romantic relationships or sexual meet-ups (Bauermeister, Leslie-Santana, Johns, Pingel, & Eisenberg, 2011; Bolding, Davis, Hart, Sherr, & Elford, 2007; DeHaan, Kuper, Magee, Bigelow, & Mustanski, 2013; Mustanski et al., 2011; Wilkerson, Smolenski, Horvath, Danilenko, & Rosser, 2010).

Gay and bisexual men's use of the Internet for sexual purposes led to some scholars conducting research in the field of sexual health and Internet use (Grov et al., 2014). Studies from the early 2000s reported evidence of an association between online sexual partnerships and engaging in risky sex (Benotsch, Kalichman, & Cage, 2002; Liau, Millett, & Marks, 2006; McFarlane, Bull, & Rietmeijer, 2000), while other studies found no such relationship (Bolding, Davis, Hart, Sherr, & Elford, 2005; Jenness et al., 2010). In addition to these findings, some scholars have discovered evidence for lower sexual risk-taking with partners met via the Internet (Horvath, Rosser, & Remafedi, 2008; Mustanski, 2007). The varying findings led to some researchers concluding that there may not be a causal relationship between these variables, but men who have a desire to engage in risky sex may use the Internet as a tool for meeting sexual partners to engage in unsafe acts (Bauermeister et al., 2011; Horvath et al., 2008; Mustanski, 2007). This signified an important change in making sense of the role of the Internet in the sexual behaviours of MSM (Grov et al., 2014).

1.7.3 The mobile Internet: 2009 onwards

The introduction of the Apple iPhone® in 2007 brought the development of 'apps culture'. These latest developments in mobile technology have led to a dramatic change in the way users connect to the Internet (Grov et al., 2014). Apps connect users to both social networks (e.g. Facebook) and mobile dating apps (e.g. Tinder) as well as to many other popular apps that offer some form of enjoyment (e.g. games, sports, travel).

Grindr launched in 2009, as a mobile-based geosocial-networking app (i.e. you can see who is nearby). For 'gay, bi, and curious guys looking for dating or friends' it marked a new phase of online dating and modern romance for MSM (Blackwell, Birnholtz, & Abbott, 2015; Kuss & Griffiths, 2017). Compared to previous desktop dating websites such as Match.com (1995), Gaydar (1999) and PlanetRomeo (2002), dating apps on mobile devices made 'a virtue of their portability and immediacy' (Miles, 2018, p. 4). Following the success of the first geosocial-dating app, Grindr, many other dating apps also developed, such as Tinder (2012), regarded as a heterosexual dating app but with an increasing user base utilising its same-sex search function. As of 2018, Tinder had 57 million users worldwide and approximately 12% of male Tinder profiles identified as gay or bisexual (Business of Apps, 2018). There are also some apps for MSM that are more towards specific sub-populations (Grov et al., 2014). For instance, the dating app Scruff (2010) is geared towards older and hairier men, which is an alternative to Grindr, whereas Growlr (2010) is designed for those who are interested in or identify as 'bears', a gay slang term referring to those men who are larger in size or weight, and hairy. These apps have certainly transformed how MSM connect, date, engage in sex and have conversations (Blackwell et al., 2015).

1.8 A tour of Grindr

In the following sections, some statistics relating to Grindr usage as well as its everyday uses will be provided, along with an explanation of Grindr's functionality.

Grindr is among the world's most popular dating apps and is presently accessible in 196 countries, with the United States, UK, and Brazil containing the most profiles (Miles, 2018). In 2015, London topped the list of cities with the most active users. As of 2017, it had over 27 million users worldwide, with 3.6 million users checking into Grindr daily (Miles, 2018). It is free to use, with optional subscription plans. The subscription permits more men to be displayed on the home screen, with better filtering choices.

When a user opens the app, Grindr compiles a grid of profiles arranged by proximity, which is facilitated by the global positioning system (GPS) function of smartphones. Creating a user profile is simple and only takes a few minutes. Users can upload a photograph (without nudity or solicitation) and fill in some personal information if desired (e.g. age, weight, height, ethnic origin, interests, body type and 'tribe', which lets users self-identify with sub-groups of the gay community under tags like twink, bears, or as HIV-positive). This then becomes visible to other men. By clicking on the pictures of other men, users are then able to view their profiles and spatial distance away (miles or a few feet). Users can also manipulate the grid of profiles by using the filters function, allowing them to choose their preferred age range, distance, race etc. Thus, Grindr has enabled fast and easy ways for men to meet partners based on attractiveness and physical closeness in their vicinity (Rice et al., 2012).

1.9 Characteristics of Grindr users

The average age of Grindr users has been reported in the literature to be between 24 and 31 years, with most users identifying themselves as gay or bisexual (Goedel, Halkitis, Greene,

Hickson, & Duncan, 2016; Grosskopf, LeVasseur, & Glaser, 2014; Lehmiller & Ioerger, 2014; Rendina, Jimenez, Grov, Ventuneac, & Parsons, 2014). Studies indicate that Grindr users tend to have a high level of educational attainment, where having a bachelor's degree is common (Goedel & Duncan, 2015; Grosskopf et al., 2014; Holloway et al., 2014; Jaspal, 2017; Rice et al., 2012). Grindr users are predominantly White, with a minority of users from other ethnic backgrounds: Mixed race, Asian, Hispanic and Black (Bonner-Thompson, 2017; Lehmiller & Ioerger, 2014; Miller, 2015; Taylor, Hutson, & Alicea, 2017). Lastly, while findings suggest that most Grindr users are single, almost all studies reported that about 10–23% of users are married or in an open or monogamous relationship (Holloway et al., 2014; Lehmiller & Ioerger, 2014; Rice et al., 2012). Evidence suggests that on average, Grindr users report opening the app around five to eight times a day (Corriero & Tong, 2016; Goedel & Duncan, 2015; Van De Wiele & Tong, 2014) and spend approximately one hour and twenty minutes on it (Goedel & Duncan, 2015).

1.10 Motivations for using Grindr

A useful framework that allows for a better understanding of the different reasons for using dating apps is the 'uses and gratification' (U&G) theory of media use (Timmermans & De Caluwé, 2017). This theory posits that individuals use certain types of media to fulfil particular needs or desires (Rubin, 1993). According to this theory, there is an important difference between the individual's initial hopes associated with media use (gratifications sought) and the actual fulfilments obtained from the media (gratifications obtained) (Katz, 1974). The gratifications sought are continuously altered by the gratifications that are obtained and this then affects future gratifications sought in subsequent media use (LaRose, Mastro, & Eastin, 2001). For example, Grindr is frequently portrayed in the media as a hook-up or sex app (Kapp,

2011). Therefore, from a U&G perspective, when a Grindr user with a sexual intent gets numerous sexual encounters through Grindr use, the user will be more likely to continue using the app to fulfil this need. Some studies exploring the motivations behind Grindr use have found that about 60% of the study sample was using the apps to find partners for casual sex (Holloway et al., 2014; Phillips et al., 2014; Rice et al., 2012); however there is also research suggesting a lower level of interest in finding sex partners (Fitzpatrick, Birnholtz, & Brubaker, 2015).

Besides hooking up there are myriad motivators for using Grindr which have also been reported in the literature, such as 'killing time' when bored, to find a boyfriend or romantic partner, make friendships, to date other MSM and to connect to the gay community (Goedel & Duncan, 2015; Landovitz et al., 2013; Rice et al., 2012; Van De Wiele & Tong, 2014). Gudelunas (2012) in his exploratory study suggests that:

> *One of the unique gratifications of gay-specific SNSs like Grindr is the sliding scale of anonymity provided. For some, this choice to conceal their identity had to do with safety, and for others, it had to do with simply not wanting to be recognized on a sex-seeking SNS* (p.362).

In another study, seven kinds of sought gratifications of Grindr were established: safety, control, ease of use, accessibility, mobility, connectivity, and versatility (Miller, 2015). Overall, these findings suggest that Grindr serves multiple needs and desires for its users within one single mobile platform. However, virtual spaces might not automatically be safer in real terms, as Grindr has been used to target victims for violent homophobic and worst possible crimes (Duffy, 2018). For instance, a serial killer Stephen Port used Grindr to kill four young men and to rape another four. He was jailed in 2016 because of his horrific crimes (BBC, 2016). More recently, Daryll Rowe was imprisoned in 2018 for intentionally passing HIV on to

numerous other men he met on Grindr (BBC, 2018), together these crimes suggesting misuse of Grindr is becoming an escalating problem.

1.11 App usage and the risk of sexually transmitted infections (STIs)

Whilst researching Grindr, it would be unwise not to mention the sexual health effects surrounding current mobile dating apps. The earliest research on gay dating apps and health primarily centred on sexual health implications. While Grindr and other similar apps are increasingly trendy and are publicly marketed as offering social networking and dating services, researchers found that a key motive among men who use these apps is to meet people for sexual encounters (Goedel & Duncan, 2015; Gudelunas, 2012). This motive is also evident in men who are already in steady relationships who also actively engage in searching for hook-ups on apps (Lehmiller & Ioerger, 2014; Yeo & Ng, 2016).

A recent integrative review of risk behaviours for HIV infection amongst MSM through Grindr found that younger age (< 25) was correlated with using the app more frequently, a greater pursuit of sexual encounters, and a higher number of sexual partners (Queiroz et al., 2017). In another study, almost 58% of MSM stated using these apps to meet sexual partners and 67% of app users did not ask about their partner's HIV status before meeting in-person (Tang et al., 2016). Scholars, however, argue that increased opportunities for meeting sexual partners via dating apps might result in higher sexual risk-taking behaviour (Grosskopf et al., 2014; Landovitz et al., 2013; Lehmiller & Ioerger, 2014) and therefore this could negatively impact the sexual health of MSM who use these apps by offering endless access to a large supply of available partners (Beymer et al., 2016; Choi et al., 2016; Wang et al., 2018).

Previous studies have revealed that MSM who utilise dating apps more regularly tend to engage in more casual sexual encounters, more unsafe sex, and a greater number of sexual partners with a diagnosis of HIV and other STIs (Bien et al., 2015; Card et al., 2017; Chan et al., 2018; Chow et al., 2016; Phillips et al., 2014; Tang et al., 2016). In the literature, the estimated incidence of unprotected sex amongst app users varies between 17% (Holloway, Pulsipher, Gibbs, Barman-Adhikari, & Rice, 2015) and 67% (Grosskopf et al., 2014). In some studies, the consumption of drugs by app users during sex was also related to unsafe anal intercourse and a history of other STIs (Landovitz et al., 2013; Yeo & Ng, 2016). However, other studies found differing findings where dating app users may be more likely to engage in safer sex with partners who they meet through apps compared to those who they meet via other means (Rice et al., 2012; Winetrobe, Rice, Bauermeister, Petering, & Holloway, 2014). Some scholars also reported no relationship between app use and unprotected sex (Bien et al., 2015; Lehmiller & Ioerger, 2014). Similarly, in an important study of Grindr users, participants' descriptions showed their increased self-efficacy concerning the negotiation of the type of sex that they wanted to engage in (Jaspal, 2017).

Three studies evaluated whether gay dating app users have a higher rate of STIs compared to non-users. A noteworthy finding was that men who used apps to engage in sexual encounters had larger odds of testing positive for gonorrhoea and for chlamydia than non-users who meet partners in different ways (Allen, Mansergh, Mimiaga, Holman, & Herbst, 2017; Beymer et al., 2014; Lehmiller & Ioerger, 2014). Having said that, a recent systematic review and meta-analysis revealed that self-reported HIV diagnosis was found to be similar among both users and non-users of apps (Wang et al., 2018). The prevalence of HIV testing among app users in the last year ranged from 70.5% (Phillips et al., 2014) to 83.2% (Landovitz et al., 2013). However, a recent review that looked at the association between the use of dating apps and

risky behaviours for HIV infection in MSM concluded that 'the use of geo-social networking apps to find sex partners may lead to new patterns of behaviour and relationships that place MSM at risk for HIV' (Queiroz et al., 2017, p.813).

In summary, the estimated incidence of sexual risk behaviours and negative health outcomes are equivocal, with wide ranges reported across studies (Choi, Wong, & Fong, 2017; Queiroz et al., 2017). There is certainly a lack of randomised clinical trials in the current literature and most of the studies reported in this field adopted a cross-sectional design and were mainly descriptive in nature. Additionally, most of the studies reported were undertaken in the USA with diverse sample sizes and without a comparison group (non-users). Therefore, it is difficult to determine whether using dating apps was a sexual risk factor as opposed to be a common experience among MSM populations. Nevertheless, most of the scholars emphasised the necessity for further research using a rigorous methodology to investigate the effects of utilising gay dating apps on sexual behaviours and health in a broader population.

1.12 Excessive usage of SNS

With the rise of SNSs, recent research indicates that, overall, the usage of these sites has increased considerably in recent years, which may lead to some social and psychological problems (Kuss & Griffiths, 2012; Xu and Tan, 2012). According to Griffiths (2003), this lends support to the availability hypothesis whereby, when there is increased access to and a greater possibility of participating in an activity, there is a rise in the number of individuals who participate in the activity. More recently, however, studies have indicated that users may feel compelled to continue using their online sites in a way that might, in some instances, lead to spending a significant amount of time on them (Griffiths et al., 2014). Griffiths (2010) emphasises, however, that spending a significant amount of time on activity does not

essentially mean that a person is ‘addicted’. For example, in some of his case studies related to online gaming, he found that excessive Internet use (up to 14 hours a day) only had a minimally negative impact on a person’s day-to-day life. He concluded therefore that ‘an activity cannot be described as an addiction if there are few (or no) negative consequences in the player’s life even if the gamer is playing excessively’ (Griffiths, 2010, p. 120). However, other authors have considered excessive Facebook use as problematic or addictive behaviours as such (e.g., Chou, Condron, & Belland, 2005).

Although there are many positive views on the use of mobile dating apps on the Internet; there are also anecdotes stressing the ‘addictive’ side of using these apps, as one user commented in the Telegraph newspaper: ‘My sociopathic curiosity and appetite for constant validation is fuelled by Tinder’s addictive function. I started consuming hundreds of profiles on boring journeys or in queues for a slow barista” (Kent, 2015, cited in Orosz et al., 2016). Another said: ‘it was also a lot easier to spend all my time swiping right and left on my phone. The act of Tindering itself was addictive, the dating part was non-existent’ (Borkin, 2015, cited in Orosz et al., 2016).

Currently, there is no fixed definition of what constitutes problematic use of dating apps; however, scholars from the problematic Internet and Facebook use field seem to agree that the word ‘problematic’ is associated with negative, detrimental consequences on behaviour which impacts on one or more parts of a person’s life. These might include their relationships with others, health, psychological well-being, job, education, and/or personal interests (Griffiths, 2008; Marino et al., 2018).

The word ‘addiction’ was first used to explain repetitive routines with the intention to obtain substances (alcohol or drugs) but the term can also be applied to excessive behaviours that do not involve taking substances (Marks, 1990). However, there is a general lack of unity in the scientific literature about how excessive behaviours are defined and conceptualised, therefore making it challenging to determine a sole definition of these phenomena (Caci et al., 2017; Mudry et al., 2011). Kardefelt-Winther and his colleagues (2017) proposed an operational definition of behavioural addictions as:

> *A repeated behaviour leading to significant harm or distress. The behaviour is not reduced by the person and persists over a significant period of time. The harm or distress is of a functionally impairing nature* (p. 2).

The concept of behavioural addictions is subject to much controversy in the literature and in DSM-5 as to whether certain types of excessive behaviours should be categorised as addictions (e.g. Internet use, sex, video game playing and social networking) (Billeux et al., 2015; Griffiths, 2013). According to Billeux and colleagues (2015), the main concern of such attitude is that:

> *Individuals who exhibit behavioural addiction symptoms are usually treated with standardised interventions that have been proven effective for patients presenting substance addiction issues. In fact, such an approach, which is diagnostic-centred, might lead to neglecting the key psychological processes (motivational, affective, cognitive, interpersonal, and social) sustaining the dysfunctional involvement in a specific conduct* (p. 123).

Billeux et al. (2015) suggest two concepts that they believe are essential in defining a pathological condition: functional impairment and stability of the dysfunctional behaviour, i.e., persistence. They argue that there is a lack of research that uses longitudinal designs in the field of behavioural addictions and those that have used these designs failed to find proof for persistence (Thege et al., 2015).

Recent discoveries about the brain's reward system have revealed that providing there is a reward – as in gambling, eating, sex or shopping – individuals are at increased risk of becoming addicted, whether the reward arises from a chemical or from an experience (Holden, 2001). Cognitive neuroscientists recently have indicated that rewarding social stimuli – sex, beautiful faces, positive emotional expressions or romantic love – also activates the dopaminergic reward pathways, and result in a release of dopamine (Krach et al., 2010). Dopamine is a chemical created by our brains that plays a vital function in motivating behaviour (Haynes, 2018). Therefore, for instance, in terms of dating apps, searching for sexual partners or every received message and/or likely matches could have the potential to be a positive social stimulus and elevates levels of dopamine and therefore can lead to continuous use of the behaviour (Haynes, 2018).

1.13 Aetiology and theories of social networking addiction

This section will provide a brief overview of models and theories for SNS addiction.

There is a general consensus within the addiction field that an amalgamation of biological, psychological, and social factors seem to contribute to the aetiology of addictions (Alonso, 2004; Griffiths, 2005; Shaffer et al., 2004) which may also be the case for SNS addiction. Addiction is a complex phenomenon, and is heavily affected by contextual factors that cannot be understood by any single theoretical standpoint (Griffiths, 2005). It is, therefore, imperative that research and treatments are best conceptualised through a biopsychosocial approach, since this approach encourages a multifaceted yet individualised understanding of the causes of addiction and provides a broader treatment outlook (Borrell-Carrio, Suchman, & Epstein, 2004; Griffiths, 2005).

While the biological underpinnings of an individual might contribute to the risk of addiction in the context of environmental influences (Conners & Tarbox, 1985), learning factors, such as classical and operant conditioning, as well as observational and social learning, are also very common determinants in the development of an addiction (Marlatt et al., 1988). Irrespective of different terminology used, the addiction process occurs in three distinct stages (Marlatt et al., 1988):

(1) Initiation

(2) Transition and maintenance of addictive behaviour

(3) Behaviour change

In the initiation stage, individuals begin to engage in excessive behaviour as a result of unmet needs arising from stressful life changes, negative mood states or other genetic, social or psychological factors that may predispose a person to develop a problem (Marlatt et al., 1988). The next phase – transition and maintenance of addictive behaviour – occurs when excessive behaviour offers continuous or intermittent rewards for people as a result of operant conditioning. Negative reinforcement occurs when, for instance, their engagement in behaviour can aid individuals in reducing stress, loneliness, anxiety or low mood (Xu & Tan, 2012). Although individuals receive instant gratification through this process, addictive behaviours are usually followed by adverse consequences, which often show their effects at a later time (Marlatt et al., 1988). In the last stage of this model, individuals will engage in the process of trying to change their addictive behaviour as a result of the negative impact of these behaviours on their day-to-day lives (Xu & Tan, 2012).

According to Turel and Serenko (2012), there are three overarching theoretical perspectives that can help to shed light on the development of SNS addiction. These are as follows:

1. The Cognitive Behavioural Model (Davis, 2001): This model follows a similar theoretical root to Beck's (1976) cognitive theory of depression. The model suggests that some users can develop maladaptive cognitions (i.e. distorted thoughts about the self-e.g. negative self-appraisal and the world-e.g. all-or-nothing thinking), which are reinforced by different environmental factors, such as social isolation or the absence of social support and can lead to excessive usage of social networking. Some examples of cognitive distortions include, 'I am only good while I am on social networking sites', 'I am worthless offline, but online I am someone', 'People treat me badly offline', and 'Nobody loves me offline'. According to Davies (2001), these unhelpful thoughts are unconsciously enacted whenever users engage in SNSs, leading to problematic use.

2. The Social Skill Model (Caplan, 2005): this model was developed as an extension of the cognitive behavioural model and proposes that users who are lonely, socially anxious or lacking social skills are inclined to foster a preference for virtual communications rather than offline connections. This model revealed that overreliance on online social interaction, leads to potential compulsive social networking use, which leads to negative outcomes such as problematic use of social networking (Caplan, 2005). Caplan (2003) summarised a preference for online social interaction as 'a cognitive individual-difference construct characterized by beliefs that one is safer, more efficacious and more confident, and more comfortable with online interpersonal interactions and relationships than with traditional face to face social activities' (p. 629).

3. The Socio-cognitive Model (LaRose, Lin, & Eastin, 2003): This model postulates that excessive SNS use occurs because of negative reinforcement (e.g. to relieve loneliness, boredom, or seek social approval) which, combined with high self-efficacy in using the website and little control over its use, tends to lead to compulsive social networking behaviour.

Another well-known and popular model of addiction has been put forward by Griffith's in 2005. Griffiths' (2005) characterises addictive behaviour as any behaviour that encompasses the six core components of addiction, which are salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse. This model of addiction originated from the gambling discipline, which shares a number of characteristics with substance-related addictions (van Rooij & Prause, 2014). Support for this model comes from a number of researchers investigating behavioural addictions, such as social networking addiction (Andreassen, Griffiths, Hetland, & Pallesen, 2012), exercise (Griffiths, Szabo, & Terry, 2005) and gaming (Lemmens, Valkenburg, & Peter, 2009). This model has been also applied to identify problematic Tinder use in the general population as well (Orosz, Toth-Kiraly, Bothe, & Melher, 2016). With regard to Grindr, the six components model of addiction would be:

1. *Salience:* when Grindr becomes the single most significant activity in a person's life and dominates thinking and behaviour.
2. *Mood modification:* when Grindr use modifies/improves mood.
3. *Tolerance:* the procedure whereby increasing amounts of Grindr use is needed to reach the previous mood-modifying outcomes.
4. *Withdrawal symptoms:* individuals experiencing unpleasant feelings or physical effects when Grindr use is discontinued.

5. *Conflict:* Grindr use jeopardises social interactions and other activities.
6. *Relapse:* the tendency for repetitive returns to former patterns of excessive Grindr use after abstinence or control.

However, tolerance and withdrawal components of the model have been subject to criticism as the key features of behavioural addictions (Billeux et al., 2015). Additionally, these two components have origins in the substance-based approach to addiction and some argue that they are not the most reproducible aspects of substance use problems nor recognised noticeably in problematic Internet users for example (van Rooij & Prause, 2014). However, other researchers argue that, for Internet addiction, tolerance could be assessed by needing to spend extensive time online (Block, 2008).

It is worth noting that, irrespective of the theoretical perspective regarding the cause of addiction, all these models are in agreement that addictions cause many negative consequences for both users themselves and their environments (Turel & Serenko, 2012). Xu and Tan (2012) argue that the change from normal to excessive social networking usage happens when the individual starts to view social networking as a viable coping mechanism, in order to reduce adverse psychological states such as stress, loneliness, or low mood. They argue that, for problematic users, social media seems to be a platform of endless rewards, which results in users engaging in the activity even more, ultimately impacting on their day-to-day lives (e.g. work/educational struggles, disregarding real-life relationships). This negative outcome may then aggravate the individual's adverse moods, leading such individuals to participate in social networking behaviour even more intensely as a method of alleviating their negative mood states. Therefore, this cycle then leads to increased psychological dependency on social networking.

1.14 Problematic social networking use and psychosocial well-being

1.14.1 Excessive Facebook use

Up to the present time, numerous studies have explicitly explored and evaluated the psychosocial impact of problematic uses of SNSs, as well as potential predictors of their overuse (e.g. Facebook; Satici & Uysal, 2015). Although some research suggests that SNSs such as Facebook can support individuals to form and provide social capital (Ellison et al., 2007; Tosun, 2012), and that they may improve users' self-esteem and well-being due to positive feedback received on profiles (Valkenburg, Peter, and Schouten, 2006), and a more positive view of one's bodily look (Rutledge, Gillmor, & Gillen, 2013); other research suggests that people's use of these sites can be excessive, so that some users find it a real struggle to limit and control their time there, leading to problematic usage behaviours (Lee, Cheung, & Thadani, 2012).

Problematic Facebook use in some studies was recognised to be associated with severe depression and anxiety (Koc & Gulyagci, 2013; Wright et al., 2013) and with lower self-esteem and well-being (Denti et al., 2012; Kalpidou, Costin, & Morris, 2011). Moreover, a study exploring why individuals do not use SNSs, such as Facebook, found that some students who are not users of Facebook have reported that their primary reason for non-use was that they perceived it to be a waste of time, while some reported fear that it can lead to them to developing dependency and an addiction (Turan & Goktas, 2011). Previous research also found that spending excessive time on SNSs such as Facebook can have a negative impact on individuals' quality of life (Bevan, Gomez, & Sparks, 2014) and may affect users' mood negatively because they feel that they have misused their time and been absorbed in something meaningless by being active on Facebook (Sagioglu & Greitemeyer, 2014).

Satici and Uysal (2015) also examined the relationship between well-being and problematic Facebook use among 311 students, using the Bergen Facebook Addiction Scale developed by Andreassen and colleagues in 2012. They concluded that problematic Facebook use was associated with a lower well-being.

1.14.2 Compulsive Internet use

With Internet being very popular more than ever in today's world, research into compulsive Internet use and psychosocial well-being is continuing to evolve. Some studies have explored the overuse of the Internet and discovered that high levels of Internet use, measured by the regularity with which one logs on to the Internet, were associated with high levels of emotional loneliness (Moody, 2001) and lower psychological well-being (Chou, Condron, & Belland, 2005). More recently, a study assessing the long-term directionality of the association between compulsive Internet use (CIU) and well-being found that CIU use was negatively correlated with happiness and self-esteem and positively associated with depression, stress and loneliness (Muuses, Finkenauer, Kerkhof, & Billedo, 2014). This longitudinal study showed stronger support for the suggestion that CIU lowers well-being over time, than for the idea that well-being affects CIU (Muuses et al., 2014). However, there is a lack of agreement in the literature concerning directions of the influence, suggesting that 'over time, CIU might affect well-being, but well-being might also affect CIU' (Muuses et al., 2014, p.22). It is also important to note that the field of Internet addiction research tends to vary hugely among different studies. A closer look at the literature on Internet addiction reveals a number of gaps and shortcomings. For instance, a meta-synthesis by Byun et al. (2009) on quantitative research into Internet addiction found that the definition and the measurement of Internet addiction among studies in the literature has been hugely inconsistent, which certainly creates difficulties in making any

comparisons between study findings. Additionally, the sampling strategy used by researchers has mainly focused on college student samples, which again limits the generalisability of study findings. They recommended that researchers should:

> *Work to develop a standardized definition of Internet addiction with supporting justification, the use of representative samples and data collection methods that minimize sampling bias and that implementation of analyses methods that can test causal relationships, rather than merely examining the degree of associations, are recommended* (p. 206).

1.15 Rationale, aims and hypotheses for the current research

1.15.1 Rationale

Recently, academics from a range of disciplines have shown an increasing interest in the topic of dating apps. Despite this much-needed attention, it appears that no other research has specifically explored the psychosocial impact of Grindr usage patterns. What is clear is that dating apps such as Grindr connect diverse individuals in singular virtual spaces, and in spite of the rising popularity of Grindr over the last few years, little is actually known about the effect that Grindr overuse have on users' mental health and psychosocial well-being. A recent survey by technology website Time Well Spent asked 200, 000 iPhone users about different apps they use and whether those apps make them happy or unhappy. An alarming 77% of Grindr users said it left them feeling unhappy. Time Well Spent reported that there was a clear association between how long people spend using apps and unhappiness: 'On average, comparing between "happy" and "unhappy" amounts of usage of the same apps, their unhappy amount is 2.4 times the amount of happy time' (2017).

The research is important because, as described in section 1.6, gay men are more likely than heterosexual men to experience greater levels of psychological distress, to have seen a mental

health practitioner in the past, and to have intentionally self-harmed and engaged with recreational drugs because of experiences of interpersonal prejudice and discrimination (Guasp, 2011). With such rapid growth in the popularity of Grindr and a large number of men who use this online space, it is therefore important to understand how people in this vulnerable group use Grindr in a fast-changing technological landscape.

Previous research concerning gay men and Internet use has focused almost exclusively on risky sexual behaviours, onward transmission of HIV, or addiction (Internet, social media and/or pornography). Research is also quite limited on dating apps and primarily has focused on sexual health repercussions. To fill this gap in the literature, the purpose of the current study is to investigate more about Grindr use patterns among gay or bisexual men to see if problematic Grindr use existed and if so, also to explore its implications on individuals' psychosocial well-being. It is expected that the results of this thesis will make a meaningful contribution to broadening our understanding of the psychological and social effects of Grindr usage.

To explore this key inquiry in more depth, this research seeks to address the following questions, derived from the forthcoming literature review.

1.15.2 Aims

1. To determine the socio-demographic characteristics of participants who use Grindr.
2. To determine Grindr behaviour patterns of the users.
3. To investigate the relationships between problematic Grindr use and mental health symptoms amongst MSM.
4. To examine the associations, if any, between problematic use of Grindr and psychological well-being.

5. To investigate the differences in neglect in social life scores between problematic versus non-problematic Grindr users.
6. To identify any associations between levels of minority stress and problematic Grindr use.

Secondary aims

7. To identify internal and external motives for using Grindr.
8. To investigate which motives are related to problematic Grindr usage.

1.15.3 Hypotheses

The current study proposes the following four hypotheses:

1. Men who engage in problematic Grindr use will have worse psychological health compared with non-problematic users.

2. Men who use Grindr problematically will exhibit low levels of psychological well-being compared to non-problematic users.

3. Men who use Grindr problematically will have higher scores in neglect in social life than those with non-problematic Grindr use.

4. Men who have increased experiences of minority stress will be more likely to engage in problematic Grindr use than those with non-problematic Grindr use.

Chapter 2: Literature review

2.1 Chapter overview

In this chapter, the main focus of the systematic review will be examining and critically evaluating the existing literature on the psychological and social effects of location-based dating apps among their users.

Although some general research investigating the behavioural, psychological and social impact of SNSs has shown evidence of a negative effect on the mental and/or social health of users, the use of dating apps is also likely to have both benefits and drawbacks. In the following section, the literature review will further consider what is already known about the psychosocial impact of location-based dating apps on their users, together with emphasising gaps in current knowledge. An account of the detailed literature search strategy and inclusions

and exclusion criteria for the literature will be outlined first, followed by an examination of the articles extracted from the search, which inspired this study.

2.2 Search strategy

2.2.1 Search terms

Reading some of the relevant research papers initially created the following search terms. The search terms have been arranged by concepts below to make presentation flow easier. They include:

Concept 1: dating, hook-up, app, dating app*, smartphone, online dating, location-based, mobile dating apps, mobile applications, geosocial-networking smartphone applications, Grindr, Tinder, tinder use, Scruff, location-aware dating app, geolocated, app use, geolocated online, people-nearby applications

Concept 2: mental health, well-being, psychological impact, depression, anxiety, psychological cost, social, psychological distress, addict*, lonely, health, overuse, excessive, problematic use, compulsive usage, relationship*

Initially, in trying to identify literature related to the psychosocial impact of dating apps several searches were conducted with the above search concepts, making use of the Boolean operators (AND, NOT, OR) as well as the truncation technique (i.e. placing an asterisk at the end of a search term in order to get all the terms that begin with that word). However, a combination of concept 1 and 2 in the database searches provided a very limited number of articles to look through. Following this, the search terms were kept as broad as possible to make sure all relevant literature had been identified.

Therefore, the following search terms were used as the main keywords for each database with different combinations using Boolean operators:

Dating OR internet dating OR hook-up OR app OR dating app* smartphone OR online dating OR location-based OR mobile dating app* OR Grindr OR geosocial-networking smartphone application* OR tinder OR scruff OR location-aware dating app OR Tinder use OR mobile application* OR geolocated OR people-nearby app*

Databases searched

Below is a list of all databases where searches were completed for the literature review:

- Scopus (detailed overview of the world's research production in the subjects of science, technology, medicine, social sciences, and arts and humanities).
- PubMed (provides access to the MEDLINE database on life sciences and biomedical topics).
- APA PsycNET (articles in the field of psychology)
- CINAHL (Cumulative Index to Nursing and Allied Health Literature, which allows access to journal articles about nursing, allied health, biomedicine, and healthcare).

Website searches: Google (www.google.com) and Google Scholar (www.scholar.google.com) were also used to search for any other relevant papers or materials on the Internet.

Reference searches: Cross-referencing was carried out via the reference sections of all the articles obtained; in order to identify any other related research papers relevant to the study.

Citation alerts: Alerts were set up in each different database to capture new, related publications.

Search output: The articles that were selected were either found electronically from the University of Hertfordshire Learning Resource Centre or through contacting the researchers directly using the ResearchGate website.

I then discussed thoughts around what should be the focus of the literature review with the research team using specific inclusion and exclusion criteria.

2.3 Inclusion and exclusion criteria

I applied an established benchmark in order to assess the papers generated from the literature search. Articles that were selected met the following criteria:

Table 1. Literature Review Inclusion and Exclusion Criteria

Inclusion criteria:
• Papers that focused on, but were not limited to, LGBT adults
• Focus on a location-based mobile dating app
• Either quantitative or qualitative research design
• Articles published from 2009 onwards (the start of the dating apps)
• Assessed outcomes related to the psychosocial impact of dating apps
Exclusion criteria:

- Research not on adults
- Papers solely on sexual health and app use and risky sexual behaviour
- Internet dating websites rather than mobile apps

Two steps guided the selection of articles: first, titles and abstracts were considered and preselected consistent with inclusion and exclusion principles; second, full texts of possibly suitable articles were saved for additional examination. The flow chart for the literature review search is displayed in Figure 1. In total the searches produced 92 papers; of these 19 were duplicates and a further 50 were also excluded before the full-text review based on the above criteria. This process gave a total of 23 papers to be read in full to assess their eligibility. A further five were excluded after full-text screening, leaving a total of 18 studies to be reviewed here. The flow diagram of the selection routine is displayed in Figure 2.

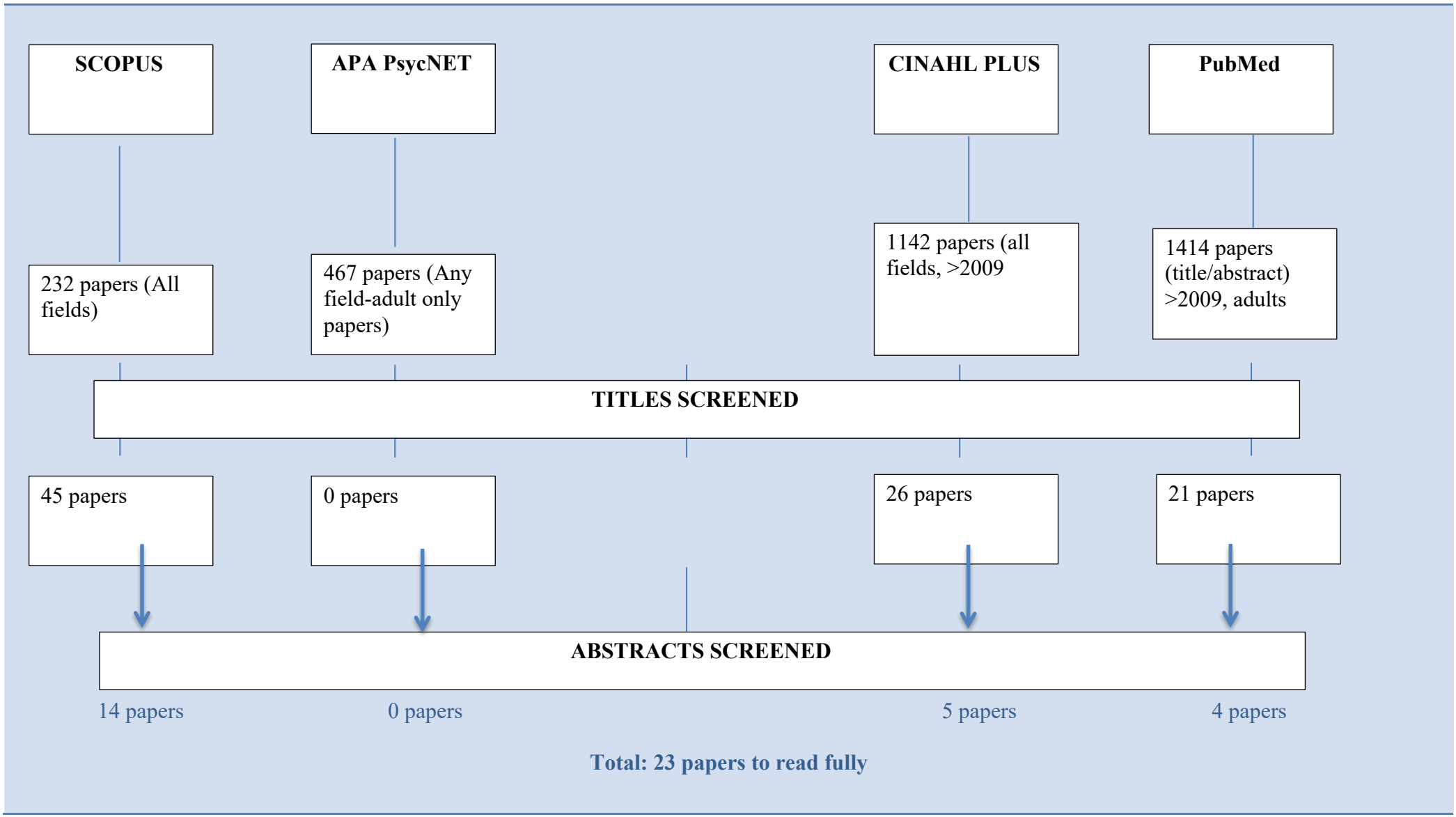


Figure 1- Flow chart for literature review search

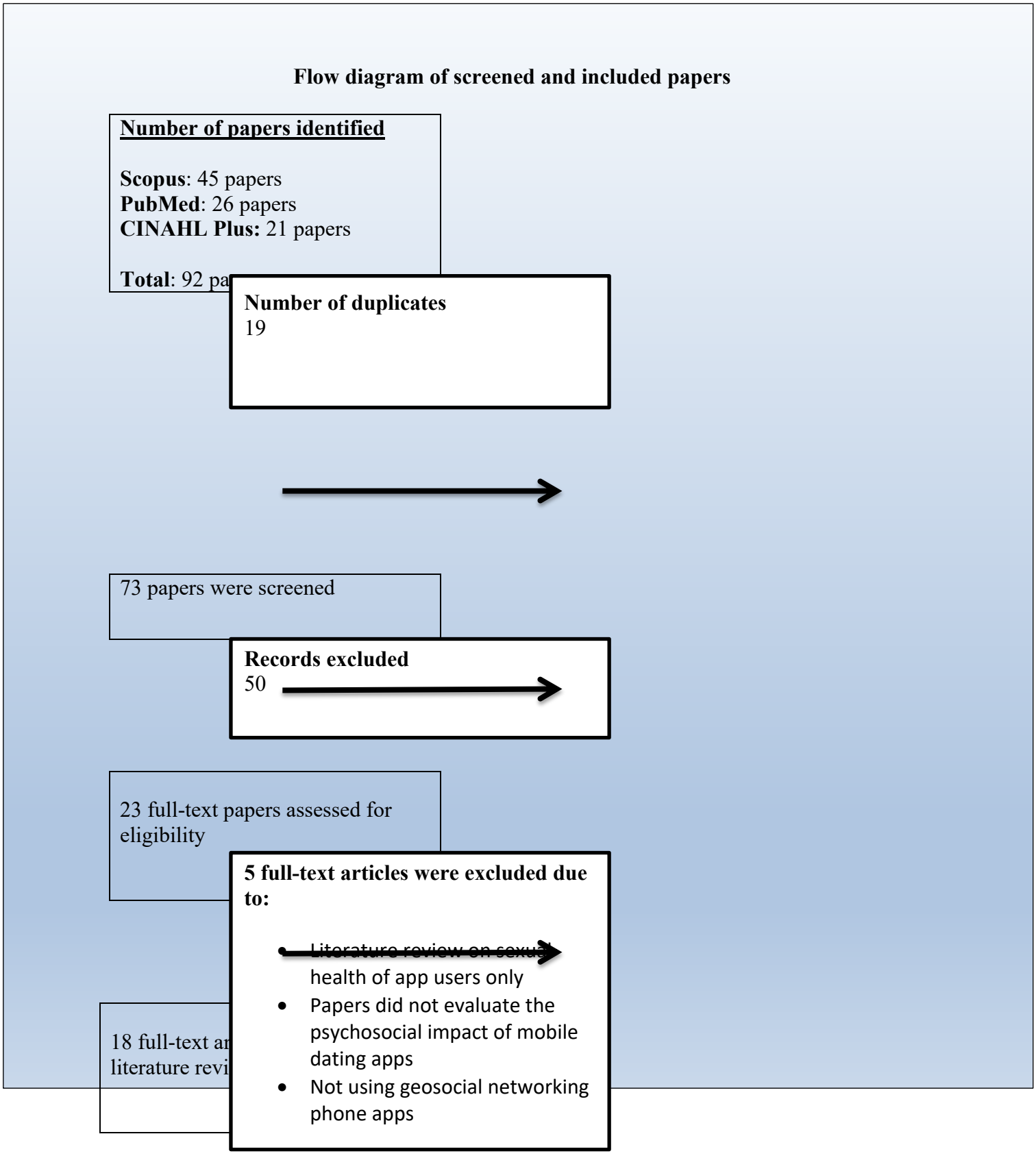


Figure 2- Flow diagram of the study selection process

2.4 Overview of research studies

The research studies chosen for this review included eighteen articles: seven of which used a qualitative design with semi-structured interviews as a method of data collection, five studies that used a mixed-method design, and a further six studies that used quantitative methods, such as surveys. The details of each study, as well as their strengths and limitations, are summarised in Appendix A. Only two of the studies were conducted in the UK (Bonner-Thompson, 2017; Jaspal, 2017), while the remainder were outside of the UK.

According to the European Science Foundation (2012), an evaluation of the quality of research practice is essential to ensure that the research meets prescribed standards. Different quality criteria were therefore used to evaluate the eighteen papers. For the qualitative studies, the Critical Appraisals Skills Programme (CASP) quality criteria were used. For the mixed-method studies, O'Cathain, Murphy, and Nicholl's (2008) guidance for Good Reporting of a Mixed Methods Study (GRAMMS) was used. Finally, for the quantitative studies, the NIH Quality Assessment Tool for Cross-Sectional Studies was used to assess quality. Summary tables for the different quality criteria are presented in Appendix B and I will also specifically discuss these further in section 2.6. The following section will now summarise the findings of the research on dating apps.

2.5 Findings of the Review

2.5.1 Psychological impact

The literature review showed that a number of recent studies revealing both positive and negative effects of dating apps on the users' mental health and psychological well-being. The following section reviews the literature related to the psychological impact of dating apps.

Previous research suggests that experiencing internalised homophobia– the internalisation of negative social attitudes about one's sexual orientation– is associated with greater levels of mental health difficulties, such as depression and anxiety (Boone, Cook, & Wilson, 2016; Newcomb & Mustanski, 2010). However, the use of dating apps was found to have an impact in counteracting this. For instance, Taylor et al. (2017) conducted an online survey of 274 Grindr users and explored the consequences of intimate self-disclosure (as assessed by intimate self-disclosure scale– e.g. 'personal feelings', 'moments in your life you are ashamed of'), using the app's private messaging function, on internalised homophobia. The authors used the Internet-enhanced self-disclosure hypothesis to understand how Grindr use may affect a user's well-being. A total of 46.7% of the study sample stated that they used Grindr for more than 50 minutes every day. Men in the sample who used Grindr more frequently engaged with more intimate self-disclosure; furthermore, men who participated in intimate self-disclosure through Grindr had lower levels of internalised homophobia compared to those who self-disclosed less. From the results, the researchers concluded that frequent Grindr use with strangers could have a positive impact on men's well-being following frequent intimate self-disclosure on the app, as this disclosure was associated with fewer feelings of internalised homophobia and stigma about their gay identity. Interestingly, this study also found that men who were looking for a

hook-up on Grindr reported engaging less in self-disclosure compared to those men who were looking for dates (Taylor et al., 2017).

In a recent study, Hobbs and colleagues (2017) used online surveys and semi-structured interviews with both males and females of varying sexualities who used different dating apps, such as Tinder, Happn and Grindr. The study investigated emerging patterns of dating app usage with participants' perceptions of the possible effects of such apps. A significant proportion of participants (66 per cent of 365 respondents) agreed with the statement that these apps allowed them 'a feeling of control' in regard to their romantic and sexual encounters. For example, one participant mentioned how Tinder enabled her to set clear expectations and boundaries with men when it came to sexual encounters. Additionally, this participant reported how Tinder had helped her to get over a difficult separation and to overcome feelings of rejection and of feeling undesirable. She considered 'matches' on Tinder to be a means of social approval regarding attractiveness, which could have a positive impact on her self-esteem. She indicated feelings of validation gained through Tinder usage, which enabled her to have a fulfilling sex life. Similarly, other participants commented on how Tinder and comparable apps enabled them to measure their desirability by the number of matches they obtained, which led to them feeling confident and happy.

Similar findings were also reported in a Sumter et al.'s (2017) study, where the authors investigated, among 163 Dutch adults, why individuals used the dating app Tinder. The data they analysed formed part of a larger study exploring body image issues during early adulthood. In their study, the self-worth validation motivation was found to lead users to engage in Tinder use in order to obtain a positive response about their appearance and to feel more confident and happier by getting validation. The study's findings suggested that Tinder users satisfy their

psychosocial needs of self-worth by gaining positive feedback on their appearance and interests. This motivation to feel better about oneself, however, was also the only motivation that was significantly associated with using Tinder more frequently. Similarly, in a study amongst Grindr users, some men used Grindr for social acceptance/inclusion. One participant said that Grindr enabled him to fulfil a need for self-validation: 'It feels good knowing that there are attractive guys out there who think I'm aesthetically pleasing' (Wiele & Tong, 2014, p.623).

In an attempt to understand more about the factors that contribute to the use of dating apps in a problematic way, Orosz et al. (2018) conducted a cross-sectional study to explore the psychological mechanisms behind problematic Tinder use, as well as whether different motivators were related to problematic use amongst Hungarian users. Including other measures, respondents also completed the 'problematic Tinder use scale', a scale based on Griffith's (2005) behavioural addiction model. The authors found that the women in their sample were more likely to use Tinder in order to find 'true love' and to enhance their self-esteem. Interestingly, they also found that the strongest predictor of using Tinder problematically was related to self-esteem enhancement. Other motivators, such as using Tinder to find love and sexual encounters, had a weak but positive relationship with problematic Tinder use. Together, these three studies make a considerable contribution to the understanding of Tinder being used as a means to raise self-esteem and feel more valuable. Despite the findings that Tinder can make people feel good about themselves and can improve well-being, in some people, it could also result in problematic patterns of usage (in pursuit of these self-enhancing goals).

Three further studies also investigated the negative psychological consequences of using Tinder and Grindr, with varying results. Strubel and Petrie (2017) conducted a cross-sectional study to investigate the impact of Tinder use and its interaction with body image concerns, internalisation of attitudes towards appearance (e.g. 'I do not care if my body looks like the body of people who are on SNSs) and self-esteem. The researchers compared Tinder users with non-users in exploring the relationships amongst these variables with an online survey. Their findings indicated that, irrespective of gender, Tinder users and non-users showed significant differing outcomes. For example, Tinder users reported:

> *Less satisfaction with their faces and bodies, more shame about their bodies, a greater likelihood of monitoring their appearance and viewing themselves from an external perspective, stronger internalization of societal appearance ideals, and more frequent comparisons about appearance than non-users* (p.37).

Additionally, they also found that male Tinder users reported lower self-esteem compared to men and women who did not use the app. Similarly, a study by Anderson et al. (2018) explored how Grindr use was related to self-objectification and to the objectification of others. In order to assess this, they compared active Grindr users to those users who had not recently used Grindr. They concluded that Grindr usage in this sample was significantly associated with the objectification of other men. Grindr users were more likely to objectify other men compared to non-users. However, in terms of self-objectification, the scores did not differ between users and non-users. Moreover, higher rates of self-objectification were related to higher rates of searching for sexual encounters with Grindr users. The finding that Grindr objectifies gay men was also found in a study exploring the reasons for discontinuing Grindr use (Brubaker et al., 2017). In summary, these findings strongly point towards the idea that self and other objectification are associated with increased Grindr usage.

A few studies have reported experiences of harmful stigmatisation and exclusion occurring on Grindr in relation to disclosing socio-demographic information. In a UK study, Bonner-Thompson (2017) explored how masculinities and sexualities were negotiated and produced through Grindr among 30 gay men who lived in Newcastle. Seven participants were above the age of 35, and often mentioned being too 'old' in 'gay years'. Some men experienced ageism by other users on Grindr. As a result, some engaged in tactics to resist these discourses by using topless pictures on their profile to draw attention to their flesh, or not filling out their age on their profile. The author concluded that: 'ageism shapes how older men choose to digitally present themselves' (p.1621). Similarly, in another British study, some participants chose the option of 'other' as their ethnic identity in their Grindr profile in order to protect themselves from social stigma (Jaspal, 2017). There are also numerous online platforms (e.g. Douchebags of Grindr, Grindr fails) dedicated to post some of the racist, femmephobic language or other forms of hate that is happening on Grindr. Here are some examples taken directly from profiles posted to Douchebags of Grindr in 2019 (see Appendix T for description of some of the slang words stated below).

Sorry not into Asian, masculine for masculine

Easy outgoing guy all about the outdoors and having redneck fun! I hate faggots so flamers don't bother!

Not into blacks or Indians. If I don't respond, consider you might not be my type and it aint' happening. Here for NSA.

Neg clean guy here and love to BB. Neg guys only. No Asians, old, black or fat hairy guys.

Looking for younger and in shape friends and more. And not into black guys. Don't bother if your older!

I don't do Asians; I don't do old people. I don't do fat people. I don't' do short people.

Jaspal's 2017 phenomenological study provides a richer account of how British gay men construct and manage their identity on Grindr. Based on interviews with 18 gay men, the author highlights how some interviewees described being mistreated, ignored or even blocked by other users, and in some circumstances, some men reported receiving verbal abuse because they weren't using Grindr to find sex. Several men seemed to lose their sense of agency and self-efficacy, as they felt powerless to decline sexual advances. However, other interviewees spoke of Grindr enabling easy access to sexual partners and empowering feelings of competence and control in their sex lives. Another interesting finding was that some participants believed Grindr use provided them with a means to construct a socially desirable identity, which could enhance self-esteem. However, some men found it challenging to 'adhere' to their online identity. Based on these findings, the author concluded that: 'these accounts evidenced a threat to psychological coherence, given that some came to view their online and offline identities as incompatible - they struggled to perceive any unifying thread between them' (p. 12).

Another important finding that demonstrates the psychological impact of using Grindr is perceived 'addiction' to the app (Jaspal, 2017). Several participants conveyed the opinion that Grindr should to be utilised 'in moderation', as it could 'lead to addiction' in some users. One participant said: 'Sometimes I end up falling asleep with it open on my phone and I wake up thinking I should really get a life. I feel like an idiot' (p.12), while another respondent reported:

> *When I go on holiday like somewhere new it's there's like a massive curiosity I have about what the guys are like, who is online… I've spent the whole day in my holiday room just looking for a hook-up when I could have been like actually talking in a human way and like exploring the place and what have you* (p.13).

As is evident from these accounts, several interviewees thought that their Grindr use was excessive, which prevented them from engaging in other essential activities and getting on with

their social lives. There was also a strong sense of shame regarding their Grindr usage. Some men reported that their usage was having a negative impact on their offline identities, which led them to query and doubt their own self-worth and self-esteem. Participants who were not able to reduce their Grindr use reported decreased self-efficacy. They felt they had lost self-control and competence because of their 'addiction' to Grindr, which threatened their psychological well-being. Similar findings were also established by Beymer et al. (2016), where the majority of men reported using Grindr and found that participants with low self-control, as assessed by the Tangney Self-Control Scale, were significantly more likely to use Grindr more frequently, and engage in a higher number of sexual encounters, compared with those men who had high self-control.

Brubaker and his colleagues (2016), employing a grounded theory approach, interviewed 16 men who had stopped using Grindr in urban settings in order to explore their reasons for discontinuation. The most common reason provided was the belief that Grindr was a 'waste of time' as many men recognised the extensive amount of time, they were spending on it, which impacted on their ability to get on with important daily activities, such as work. One participant said, 'Having a four sentence conversation… it's easy to lose an hour and a half doing that' (p.379). Participants spoke about how spending too much time on the app and the variable nature of Grindr conversations caused participants to acknowledge that Grindr was just not for them.

Finally, a geographically varied study conducted by Miller (2015) asked 143 men how they felt after using specific dating social networks (some utilised Grindr or Jack'd, while others used websites such as Manhunt, etc.). The author found that the majority of men voiced

negative emotions (33.6%) more often, compared to mostly positive (21.7%) or mixed (17%) feelings about their use of these dating apps/sites. The author reported:

> *Descriptions of negative feelings included adjectives and phrases depicting vulnerability and anxiousness, boredom (e.g. wasted time, wasted life), sexual indignity (e.g. trashy, slutty, cheap), adverse feelings about the self (e.g. hopeless, unattractive, let down), frustration (e.g. agitated, annoyed), embarrassment or shame and loneliness* (p.482).

The author concluded that for some, these apps left men feeling emotionally diminished.

2.5.2 Social impact

The following section reviews the literature related to the social impact of dating apps.

A number of authors have recognised the positive impact of Grindr on the social networks of its users. For instance, Taylor et al. (2017) explored the social consequences of Grindr use among 274 American men, and examined the association between frequent Grindr use and levels of loneliness. The findings revealed that frequent Grindr users were less likely to feel lonely after using the app because they participated in intimate self-disclosure with other users (sharing personal feelings or shameful acts). Likewise, another American study explored the experiences of 29 men living in two small cities in order to understand the role of these apps in their social lives (Hughto et al., 2017). According to these researchers, dating apps such as Grindr helped their participants to facilitate physical connections with other men, which fostered a sense of belonging to a community. Some men in this study talked about the lack of gay spaces in small cities, such as bars or bookstores, and how this posed a huge challenge to their ability to connect with other gay men. Several men also commented on how they appreciated the ease of accessing virtual communities where they could self-disclose sexual fantasies or their HIV-positive status without the fear of stigma. For instance, one participant

spoke about how Grindr enables HIV-positive men to connect to the 'poz' community, 'thereby shielding them from the mental health threat of peer-based rejection' (p. 733).

Three additional studies also explored the perceived social benefits of SNSs (Blackwell and Birnholtz, 2014; Gudelunas, 2012; Miller, 2015). Miller (2015) explored the motivations for using apps such as Grindr by employing a uses and gratifications theory framework. One participant stated how he had made great friendships via these apps with people whom he would not have met otherwise. This finding was also echoed by another participant, who commented on how he met other like-minded guys and reported that 'without Grindr, I wouldn't have met guys like myself, who ultimately made me feel more comfortable about being gay. I have a few good friends thanks to these apps' (p. 480). The author concluded that these connections led to positive links with homosexuality and the gay community, which is important for forming a positive gay identity. Similar findings were also found by Gudelunas (2012), who analysed findings from six different focus groups and one-on-one intercept interviews with gay and bisexual men, in an attempt to understand more about the needs and motivations that bring men to online sites. Some men spoke about some functions of Grindr, and how they were able to 'star' people in an attempt to keep in touch with friends or sexual partners and find out 'what's going on'. A participant indicated, 'I have at least 7 or 8 profiles online now. No, I don't think it's hard keeping up with so many profiles, it's sort of fun and it makes me feel like I'm out there… meeting people constantly' (p. 359). The author concluded that 'for gay men in this study, sexual capital is closely aligned with social capital' (p. 360). In another study, Blackwell and Birnholtz (2014) reported how Grindr was particularly important for men who lived in rural or isolated neighbourhoods, where Grindr was perceived as a virtual place for connection.

Wiele and Tong (2014) used a mixed-method design to explore men's motivations for using Grindr. Their analysis suggested that Grindr played a significant role for some men in creating 'a sense of community', and helped to expand their social interactions, whereas some participants felt comforted by the fact that there were other gay men living within their immediate vicinity. The authors also asked respondents to describe their dislikes about Grindr. One respondent noted:

> *It often allows some of the worst aspects of the gay community to flourish. Specifically, sex-obsessed shallowness, racism ('no blacks, sorry'), discrimination against body types ('no chubs'), discrimination against perceived unattractiveness, discrimination against penis size (I've seen guys that won't talk to you if you're less than 9 inches), discrimination against femininity ('masc looking only for another masc' or 'no fems'), discrimination against the practice of safer sex ('poz looking to bareback') and general discrimination based on ('physical attributes')* (p.628).

2.5.3 Relational impact

Four studies examined how the use of geosocial networking apps impacts on the romantic lives of gay and bisexual men (Macapagal et al., 2017), or their ability to form romantic relationships (Brubaker et al., 2016; Corriero and Tong, 2016; LeFebvre 2018).

One study assessed patterns of dating app use with men who were in relationships and explored the impact of their usage on them (Macapagal et al., 2017). This study involved 323 gay and bisexual men who had been in a relationship for a minimum of six months and who responded to an online survey. Most participants were in a non-monogamous relationship (68.4 per cent). Some respondents stated how the apps facilitated the satisfaction of their sexual desires that were not being met in their primary relationship, whereas others commented on how the app 'improved the quality of their primary relationship' (p.8) in communication (through openness in discussing desires, fantasies, and sexual interests). One participant said, 'our use of apps has also helped us speak more openly and honestly with each other and brought us a deeper level

of trust and respect for each other' (p.8). Moreover, app use helped some of the couples in reducing social isolation, which provided them with a sense of connection to the community. Some participants also spoke about how the use of apps had led to improvements in their sex life with their primary partners, and some described how app use 'added 'spice' to a boring sex life' (p.9). However, not all the findings were positive. Some of the perceived downsides of app use involved 'jealousy and lack of trust' between partners. One participant said, 'it has spurred some resentment when one of us gets more messages/attention than the other' (p.9). Other drawbacks involved taking the 'focus away from their primary relationship' (p.9). Some participants also spoke about how they and/or their partners spent excessive time on the apps, resulting in not spending much time with their other halves. This theme was evident in one participant, who stated, 'I spent more time looking for hook-ups online than I did with him' (p.9). Another respondent spoke of how app use led to fewer dialogues with his partner. Other, less frequent, findings involved the use of apps causing conflict in relationships. One participant said, 'we have… broken up many times and he used to beat me when he found out I was meeting other guys' (p.10).

In an investigation into motivations for discontinuing Grindr use, Brubaker et al. (2016) demonstrated how using Grindr did not facilitate meeting the 'right kind of person'. Overall, men felt that Grindr was a means for casual sex hook-ups. Some participants expressed their frustration with their inability to form 'meaningful connections' with other men from the app. Some felt that meeting someone who was truly a good counterpart for them was 'sort of like finding a needle in a haystack' (p.379). Some men felt that it stopped them from forming satisfying relationships because 'Grindr promotes a gay culture in which we look and always keep looking, because the next best thing is right around the corner' (p.380). In a comparable study of 395 participants, where a majority self-identified as heterosexual, LeFebvre (2018)

explored motives for selecting and deleting Tinder. Interestingly, about half of the participants had deleted their app numerous times, varying from one to seven. When they were asked their reasons for the deletion, a common reason was that the participants had been unable to find potential partners (most users wanted a one-night stand rather than a relationship) or receive positive responses. Some participants had stopped using the app because they experienced harassment from other users, which made them feel unsafe. Finally, concerns associated with Grindr use were investigated by Corriero and Tong (2016). They found misrepresentations of health (particularly HIV status) and social stigma (slut-shaming) to be the main concerns for users. Slut-shaming is the idea that one could be judged by others simply for using Grindr. One participant stated, 'Grindr is perceived as being a hookup site, so it can make you look sleazy' (p.131).

2.6 Synthesis and evaluation of findings

Recently, researchers have begun exploring the motivations behind the use of dating apps and their impact on domains, such as mental health, psychological well-being and social functioning, in addition to the construction and management of identity. However, the research is still in its infancy. Overall, there seems to be some evidence to indicate that frequent Grindr use can have a positive impact on psychological well-being. Researchers have found that men whose primary intention is to find dates tend to engage in more intimate self-disclosure with other men. In turn, such self-disclosure appears to be associated with reduced loneliness and diminished internalised homophobia (Taylor et al., 2017). Although this finding is important, it is worth mentioning that the indirect effect of Grindr use on loneliness was relatively small in statistical terms; going on Grindr may not considerably decrease loneliness but rather offer a small buffer against loneliness when used as a way to engage in self-disclosure. Additionally, this study failed to adequately define what it meant to use Grindr frequently. Therefore, more

research appears to be necessary to improve our understanding of Grindr use's effects on concepts such as psychological well-being and internalised homophobia.

Other qualitative studies have explored how using dating apps such as Tinder or Grindr allow some individuals to enhance their perception of control in terms of who they date, or their choice of sexual practices (Hobbs et al., 2017; Jaspal, 2017). These findings are significant as a sense of agency is positively associated with greater self-esteem and well-being (Welzel & Inglehart, 2010). Some other studies have found evidence regarding feelings of validation and perceptions of desirability, which can both be gained by using these apps (Hobbs et al., 2017; Sumter et al., 2017; Wiele and Tong, 2014). However, other researchers have explored motivations for using dating apps and found that problematic use is associated with efforts to enhance self-esteem (Orosz et al., 2018). Overall, it appears that individuals are motivated to use dating apps such as Grindr for a variety of reasons and with varying results, some of which are potentially negative (Anderson et al., 2017; Miller, 2015; Strubel and Petrie, 2017). Some researchers have also concluded that Grindr usage is associated with both self and other objectification (Anderson et al., 2017; Brubaker et al., 2017), in addition to the exclusion and rejection of men on the basis of particular attributes (Bonner-Thompson, 2017; Brubaker et al., 2016; Jaspal, 2017; Wiele and Tong, 2014), and anxiety and frustration (Miller, 2015).

Factors influencing the use of dating have been explored in several studies (Beymer et al., 2016; Hobbs et al., 2017; Orosz et al., 2018). What is not yet clear is the impact of different usage patterns on mental health and well-being. So far, little attention has been paid to the concept of 'addiction' to sexualised dating apps, such as Grindr. Only two qualitative studies in the literature provided some evidence of how self-labelled 'addiction' to Grindr could challenge users' social and psychological well-being (Brubaker et al., 2016; Jaspal, 2017).

These studies collectively illustrate the importance of examining problematic use of Grindr by using large sample sizes, since some users reported negative detrimental consequences in their day-to-day lives.

Several studies in the literature have also explored the social consequences of using Grindr, and reported positive results in terms of reducing loneliness, facilitating friendships, identifying sexual partners, expanding the community for people who live in rural and isolated areas, and improving the quality of primary relationships (Blackwell and Birnholtz, 2014; Gudelunas, 2012; Hughto et al., 2017; Macapagal et al., 2017; Taylor et al., 2017). However, these studies fail to discuss how these findings relate to problematic usage patterns. One study found evidence of how primary relationships were negatively impacted by excessive use of sexualised dating apps (Macapagal et al., 2017), while some qualitative studies have found a range of negative effects of dating app use. Some findings include the inability to establish meaningful and fulfilling connections with other men, as well as non-sexual friendships (Brubaker et al., 2016; LeFebvre, 2018).

Overall, there is a lack of clarification and consistency in the definition of excessive or problematic dating app use. Most studies have been qualitative, where individuals report on their own personal experiences. Conducting quantitative studies with larger sample sizes is therefore very important to determine if some of these findings from the qualitative studies are generalisable to larger populations. Future research also needs to pay attention to the operational measurement of what constitutes problematic app usage.

The literature review identified a number of both qualitative (Bonner-Thompson, 2017; Brubaker et al., 2016; Gudelunas, 2012; Hughto et al., 2017; Jaspal, 2017; Miller, 2015) and

quantitative studies (Anderson et al., 2018; Beymer et al., 2016; Hobbs et al., 2017; LeFebvre, 2018; Macapagal et al., 2016; Orosz et al., 2018; Taylor et al., 2017; Wiele and Tong, 2014) with large sample sizes. There were two studies where there were comparatively fewer participants who were current Tinder users compared to non-users (Strubel and Petrie, 2017; Sumter et al., 2017). What is most striking from the literature review is the lack of studies conducted in the UK, with only two of the studies were conducted there (Bonner-Thompson, 2017; Jaspal, 2017). A further two were conducted in Australia (Anderson et al., 2018; Hobbs et al., 2017), one in the Netherlands (Sumter et al., 2017), one in Hungary (Orosz et al., 2018), with the other twelve studies being conducted in the USA (Beymer et al., 2016; Brubaker et al., 2016; Blackwell et al., 2014; Corriero & Tong, 2016; Gudelunas, 2012; Hughto et al., 2017; LeFebvre, 2018; Macapagal et al., 2016; Miller, 2015; Strubel and Petrie, 2017; Taylor et al., 2017; Wiele & Tong, 2014). As Grindr is available worldwide, some of the experiences or usage patterns might differ geographically.

In terms of quantitative studies, the generalisability of much published research on this issue is problematic, as all the quantitative studies used a cross-sectional design and utilised convenience sampling (Anderson et al., 2018; Beymer et al., 2016; Orosz et al., 2018; Strubel & Petrie, 2017; Sumter et al., 2017; Taylor et al., 2017). This means that causality and longitudinal impacts cannot be concluded from these results. Most of these studies have established the need for longitudinal design in order to capture how the different variables have changed over time. Additionally, most measures used self-reported scales, which raises issues of self-report bias.

Most of the studies reported in the literature review characterised a specific subgroup of MSM who use Grindr. It has been argued in the literature that Grindr users tend to be mainly

Caucasian, relatively young, and highly educated (Beymer et al., 2016; Blackwell et al., 2014; Gudelunas, 2012; Hughto et al., 2017; Miller, 2015; Taylor et al., 2017) which could limit the generalisability of findings. The demographics and experiences of users might differ depending on different dating apps, possibly making it difficult to make general conclusions regarding all MSM. Thus, findings should be scrutinised with caution as men from more diverse ethnic and educational backgrounds are evidently underrepresented in the literature.

Finally, in terms of qualitative studies, all the researchers provided a clear description of how the analysis was conducted and how themes or categories were derived (Bonner-Thompson, 2017; Gudelunas, 2012; Jaspal, 2017; Macapagal et al., 2016; Miller 2015; Wiele & Tong, 2014). Furthermore, rich examples were provided for themes that came up in their studies, which were supported by respondents' quotes. However, some studies had only one analyst, which could decrease the reliability/credibility of their results, which had been arrived at without undertaking triangulation (Bonner-Thompson, 2017; Gudelunas, 2012; Hobbs et al., 2017). Finally, another weakness of some studies was that the authors did not fully consider ethical issues, nor did they reflect on their own relationship to the research, which could have had a potential negative impact on the data-gathering process (Brubaker et al., 2016; Corriero & Tong, 2016; Jaspal, 2017; Miller, 2015).

Chapter 3: Method

3.1 Chapter overview

In this chapter, the study design and advantages and disadvantages for this particular design will be stated, including information on the target population and recruitment strategy, and sample size calculation. Furthermore, this chapter will outline the measures the study used and

the contribution of service user consultation. The chapter will finish with a section on ethical considerations and the method of data analysis.

3.2 Design

A nonexperimental, correlational research design was used to investigate the relationships between the variables of Grindr usage patterns and mental health and well-being. Although one of the key drawbacks of correlational studies is that they cannot prove cause-and-effect relationships (Barker, Pistrang, Elliott, & Barker, 2002) an important advantage of these studies is that they allow researchers to establish the strength and direction of a relationship amongst different variables and can help researchers to suggest areas where experimental research could take place.

The present study used a cross-sectional design to collect data from non-clinical populations by administering questionnaires in an online surveying system, Qualtrics (Provo, UT, version 2018). This survey method was favoured as it not only offered a greater sense of anonymity for the men who took part in the study but also allowed for wider access to potential participants.

3.3 Target population and recruitment strategy

Inclusion criteria for participants were limited to those who were 18 years of age and older, identifying as gay or bisexual and a current user of Grindr. Exclusion criteria for the study were participants who were under the age of 18 and those who currently did not have a current Grindr account. A non-probability sampling technique with convenience sampling was used to recruit

participants to complete the self-report questionnaires. Participation was completely voluntary and there were no incentives offered.

MSM are hard-to-reach people for research, and therefore some argue social media-based methods could overcome certain difficulties in reaching to these groups (Iribarren et al., 2018). For the purposes of this study, several recruitment approaches were adopted in order to optimise the uptake to the study as well as to achieve a random sample of men (Figure 3). A high proportion of the respondents were recruited into the study through Grindr (83.7%) and SNSs (11.5%; from Facebook & Twitter).

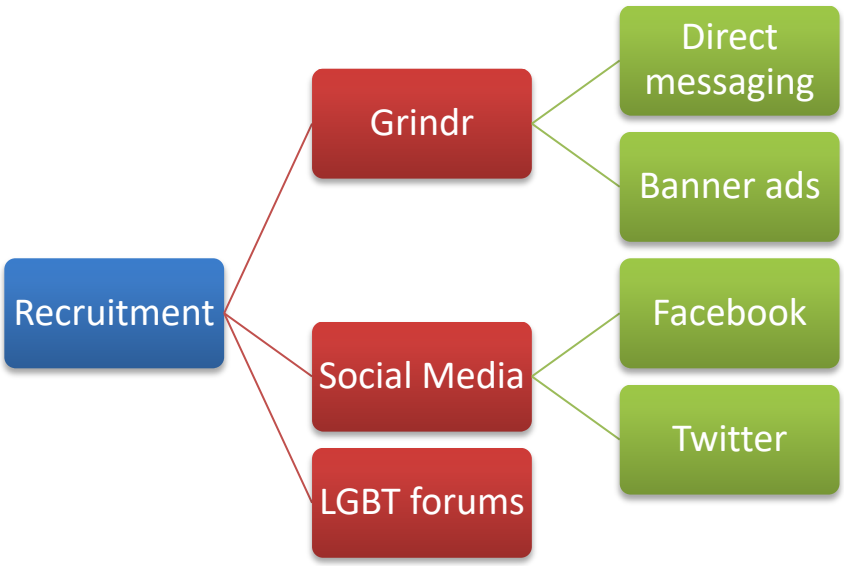


Figure 3- Recruitment route

3.3.1 Recruitment via Grindr

Direct messaging:

This method of recruitment is consistent with previous research recruiting Grindr users into research about MSM (Burrell et al., 2012; Gibbs & Rice, 2016; Goedel, Brooks, & Duncan, 2016; Holloway et al., 2014; Landovitz et al., 2012; Rice et al., 2012). Researchers argue that

this manner of recruitment can increase geographic representativeness and provide wider access to MSM (Blackwell et al., 2014; Goedel & Brooks et al., 2016; Koc, 2016). Figure 4 demonstrates a visual example of a user page on Grindr.

Figure 4- Screenshot of Grindr user profile (generic publicity material)

As part of my thesis, I created a researcher profile on Grindr between May and September 2018 in order to recruit users to the study. The profile picture I used was a scenic beach photo, as a previous researcher who utilised Grindr as a form of recruitment spoke about how using their own picture resulted in becoming 'entangled in the sexual politics that shape Grindr' (Bonner-Thompson, 2017, p.1615). As a result, I decided against using my own picture in an effort to 'construct boundaries' (Cuomo & Massaro, 2016) and to reduce the number of users who may have assumed that the main aim of my online presence was to look for hook-ups or dates. If a message was received about hook-ups, users were informed that this was a researcher profile

and if they wanted further information about the study that I could provide to them. No demographic sections on Grindr were filled apart from the 'about me' section where it briefly described the nature of the study.

The 'about me' part of the profile itself included the following text:

> Hello, I'm a gay doctoral student conducting my research on location-based dating apps and psychological well-being and mental health. Feel free to message me if you are interested or looking to know more about it.

The app automatically records all text messages sent and received. This distinctive feature of Grindr helped me to verify that no user was approached more than once. I was able to exchange dialogues with potential participants to answer any questions about the research. Some users contacted me directly in order to take part or request further information about the study. Users questions were answered in a professional way to build trust and confidentiality. In addition, I also sent an initial standardised message using the instant-message function of Grindr to users to gauge their interest in taking part in the study. Direct messaging involved a random selection of men, who appeared online at the time I was signed onto Grindr. Earlier research found that users are more active at different times of the day specifically in the evening or late night and on weekdays (Goedel & Duncan, 2015). To reflect this, data collection took place at different times during the week/weekend to help broaden variability in the selection of profiles. The invitation on Grindr contained the following text:

> Hello, hope you are well. Not sure if you managed to read my profile but just wondered if you would like to participate in my doctoral research project?

A sample of Grindr conversation between a participant and myself can be seen in Figure 5. The great majority of participants who were contacted via the direct messaging feature of Grindr

demonstrated considerable interest in participating in the study, which made the recruitment process run smoother.

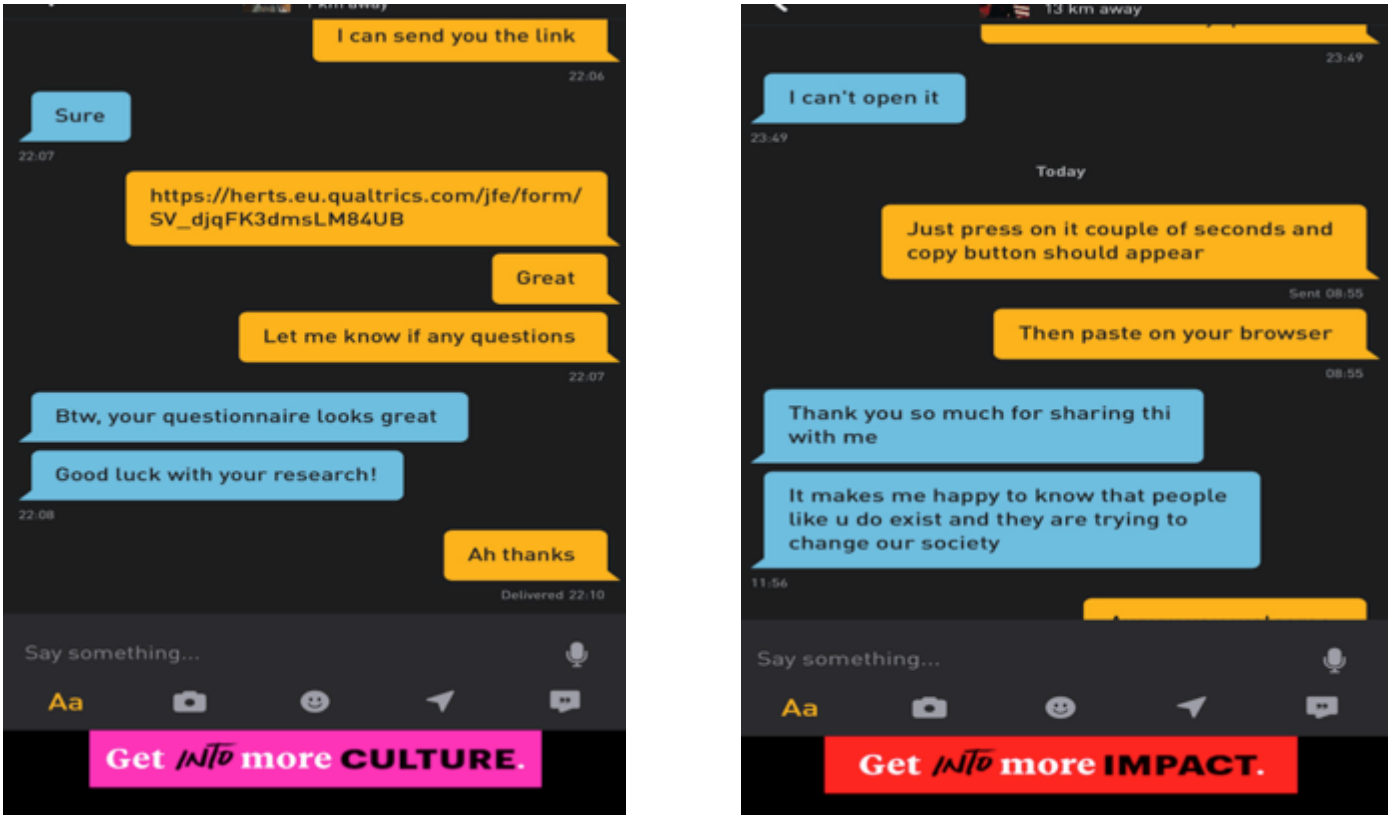


Figure 5- Sample Grindr conversations between participants and myself

Banner ads:

Purchased banner ads linking to the online survey were also placed on Grindr over a period of two consecutive 24-hour periods in May 2018 in order to increase the number of participants from across the nation. Participants were able to see the banner once they logged onto Grindr. The banner was set up for 100,000 ad impressions over the course of two days. Participants entered the survey by clicking on the banner link. The banner contained the following text: '*Have your say. For Gay and Bisexual men, we want to hear from you. Click here to take part.*'

At the end of the two-day period, a total of 50 users had clicked the advertisement in the app and were directed to the participant information sheet page of the survey. This method of recruitment is also in line with previous research recruiting Grindr users into other cross-sectional studies of sexual risk-taking behaviour and substance use (Beymer et al., 2016; Burrell et al., 2012; Goedel, Halkitis, Greene, & Duncan, 2016; Rendina et al., 2014; Usher et al., 2014). The image of the banner is provided in Figure 6. However, this method of recruitment showed a very low completion rate in the study, as only four participants came through this route.

Figure 6- The banner ad for the study

3.3.2 Recruitment via social media

Facebook:

I posted to the 'wall' of various LGBT-specific groups on Facebook in order to advertise the study (such as, but not limited to, LGBT London University Students, Southwark LGBT Network, and GAY late bar). Administrator approval was sought prior to posting.

Twitter:

The survey link was also advertised via a Twitter account specifically created for this research. The tweet was also shared and re-tweeted by willing network organisations and people, in a snowballing method. The Twitter advertisement contained the following text: 'Do you use Grindr? If so, we want to hear from you! #Grindr #datingapp #LGBT #research. Survey link and further information about the study can be accessed here: *https://herts.eu.qualtrics.com/jfe/form/SV_djqFK3dmsLM84UB'*

3.3.3 Recruitment via UK LGBT forums

Reddit LGBT & Pink UK:

Reddit LGBT has 279k subscribers and the forum provides a safe space for sexually minority people to discuss issues that are pertinent to them or talk about interests and passions. Similarly, Pink UK provides a comprehensive list of gay venues in the UK and also has a section on gay groups where people can socialise and post information. The study was advertised in both of these forums. However, only 10 participants completed the study via this route (1.2%), which is a similar finding to other studies that also used these forums (Miller, 2016).

3.3.4 Word of mouth:

Participants were also encouraged to forward the survey link on to other known Grindr users in their contacts in order to help the researcher to achieve a high response rate. A total of 19 participants came through this route (2.3%).

3.4 Final sample size and response rate

Data collection was completed on September 1st, 2018. By this date, a total of 930 respondents had clicked on the survey link, which transported them to the participant information sheet on Qualtrics. However, 95 of those respondents dropped out immediately from the study. During the study period, 835 individuals provided consent and started the survey. Of these, three participants were excluded from the analysis because they stated that they were under the age of 18. From the total of 832 respondents, 35 of them did not fully complete all the questions. The response rate was 89.5% and the dropout rate was 10.5%. The full completion rate of the questionnaire is 85.7%. A flow diagram of final sample size in study sub-sections can be seen

in Figure 7. In total, 832 participants were eligible, and the study group comprised men between the ages of 18 to 86 years.

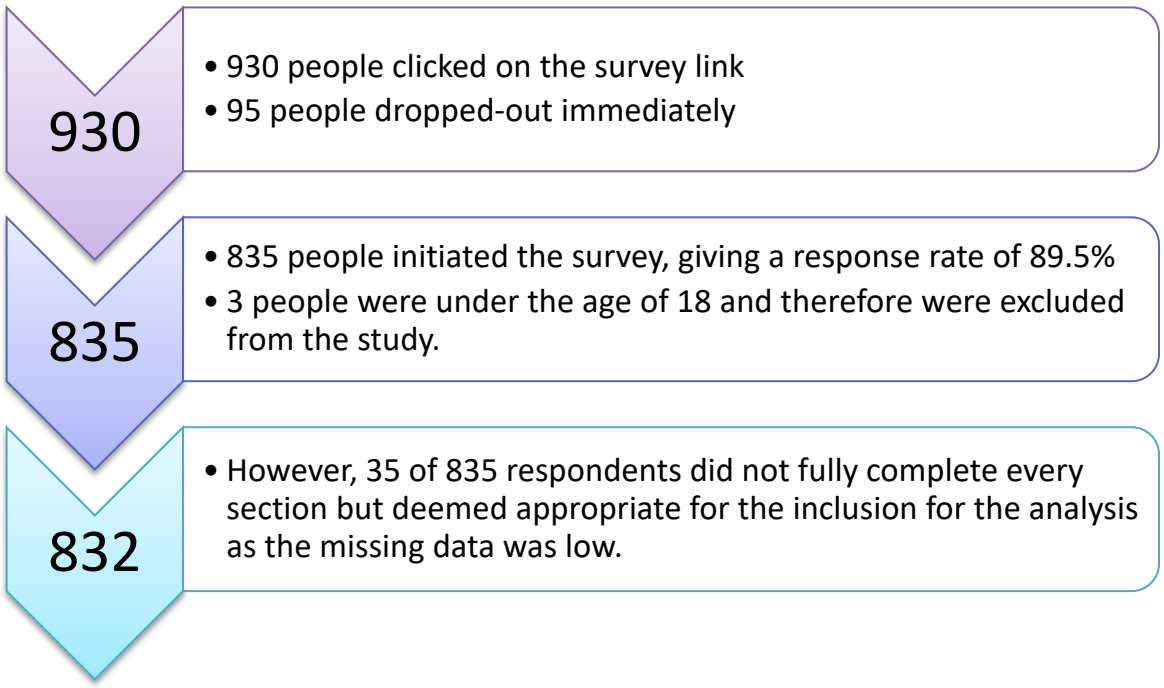


Figure 7- Final sample sizes in study sub-sections

3.4.1 Complaint during recruitment

One of the participants who taken part in the study expressed concerns regarding the design of the questions and how, in his opinion, some of the questions did not address the key aims of the study. He defined himself as someone who had a mental health condition. He raised his concerns with the research committee. A meeting was held to discuss some of the points he raised with the Programme Director. He was reassured that the study had been through a rigorous university ethics approval procedure, which covered all aspects of the study. He was offered the opportunity to withdraw from the study at any time, or indeed to stay as a participant should he choose to. He chose to remain. At the peak stage of recruitment, this news came as a bit of a shock and I tried to deal with the unhappiness of the participant regarding the study

as professional and ethically appropriate manner. I also discussed this with both the research team and personal clinical supervisor in terms of what I could have done differently in this situation.

3.5 Sample size determination and sensitivity analysis

A statistical power analysis was undertaken before recruitment commenced using G*Power computer software (Version 3.1.2, Faul & Erdfelder, 1992) in order to establish the sample size needed to detect an association between a predictor (e.g. psychological well-being) and a dependent variable (e.g. problematic Grindr use) as indicated in the hypotheses of the study.

The calculation showed that a sample size of 215 would be needed to detect a medium effect size correlation of r = 0.30 with power at 0.99 and at alpha level of 0.05 (two-tailed). The total sample obtained was 832. The details of variable power size can be seen in Table 5. Sample sizes shown in Table 5 reflect the added 10% to account for dropouts.

Table 5. Varying Power Sizes for Sample Size Determination

Sample size determination	Varying power	80%	90%	99%
Correlation bivariate model				
	r = 0.3	92	123	215
	r = 0.2	212	284	495
t-test (two-independent means)				
	Effect size d 0.5	141	189	326
	Effect size d 0.8	57	75	130

Chi-square				
	Proportion p2 0.85 (15% effect size)	266	354	616
	Proportion p1 0.70	266	354	616

3.6 Survey development

The survey encompassed different elements, all of which were intended to capture components of the hypotheses summarised in section 1.15.3. There were six self-report questionnaires in total. The elements were as follows:

1. Demographic information
2. Questions on Grindr user behaviours
3. Motivations for using Grindr
4. Identification of problematic Grindr use
5. Assessing mental well-being
6. Assessing psychological distress
7. Assessing potential neglect in social life
8. Identification of minority stress

3.7 Measures

3.7.1 Demographic information

The survey began with a section on demographic information including sexual orientation (gay, bisexual, and other), age (measured continuously), ethnicity (the options available for participants to choose were obtained from the Grindr profile set-up section: Asian, White,

Black, Latino, Middle Eastern, Mixed, South Asian, and Other), country of residence (UK or non-UK), type of community where participants have been residing in the last year (rural/ small town / midsize city / metropolitan city), their education level (GCSE, A-levels, College, Bachelor's, Master's, or Doctoral degree), occupation status (working, studying, unemployed, retired, unable to work, and other) and current relationship status (single, partnered, partnered but in an open relationship, married, engaged, and dating). This part of the questionnaire was devised specifically for this study (see Appendix C).

3.7.2 Grindr user behaviour

Particular information regarding Grindr user behaviours was gathered, including:

- Length of time beginning using Grindr (less than 6 months, 6 months–1 year, 1–3 years, and more than 3 years).
- Time spent on Grindr daily (less than 1 hour per day, 1–2 hours per day, 2–3 hours per day, and more than 3 hours per day).
- Which parts of the week participants were most active on Grindr (weekdays or weekends)?
- What time of day participants were most active on Grindr (early morning, morning, afternoon, evening, late night, and most of the day)?

Participants were also asked to indicate whether they currently used other mobile dating apps apart from Grindr to socialise with other MSM and if so, to indicate which ones by using the free text entry option on Qualtrics. The number of other dating apps currently used was calculated for every participant. Each answer was checked for validity to confirm that the

app(s) listed met the criteria for a geosocial-networking app. This part of the questionnaire was devised specifically for this study (see Appendix D).

Following this, participants then completed six established self-report questionnaires.

3.7.3 Tinder Motives Scale (TMS; Timmermans & De Caluwé, 2017)

To assess motives for using Grindr, I used the TMS. The scale consists of 13 motives and it was developed originally to assess Tinder motives. It has a seven-point Likert scale ranging from one (strongly disagree) to seven (strongly agree). Grindr users indicated to what extent they used Grindr for social approval, relationship seeking, and sexual experience, among other options. Modifications from the original included the change of wording from Tinder to Grindr. The development and validation of the TSM is founded on four independent studies and the Cronbach's alphas for all motivations were between 0.74 and 0.95, showing good to excellent reliability (see Appendix E).

3.7.4 Problematic Tinder Use Scale (PTUS; Orosz et al., 2016)

To establish whether participants use of Grindr was problematic or not, users were asked to complete a five-item Likert-type scale ranging from one (never) to five (always). This scale was built upon Griffiths' (2005) six-component model of addiction (salience, conflict, mood modification, withdrawal, tolerance, and relapse). The phrasing of the items matches that of other questionnaires (Bergen Facebook Addiction Scale- Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Bergen Work Addiction Scale- Andreassen, Griffiths, Hetland, & Pallesen, 2012), which are similarly based on the six core addiction elements. Modifications from the original measure included the change of wording from Tinder to Grindr. An example item is:

‘During the last year, how often have you thought about Grindr?’. Reliability measure of alpha = 0.69 was found in this sample. The authors have suggested that PTUS can be used for research on the problematic use of location-based dating apps (see Appendix F).

3.7.5 The Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007)

In order to assess participants’ mental well-being, the study used a scale of 14 positively worded items, with five response categories from one (none of the time) to five (all of the time) was used. This scale was chosen as it is short and has robust psychometric properties. Example items are: ‘I’ve been feeling useful’ and ‘I’ve been feeling cheerful’. It provides a single score ranging from 14–70. Higher scores indicate higher positive mental well-being. The WEMWBS has been shown to have good content validity, internal consistency and test-retest reliability with a large (n = 354) sample of students and a very large (n = 2075) sample of the general population. Cronbach’s alpha for the student sample was 0.89 and .091 for the population sample, indicating good reliability (see Appendix G).

3.7.6 Kessler Psychological Distress Scale (K10; Kessler & Mroczek, 1994)

The K10 instrument was used to measure Grindr users’ mental health. This 10-item questionnaire is intended to generate a global measure of distress based on questions about anxiety and depressive symptoms that a person may have experienced in the most recent four-week period. The response categories for each of the 10 items range from one (all of the time) to five (none of the time). Example items are: ‘In the past four weeks, about how often did you feel nervous?’ and ’In the past four weeks, about how often did you feel depressed?’ Scores range from 10– 50, where a higher score indicates higher psychological distress. This scale was preferred because it is a widely used short screening tool to measure psychological distress globally (Kessler et al., 2012). It has been extensively validated across diverse populations and

it is especially successful in detecting mood and anxiety disorders (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). The K10 scale has a high factorial and construct validity (Kessler et al., 2002) (see Appendix H).

3.7.7 Internet Addiction Test (IAT; Young, 1998)

Five items from the IAT were chosen to assess users' potential neglect of their social life. This scale comprises 20 items rated on a five-point Likert scale (from one 'rarely' to five 'always'). The scale measures the occurrence and severity of Internet dependency in adults. The higher the scores, the greater the problems Internet use causes. In a UK study assessing the psychometric properties of the IAT showed good to moderate internal consistency (Widyanto & McMurran, 2004). For the current study, only five of the twenty questions were used, those specifically related to the social aspects of addiction. The rest of the questions measured different concepts, which was already captured by a different questionnaire. The wording was changed from the internet to Grindr (see Appendix I). The questions used in the study as follows:

- How often do you prefer the excitement of Grindr to intimacy with your partner?
- How often do you form new relationships with fellow online users?
- How often do others in your life complain to you about the amount of time you spend on Grindr?
- How often do you choose to spend more time on Grindr over going out with others?
- How often do you snap, yell, or act annoyed if someone bothers you while you are on Grindr?

3.7.8 Daily Heterosexist Experience Questionnaire (DHEQ; Balsam, Beadnell, & Molina, 2013)

The DHEQ was used to measure participants' experiences of minority stress. This questionnaire has 50 items and nine subscales with six response categories from zero (did not happen/not applicable to me) to five (it happened, and it bothered me extremely). Example items are: 'Difficulty finding a partner because you are LGBT' and 'Hearing about LGBT people you know being treated unfairly'. The modifications for the study involved the removal of three subscales (parenting, HIV/AIDS, and gender expression subscales). Therefore, for the purposes of this research, 32 items were deemed relevant (the six subscales used in the study were: vigilance, discrimination/harassment, and vicarious trauma, family of origin, victimization and isolation). Higher scores on the subscales of the DHEQ are related to greater emotional distress and perceived overall LGBT discrimination. In terms of reliability, the overall alpha for scores using all 50 items was 0.92. This scale was developed and validated with LGBT populations that were varied in race, ethnicity and sexuality, which the authors argue make it more generalisable to the wider LGBT community than previous measures in assessing minority stress (Balsam et al., 2013) (see Appendix J).

3.8 Procedure

Qualtrics was utilised to design and create the survey and to collect data. The 'Prevent Ballot Box Stuffing' option on Qualtrics was ticked to prevent users from accessing the survey multiple times, by placing a cookie on their browser when they submit a response. The next time the participant went on the survey link, Qualtrics would see this cookie and not allow them to carry out the survey. Several recruitment approaches were implemented. The invitation to participate in the study explained the aims of the study and included a link to the survey. The link directed participants to the participant information sheet, along with the consent form and survey. The first page of the survey (see Appendix K) presented participants with an information sheet, which did the following:

(a) It provided a short description of the aims of the study,

(b) It informed the participants of what they would be asked to do and the expected length of the survey (10–15 minutes),

(c) It described some possible benefits as well as disadvantages associated with taking part which also included sources of support,

(d) It explained that their contribution was completely voluntary and confidential, thus did not involve any personally identifying information,

(e) It informed participants that they could withdraw from the study at any time during the completion of the survey,

(f) It provided information regarding what will happen to the results of the study,

(g) It specified information about the ethical approval of the study, and

(h) It stated contact details for the principal researcher.

All participants also read and agreed to the informed consent form by ticking a box on the second page before taking part in the study. Participants were then asked to complete their demographic information as accurately as possible as well as answering questions on their Grindr use behaviours, followed by the six questionnaires.

When the participants completed the survey, they were directed to a debriefing page (see Appendix L), which thanked participants for their valuable contribution and provided further information about support networks, should they wish to utilise them. Participants were also provided with an email address for the principal researcher and informed that they could email the researcher if they wanted to be sent a summary of the key findings. Following the completion of data collection, responses were imported straight into SPSS version 25

(statistical software package, IBM, New York, USA) from Qualtrics where data clean up was performed. If participants were under the age of 18, their data were excluded from the analysis.

3.9 Ethical considerations

As described in the previous section, participants were informed through the participant information sheet about the nature of the study, the clinical implications and any potential risks to participants. Participants took the decision to participate in the study or not. Participants were provided with sources of support in the participant information sheet as well as in the debrief section, which they could use if they wished. The study was completely voluntary and, if participants chose to take part, they had the option to withdraw from the study at any time without any negative consequences.

The study did not require any personally identifiable information from the participants; therefore, anonymity was attained for all contributors where responses cannot be attributed to any person. However, at the end of the study, participants were given the opportunity to email the principal researcher if they wished to receive a summary of the key findings. Although anonymity could not be guaranteed for these participants, they were assured that their email address would remain confidential and not shared outside the research team. When participants emailed the principal researcher in order to be informed of the key findings, their email address was kept in a separate password-protected computer. Recruitment was also conducted using a password-protected smartphone, which was only accessible by the principal researcher. Once the recruitment came to an end, the application and its contents were deleted.

Participants were informed that they would complete a series of questions asking them about their experiences related to anxiety, depression, quality of life and past experiences. The study

warned participants that, while the survey asked sensitive questions, and this might cause some discomfort, it has been widely used in research. If they were concerned about this, they were recommended to speak with their GP or other health professional. Contact details for other sources of support were also provided for anyone who might need further information or support for their mental health difficulties.

Prior to commencing the recruitment process, ethical approval for this study was obtained from the University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority with no amendments (Reference UH Protocol Number: LMS/PGR/UH/03266, see appendix M for a copy of the approval certificate).

3.10 Service user consultation

Two service users were consulted in the initial stages of the research project to ensure that the overall aims of the study were appropriate and coherent. They were invited to comment on the proposal and planning of the project, as well as on the feasibility and accessibility of the design of the study. In addition to this, their views on the implementation of different questionnaires were sought as well as helping in testing out the length of completion of the survey. They reviewed the participant information sheet and consent forms to make sure that the language were user-friendly. Some enhancements and changes as a result of service-user involvement were as follows:

- Title of the study was changed to reduce the appearance of bias.
- More options on ethnicity categories were provided.
- Grindr logo was added with ‘welcome’ word on top of in order to be more visually appealing.

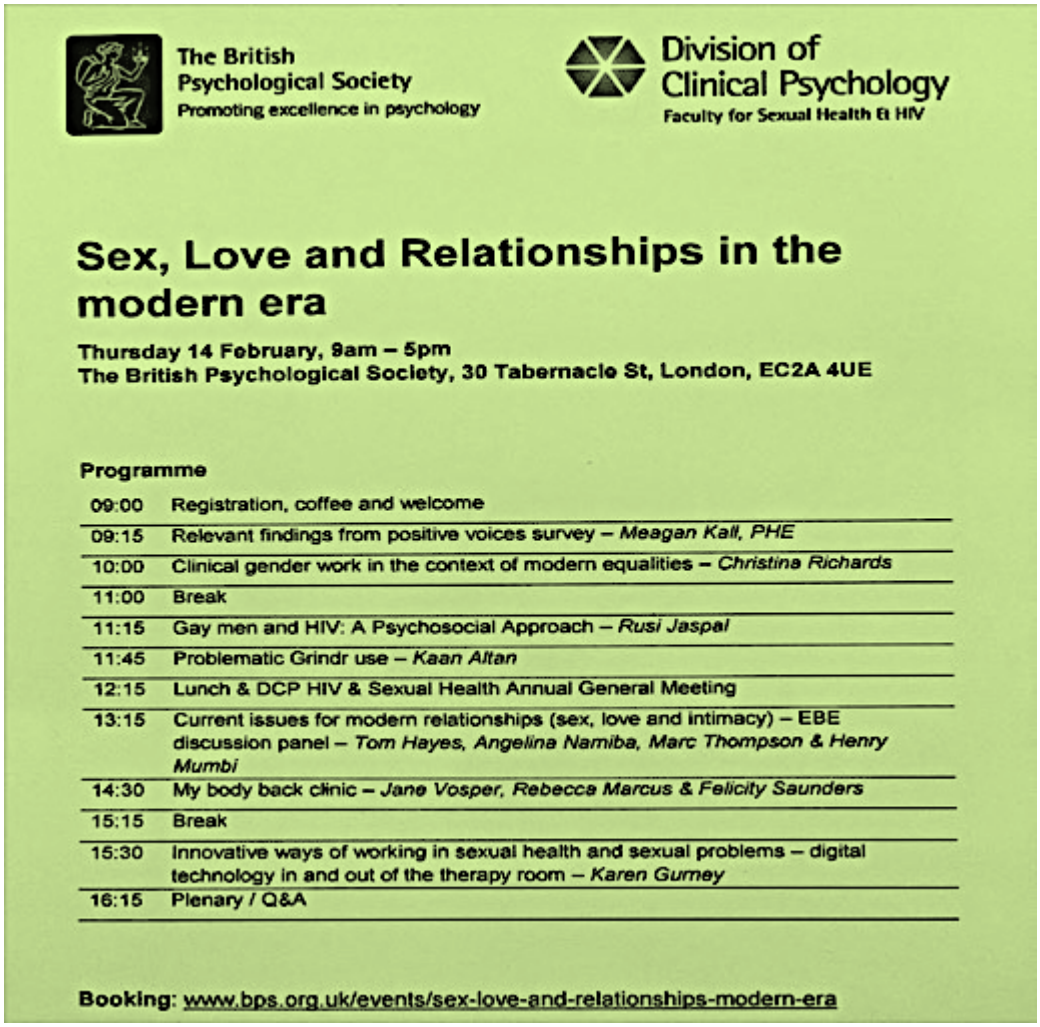
- The order of certain sections was re-arranged to make the flow clearer.
- The question on age was changed from age ranges to using free text to allow participants to insert their exact age.
- More options on current relationship status were added, such as partnered (in an open relationship).
- Instructions for the 'motivations of Grindr use' scale were made clearer.
- Contact details for sources of support were added to the debrief section.

One of the service-users also read the completed thesis from the beginning to the end and provided me with some good suggestions as to how I could re-word certain phrases in certain parts of the thesis. Some changes were made as a result of this consultation.

3.11 Dissemination

All participants who undertook the study were given the opportunity to email the principal researcher if they wished to receive a summary of the key findings. Some participants have emailed me to request a summary of results. I am in the process of creating a poster to summarise the research findings to share with those participants who informed me that they were interested in hearing about the results.

I was also invited to present my research at the British Psychological Society, Sex, *Love and Relationships in the Modern Era* conference back in February 2019. This was a successful talk and I received positive feedback from other clinical psychologists/sexologists as well as academics within the field. Information on the details of the conference schedule can be seen in Figure 8. The presentation slides for this conference can also be found in Appendix N. Some of my preliminary findings were tweeted by clinical psychologists/psychosexologists at the



The British Psychological Society
Promoting excellence in psychology

Division of Clinical Psychology
Faculty for Sexual Health Et HIV

Sex, Love and Relationships in the modern era

Thursday 14 February, 9am – 5pm
The British Psychological Society, 30 Tabernacle St, London, EC2A 4UE

Programme

09:00	Registration, coffee and welcome
09:15	Relevant findings from positive voices survey – *Meagan Kall, PHE*
10:00	Clinical gender work in the context of modern equalities – *Christina Richards*
11:00	Break
11:15	Gay men and HIV: A Psychosocial Approach – *Rusi Jaspal*
11:45	Problematic Grindr use – *Kaan Altan*
12:15	Lunch & DCP HIV & Sexual Health Annual General Meeting
13:15	Current issues for modern relationships (sex, love and intimacy) – EBE discussion panel – *Tom Hayes, Angelina Namiba, Marc Thompson & Henry Mumbi*
14:30	My body back clinic – *Jane Vosper, Rebecca Marcus & Felicity Saunders*
15:15	Break
15:30	Innovative ways of working in sexual health and sexual problems – digital technology in and out of the therapy room – *Karen Gurney*
16:15	Plenary / Q&A

Booking: www.bps.org.uk/events/sex-love-and-relationships-modern-era

conference as well as some organisations on Twitter, including Queer-News and Faculty for HIV.

I have also presented my research at my current placement to other clinical/counselling/trainee/assistant psychologists and heads of services to bring awareness of some of the findings of my research for clinical practice. I am currently working with my external supervisor to feed back the results to some sexual health services across London.

Figure 8- Conference agenda for the day

3.12 Statistical analysis

To investigate Grindr usage patterns and mental health and well-being I undertook a number of activities, including performing descriptive statistics to report the analysis of data on demographic information and Grindr user behaviours (means, standard deviations). Categorical variables were shown as frequency and percentages.

Problematic Grindr Use Scale (henceforth PGUS) total scores were used as a continuous measure to explore relationships by using correlational and regression analyses. PGUS was also used to divide the sample into the appropriate groups for comparison purposes, as this can help to create meaningful findings that are easily understandable to a wide audience. An important question, however, remains about what range of scores may be of primary concern to investigators. Because of not knowing what the best proportion split was, which would have

indicated what problematic use is, the study used two ways of grouping problematic use, in order to facilitate the interpretation of findings and to investigate whether the notion of problematic Grindr use (henceforth PGU) existed. A common approach of dichotomisation is applied in research in fields such as social, developmental and clinical psychology, where the median split is used to form high and low groups (MacCallum et al., 2002). In addition to this, due to the large sample size the study had, the utilisation of a quartile split method was also decided on in order to compare the extremities of the sample against other study variables, to see if there was a true effect size. This defined the first quarter as non-problematic Grindr use and the top quarter as PGU.

I explored differences in behavioural characteristics by demographic characteristics using analyses of variance methods for associations between continuous behavioural variables and categorical demographic variables, chi-square tests were undertaken. Pearson's and Spearman correlation coefficients were also undertaken, as well as linear multiple regression and binary logistic regression analyses. Prior to analysis, assumptions were also checked.

The computer programme *Statistical Package for the Social Sciences* (SPSS) version 25 (SPSS IBM, New York, USA) was used to conduct all statistical investigations. Statistical significance was determined by $p < 0.05$. The detail of the analysis will be discussed in the subsequent chapter.

Chapter 4: Results

4.1 Chapter overview

This chapter will present the results from the quantitative analysis. Descriptive statistics using frequency tables will initially be presented regarding socio-demographic and Grindr user

behaviour variables of the sample. The univariate analysis findings will then be presented in relation to each research question in turn, followed by additional findings of interest, with a section including multivariate analysis of predictors of PGU. Tables and figures will be used throughout this section to complement the findings.

4.2 Data checking

As previously discussed in chapter three, overall there were 832 participants who completed the study. Therefore, all available data from the 832 participants will be included in each analysis. The number of participants included in each analysis will differ simply due to missing responses.

Following the completion of data collection, responses were imported into SPSS from Qualtrics, where data were checked in order to ensure there were no data errors. Tabachnik and Fidell (2001) suggest that, to make sure the data are transferred correctly, some simple descriptive analyses should be executed. As a result, frequency and descriptive analyses were conducted initially. Summing scale items to provide total scores created new variables. The data were explored in detail and frequency distributions for each of the variables were also constructed.

Internal consistency for scales was assessed by Cronbach's alpha using Nunnally's (1978) recommendations about the acceptability of the value (< 0.70 is poor, 0.70 is satisfactory and 0.80 is good). The internal consistency coefficients, calculated using Cronbach's alpha for each of the scales, can be seen in Table 6.

4.3 Data exploration: assumptions of parametric tests

In order to decide which statistical tests to pursue, it is imperative that the data are examined to ensure that they meet the assumptions of parametric tests. According to Field (2018), the main assumptions of parametric tests are:

- Normality – data is normally distributed
- Linearity – data has a linear relationship
- Homogeneity of variance – the variance within each of the populations is equal
- Independence – data for each sample are independent from each other

Several statistical methods have been suggested for checking for normality and there is currently no gold standard (Kim, 2013). For this study, normality was initially checked using the skewness and kurtosis of the distribution and via the simple eyeballing method to check the shape of the variable's distribution using histograms. Skewness is a measure of the asymmetry whereas kurtosis is a measure of 'peakedness' of a distribution (Kim, 2013). George and Mallery (2010) suggested that values for skewness and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution. The key summated scales satisfied the assumption of normality and did not violate the thresholds recommended by George and Mallery (2010) (see Table 6). Additionally, the visual inspection of the variables using histograms also shows mostly normal distributions. Appendix O provides normality plots graphically.

There are also more formal statistical tests of the assumption of normality such as the Shapiro-Wilk test (S-W) (Field, 2018). Some researchers advocate the S-W test as the best choice for testing the normality of data as it offers better power than other normality tests (Thode, 2002). This test was, therefore, also utilised as a comparison to the skewness and kurtosis scores. The

results of the S-W test suggested that the summated scales might differ from a normal distribution ($p < 0.05$). However, there is an on-going debate in the literature about the S-W test being very sensitive and unreliable for large sample sizes, as it can produce significant results even when the scores are only marginally different from normal distribution (Field, 2018; Kim, 2013; Oztuna, Elhan, & Tuccar, 2006). It has been recommended that with large sample sizes (>30 or 40), the violation of the normality assumption would not cause major concerns and parametric tests can be used even when the data are not normally distributed (Elliott, 2007; Ghasemi & Zahediasl, 2012; Pallant, 2007). Also, taking into account the Central Limit Theorem (CLT), if you have a large sample size then the parameter estimates of that population will have a normal distribution irrespective of the shape of the data (Field, 2018), as in the present study. However, as a matter of completeness and due to the differing results for the Skewness and Kurtosis scores and the S-W test, the results section will also present the findings from the non-parametric tests where appropriate.

Table 6. Internal Consistency and Normality of Key Study Summated Scales

Scales	Cronbach's α	Skewness	Kurtosis
Problematic Grindr Use Scale (PGUS)	0.83	.520	-.260
The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)	0.93	-.201	-.185

The Kessler Psychological Distress Scale (K10)	0.92	-.679	-.304
The Internet Addiction Test (IAT) (reduced version)	0.66	.733	1.336
The Daily Heterosexist Experiences Questionnaire (DEHQ) (reduced version)	0.91	-.716	1.007

4.4 Main Findings

The following section will present the main findings in relation to each research question in turn, followed by additional findings of interest.

4.4.1 Research Aim 1) to determine the socio-demographic characteristics of participants who use Grindr

Sample characteristics of participants

The demographic characteristics of the sample are listed in Table 7. The study group comprised men between the ages of 18 to 86 years (M= 34.80, SD=11.15). The majority of the participants (61.7%) were in the 25 to 44 age group. Participants who responded to the demographics questions most frequently identified as White (77.1%) followed by South Asian (5.5%), Mixed (4.6%), Asian (4.5%), Latino (2.8%), Black (2.4%), Middle Eastern (1.7%), and Other (1.4%) (Ethnicities represented in the 'Other' category included: Eastern European, European Maori, Japanese, Latin/White, Mauritian, White-Turkish, White & Asian, and White Latino). The majority of the sample classified their sexual orientation as gay (86.5%) or bisexual (11.3%).

Seventy per cent of the respondents had gained a qualification beyond college. In terms of highest completed education level, over one third (41.2%) reported having a bachelor's degree

and 24% reported a master's degree for educational achievement. A majority of participants reported working (79.1%) or studying (13.5%). Approximately 68% of participants characterised their current relationship status as single whereas a sizeable proportion were partnered but in an open relationship (15%).

Table 7. Socio-demographic Characteristics of the Sample (n=832)

Demographics	Frequency	Percentage %
Age groups		
18-24	152	18.3
25-44	513	61.7
45-64	159	19.1
65 and above	8	1.0
Total	832	100.0
Sexual orientation		
Gay	720	86.5
Bisexual	94	11.3
Other	18	2.2
Total	832	100.0
Ethnicity		
Asian	37	4.5
White	641	77.1
Black	20	2.4
Latino	23	2.8
Middle Eastern	14	1.7
Mixed	38	4.6
South Asian	46	5.5
Other	12	1.4
Total	831	99.9
Country of residence		
UK	729	87.7
Non-UK	102	12.3
Total	831	99.9
Type of community		
Rural	44	5.3
Small town	102	12.3
Midsize city	121	14.5
Metropolitan city	565	67.9
Total	832	100.0
Education level		
GCSE	40	4.8
A-levels	100	12.0
College	113	13.6
Bachelor’s degree	343	41.2
Master’s degree	200	24.0
Doctoral degree	36	4.3
Total	832	100.0

Demographics	Frequency	Percentage %
Occupation status		
Working	658	79.1
Studying	112	13.5
Unemployed	25	3.0
Retired	14	1.7
Unable to work	11	1.3
Other	12	1.4
Total	832	100.0
Current relationship status		
Single	567	68.1
Partnered	61	7.3
Partnered (in an open relationship)	124	14.9
Married	53	6.4
Engaged	2	.2
Dating	25	3.0
Total	832	100.0

4.4.2 Research Question 2) to determine Grindr behaviour patterns of the users

Information relating to participants' Grindr use behaviours is displayed in Table 8. A majority of participants have been using Grindr for either more than three years (59.9%) or for 1–3 years (23.8%), compared to less than 6 months (7.8%) or 6 months to 1 year (8.5%). Regarding frequency of Grindr use, over one-third of the men stated that they use the dating app for 1–2 hours per day (39.8%) and 36.3% of respondents reported using Grindr less than 1 hour per day. A high proportion of men were active during the weekdays (56.7%) with evening being the most active time of the day (39.2%). PGUS scores significantly correlated positively with the frequency of Grindr use, (r (792) = .420, p <. 001).

Table 8. Frequencies and Percentages for Participants' Grindr Use Patterns

App use patterns	Frequency	Percentage %
Length of Grindr usage		
Less than 6 months	65	7.8
6 months-1 year	71	8.5
1-3 years	198	23.8
More than 3 years	498	59.9
Total	832	100.0
Time spent on Grindr each day		
Less than 1 hour per day	302	36.3
1-2 hours per day	331	39.8
2-3 hours per day	110	13.2
More than 3 hours per day	88	10.6
Total	831	99.9
Part of the week most active on Grindr		
Weekdays	471	56.7
Weekends	359	43.3
Total	830	99.8
Time of the day most active on Grindr		
Early Morning	31	3.7
Morning	46	5.5
Afternoon	98	11.8
Evening	326	39.2
Late night	107	12.9
Most of the day	224	26.9
Total	832	100.0

As Figure 9 shows, 15.7% of participants stated that during the last year they always spent much more time on Grindr than they initially intended (n = 125), while only 4.3% (n = 34) reported never using Grindr more than they intended. Of the remaining participants 34.5% (n = 275) indicated they often used Grindr more than they intended, 32.4% indicated sometimes doing so (n = 258), and 13.2% indicated rarely doing so (n = 105). Figure 10 illustrates the participants' answers to the question: 'During the last year how often have you tried to cut down on Grindr use without success?' 4.9% (n = 39) reported always and 40.2% (n = 320) indicated never. 12.4% (n = 99) said often, 23.6% (n = 188) reported sometimes, and 18.8% (n = 150) indicated rarely. A high percentage of men (44.5%, n = 354) also reported that during the last year, they often thought about Grindr, compared to 2.3% (n = 18) who never did.

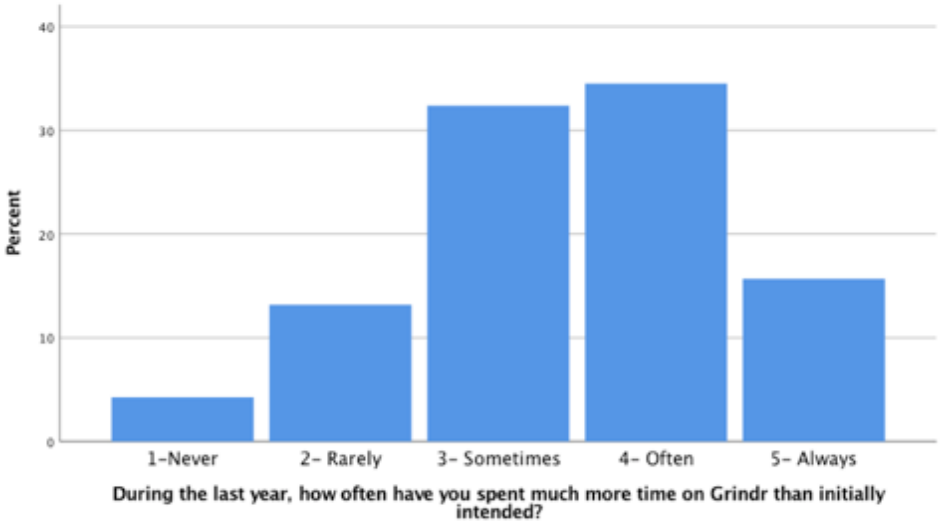


Figure 9- Participants' responses to whether they spend more time on Grindr than initially intended (%)

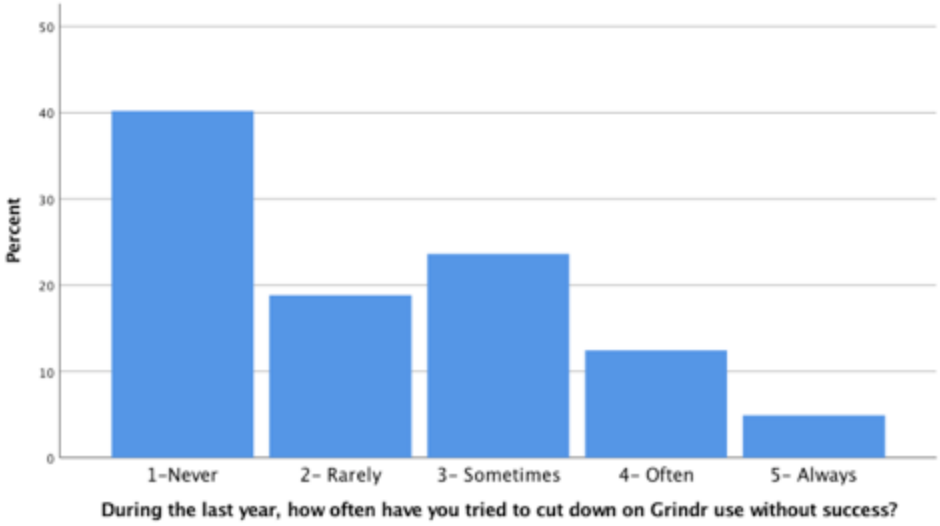


Figure 10- Participants' responses to whether they have tried to cut down on Grindr use without success (%)

Use of other dating apps

Information relating to respondents' use of other dating apps can be seen in Table 9. A majority of the participants (61.3%) reported using other mobile dating apps in addition to using Grindr. Most respondents either had one other dating app (33.5%) or two (15.9%). Participants were also asked to list other specific dating apps they used to socialise with other MSM. Table 10 shows a full breakdown of the different geosocial networking apps used by participants. Each answer was checked to certify that the app(s) listed were advertised as a dating app. The three most common dating apps used by participants were Scruff (28%), followed by Tinder (24%) and Chappy (10%).

Table 9. ***Frequencies and Percentages for Participants' Use of Other Dating Apps***

	Frequency	Percentage %
Use of other mobile dating apps		
Yes	510	61.3
No	322	38.7
Total	832	100.0
How many other dating apps?		
One	279	33.5
Two	132	15.9
Three	55	6.6
Four	26	3.1
Five	12	1.4
Six	5	.6
Total	510	61.3
Use of Tinder	201	24.2
Use of Scruff	229	27.5
Use of Chappy	84	10.1

Table 10. ***Type of Geosocial Networking Dating Apps Used by Participants'***

App(s) used	*n*	%
3Fun	1	0.12
Adam4Adam	2	0.24
Badoo	5	0.60
Bbrt (*Not app*)	14	1.69
Biggercity	7	0.84
Blendr	1	0.12
Blued	1	0.12
Bumble	17	2.05
Chappy	84	10.13
Coffee meets Bagel	2	0.24
Daddyhunt	4	0.48
Fabguys	13	1.57
Fabswingers	6	1.09
Feeld	1	0.12
FitGorillaz (*Not app*)	1	0.12
Gaydar	3	0.36
Gayromeo	19	2.29
Grandslammerz (*Not app*)	1	0.12
Grazer	2	0.24
Growlr	39	4.70
Happn	4	0.48
Hinge	2	0.24
Hornet	43	5.19
Jack'd	12	1.45
Kik	1	0.12
Manhunt	3	0.36
Match.com	2	0.24
OKCupid	8	0.97
Planetromeo	16	1.93
Plenty of Fish	12	1.45
Raya	1	0.12
Recon	35	4.22
Scruff	229	27.62
Silver Daddies	1	0.12
Squirt (*Not app*)	9	1.09
Surge	15	1.81
The league	2	0.24
Tinder	201	24.25
Toffee	1	0.12
Wapo	3	0.36
Wbear	6	0.72

App use is not necessarily mutually exclusive since an individual can use more than one app.

4.4.3 Research question 3) to investigate the relationships between PGU and mental health symptoms among MSM

Research question 3 investigated the relationship between PGU and psychological distress amongst MSM. There are no cut-off scores recommended for the PGUS by its original creators, therefore, to address the research questions using analyses of variance methods, the scale was split in two ways for presentation of results and investigation of the potential cut-off's for problematic and non-problematic Grindr use:

1. **Quartile split**: A quartile split was performed on the PGUS in order to investigate the extremities of the sample. In order to test the primary hypotheses, the 1st quartile (n = 199; 24%) and the 3rd quartile (n = 279; 34%) of the sample was used (non-problematic versus problematic use).

2. **Median split**: A median split was also performed on the PGUS (median=15) as PGU may occur in a variety of severities. Participants with the median score or below were labelled as low problematic users (n = 445; 56%), while scores higher than the median were labelled as the high problematic users (n = 348; 44%). The mean score for PGU, as measured by the PGUS, was 15.17 (SD = 4.794). Out of possible score of 30, the highest score was 30.

The Kessler Psychological Distress Scale (K10) was used to measure participants' mental health symptoms, with low scores indicating low levels of psychological distress and high scores indicating high levels of psychological distress. In terms of interpretation of scores, the Victorian Population Health Survey (2001) specified cut-off scores for clinicians to use as a guide for screening for psychological distress. Participants' total score for this scale were then

clustered into one of the following categories: K10 score 10 to 19 (likely to be well), K10 score 20 to 24 (mild psychological distress), K10 score 25 to 29 (moderate psychological distress), and K10 score 30 to 50 (severe psychological distress). The mean score for psychological distress, as measured by the K10, was 21.17 (*SD* = 8.278). Out of possible score of 50, the highest score was 50.

In order to answer Research Question 3, correlation analysis was employed. Correlation analysis is useful in determining the strength and direction of the association between two scale variables. In interpreting the Pearson correlation coefficient (*r)*, values of .10 to .29 were considered small correlations, values of .30 to .49 were considered medium correlations, and those from .50 to 1.0 were considered large correlations in terms of magnitude of effect sizes (Cohen, 1988, pp. 79–81). Bivariate correlation was computed by using Pearson and Spearman correlation coefficients to assess the relationship between the total scores for PGUS and K10. Spearman was conducted because the S-W test was significant for both of the variables, therefore indicating a potential deviation from normality. Figure 11 summarises the results graphically. The analyses showed a medium, positive correlation, which was statistically significant (r (786) = .38, $p < .001$; r_s (786) = .39, $p < .001$). From the correlation analysis, it can be concluded that increases in PGUS scores were positively correlated with increases in K10 psychological distress scores.

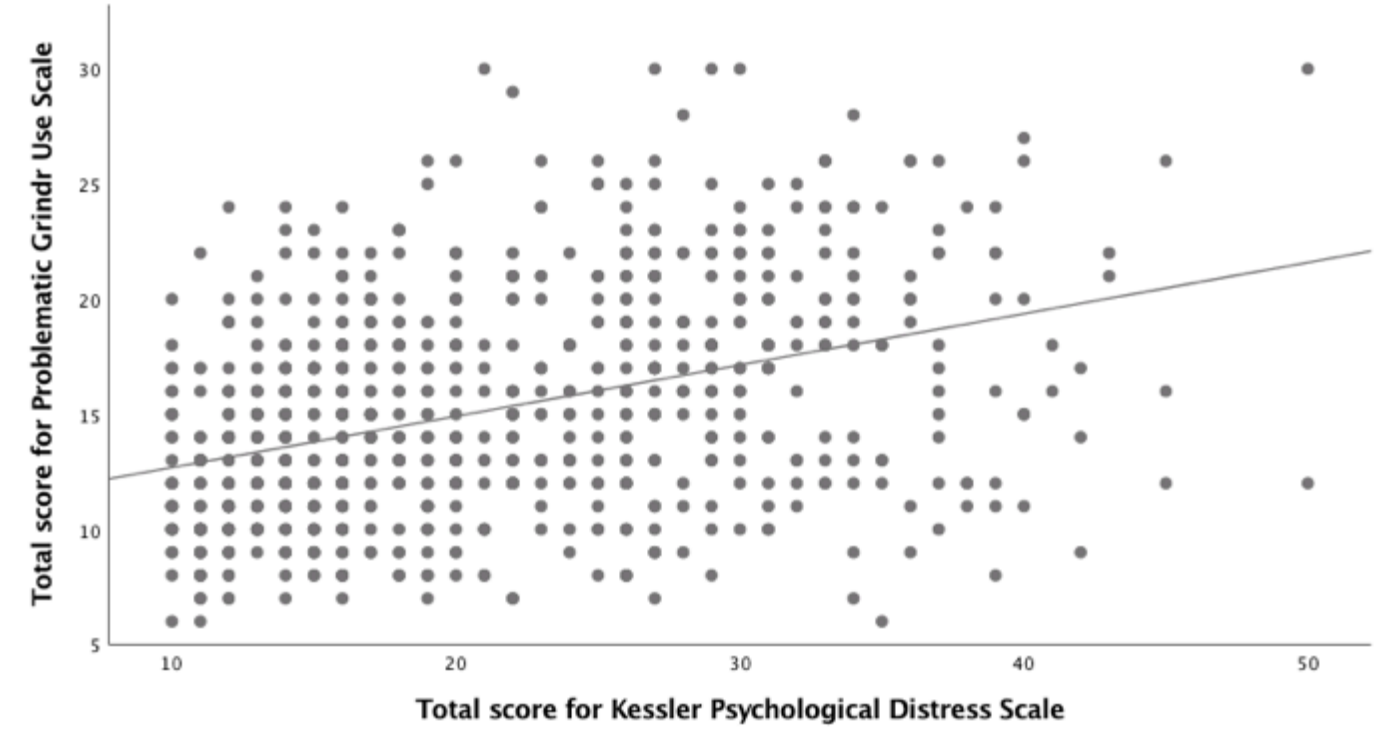


Figure 11- The relationship between scores on the PGUS and K10 scales

The hypothesis was also further verified by investigating the extremities of the PGUS (i.e., the 1st quartile of the distribution where participants Grindr use is defined as not problematic versus the 3rd quartile of the distribution where participants Grindr use is defined as problematic) against participants' psychological distress category. Table 11 shows the relationship between non-problematic and problematic Grindr use and Kessler psychological distress groupings.

Table 11. The Relationship between Non-Problematic and Problematic Grindr Use and Kessler Psychological Distress Groupings

			Total score for Kessler Psychological Distress Scale				Total
			Likely to be well	Mild psychological distress	Moderate psychological distress	Severe psychological distress	
PGUS	Non-problematic (Q1)		142	17	22	16	197
		%	72.1%	8.6%	11.2%	8.1%	100.0%
	Problematic (Q3)		66	36	58	81	241
		%	27.4%	14.9%	24.1%	33.6%	100.0%
Total			208	53	80	97	438
		%	47.5%	12.1%	18.3%	22.1%	100.0%

I performed a Pearson chi-square test for association to investigate whether there was a relationship between participants' non-problematic and problematic Grindr use and psychological distress. A total of 438 participants were included in the analysis. The chi-square shows that there is a significant association between non-problematic and problematic Grindr use and psychological distress (x^2 (3, N=438) = 90.834, $p < .001$). Participants whose use of Grindr was problematic reported significantly higher psychological distress. As shown by the frequencies cross tabulated in Table 11, 33.6% of individuals in the problematic group were in the severe psychological distress category compared to only 8.1% of individuals in the non-problematic group. The majority of people in the non-problematic group were in the likely to be well category (72.1%) compared to only 27.4% of individuals in the problematic group.

In order to be more inclusive of the total sample, I ran the cross-tabulation and chi-square test again, this time including the median split variable. A total of 786 respondents were included in the analysis. Table 12 shows the relationship between low problematic and high PGU and Kessler psychological distress groupings.

Table 12. The Relationship between Low Problematic and High Problematic Grindr Use and Kessler Psychological Distress Groupings

			Total score for Kessler Psychological Distress Scale				Total
			Likely to be well	Mild psychological distress	Moderate psychological distress	Severe psychological distress	
PGUS	Low problematic		285	61	49	47	442
		%	64.5%	13.8%	11.1%	10.6%	100.0%
	High Problematic		118	51	81	94	344
		%	34.3%	14.8%	23.5%	27.3%	100.0%
Total			403	112	130	141	786
		%	51.3%	14.2%	16.5%	17.9%	100.0%

I carried out a Pearson's chi-square test to assess whether the levels of PGU and psychological distress were related. The analysis revealed that there was significant evidence of an association, (x^2 (3, N=786) = 82.707, $p < .001$) and confirmed the prediction that high problematic Grindr users were reporting higher levels of psychological distress. As shown by the frequencies cross tabulated in Table 12, 27.3% of men in the high problematic group reported more severe psychological distress, compared to 10.6% in the low problematic group. Similarly, only 34.3% of men in the high problematic group reported being in the likely to be well category compared to 64.5% of men who were in the low problematic group.

4.4.4 Research question 4) to examine the associations, if any, between problematic use of Grindr and psychological well-being among MSM

Research question 4 investigated the relationship between PGU and psychological well-being among MSM. In order to explore this relationship, the research employed the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) to measure participants' psychological well-being, with higher scores indicating higher positive well-being. A median split was performed on WEMWBS (median=47). Participants with the median score or below were labelled as the low well-being group, while those with scores higher than the median were labelled as the high well-being group. The mean score for psychological well-being, as measured by the WEMWBS, was 46.57 (*SD* = 10.022). Out of possible score of 70, the highest score was 70.

In order to answer the research question, first correlation analysis was undertaken where bivariate correlation was computed by using both the Pearson and Spearman correlation coefficient. The S-W test suggested that the variables PGUS and WEMWBS may not be normally distributed and therefore both types of correlational analyses were used. These analyses were conducted to assess the relationship between the PGUS and WEMWBS total scores. Figure 12 summarises the results graphically. There was a medium, negative correlation, which was statistically significant (r (785) = -.35, $p < .001$; r_s (785) = -.35, $p < .001$). From the correlation analysis, it can be concluded that those with high scores on the PGUS tended to have low scores on the WEMWBS.

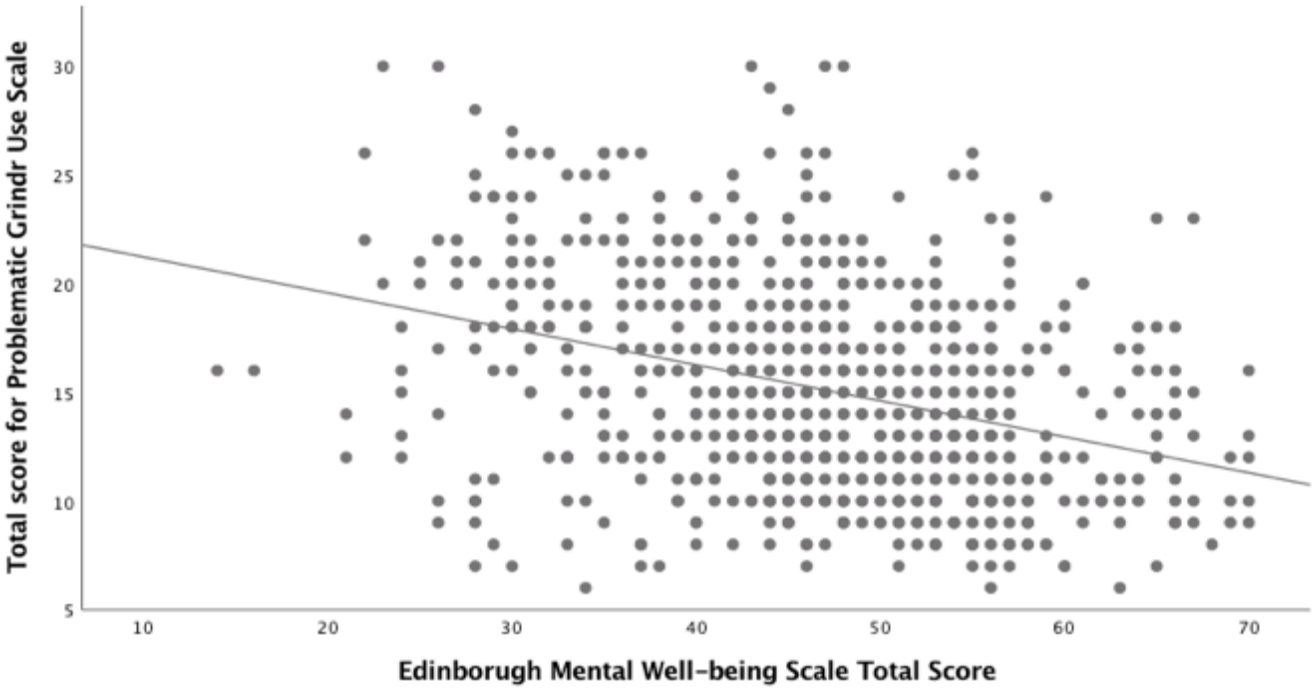


Figure 12- The relationship between scores on the PGUS and WEMWBS scales

The hypothesis was further verified by investigating the extremities of the PGUS against participants' psychological well-being category. Table 13 shows the relationship between non-problematic and problematic Grindr use and psychological well-being groupings in a 2 x 2 contingency table.

A chi-square test of association was performed to investigate whether there was a relationship between participants' non-problematic and problematic Grindr use and psychological well-being scores. A total of 478 participants were included in the analysis. There was a significant association between problematic and non-problematic Grindr use and psychological well-being. The chi-square test showed the results were significant (x^2 (1, N=478) = 36.756, $p <$ .001). The analysis shows that those participants with PGU reported significantly lower psychological well-being whereas those individuals with non-problematic Grindr use reported

significantly better well-being. As shown by the frequencies cross-tabulated in Table 13, 62.7% of individuals in the problematic group had lower psychological well-being compared to 34.2% of individuals in the non-problematic group. The majority of the individuals in the non-problematic group had higher psychological well-being (65.8%) whereas only 37.3% of individuals in the problematic group were in this category.

Table 13. The Relationship between Non- Problematic and Problematic Grindr Use and Psychological Well-being Groupings

			WEMWBS		Total
			Lower psychological well-being	Higher psychological well-being	
PGUS	Non-problematic		68	131	199
		%	34.2%	65.8%	100.0%
	Problematic		175	104	279
		%	62.7%	37.3%	100.0%
Total			243	235	478
		%	50.8%	49.2%	100.0%

In order to be more inclusive of the total sample, the cross-tabulation and chi-square test was run again, this time including the median split variable. A total of 793 respondents were included in the analysis. Table 14 shows the relationship between low problematic and high PGU and psychological well-being groupings in a 2 x 2 contingency table.

Table 14. The Relationship between Low and High Problematic Grindr Use and WEMWBS Groupings

			WEMWBS		Total
			Lower psychological well-being	Higher psychological well-being	
PGUS	Low problematic		185	260	445
		%	41.6%	58.4%	100.0%
	High Problematic		229	119	348
		%	65.8%	34.2%	100.0%
Total			414	379	793
		%	52.2%	47.8%	100.0%

I carried out a Pearson's chi-square test to assess whether the level of PGU and psychological well-being were related. There was significant evidence of an association, (x^2 (1, N=793) = 44.989, $p < .001$). Overall, high PGU was associated with lower psychological well-being scores. As shown by the frequencies cross-tabulated in Table 14, 65.8% of individuals in the high problematic group reported lower psychological well-being compared to 41.6% of individuals in the low problematic group. Similarly, only 34.2% of individuals in the high problematic group reported higher psychological well-being compared to 58.4% of individuals who were in the low problematic group.

4.4.5 Research question 5) to examine the associations, if any, between PGU and potential neglect in user's social life among MSM

In order to answer the research question, a reduced version of Internet Addiction Test (IAT) was used to measure participants' potential neglect in social life. Higher scores on this scale suggest greater social neglect. Only three questions on this scale was used in the end for the analyses because the cronbach's alpha for the original five questions in this study came back as 0.59. However, after removing two questions, alpha increased to .69, which suggested improved reliability of the test. The three questions that were used in the analyses were:

- How often do others in your life complain to you about the amount of time you spend on Grindr?
- How often do you choose to spend more time on Grindr over going out with others?
- How often do you snap, yell, or act annoyed if someone bothers you while you are on Grindr?

The mean score for neglect in social life was 2.96 (*SD* = 2.070). Out of a possible score of 15, the highest score was 12.

The hypothesis was first tested by applying correlation analysis where bivariate correlation was computed by using both the Pearson and Spearman's correlation coefficient to assess the relationship between the variables PGUS and neglect in social life total scores. Since the S-W test was significant, therefore indicating deviation from normality, the Spearman test was also run. Figure 13 summarises the results graphically. There was a medium, positive correlation, which was statistically significant ($r\ (785) = .49$, $p < .001$; $r_s\ (785) = .46$, $p < .001$). From the

correlation analyses, it can be concluded that increases in PGUS scores were positively correlated with increases in neglect in social life scores.

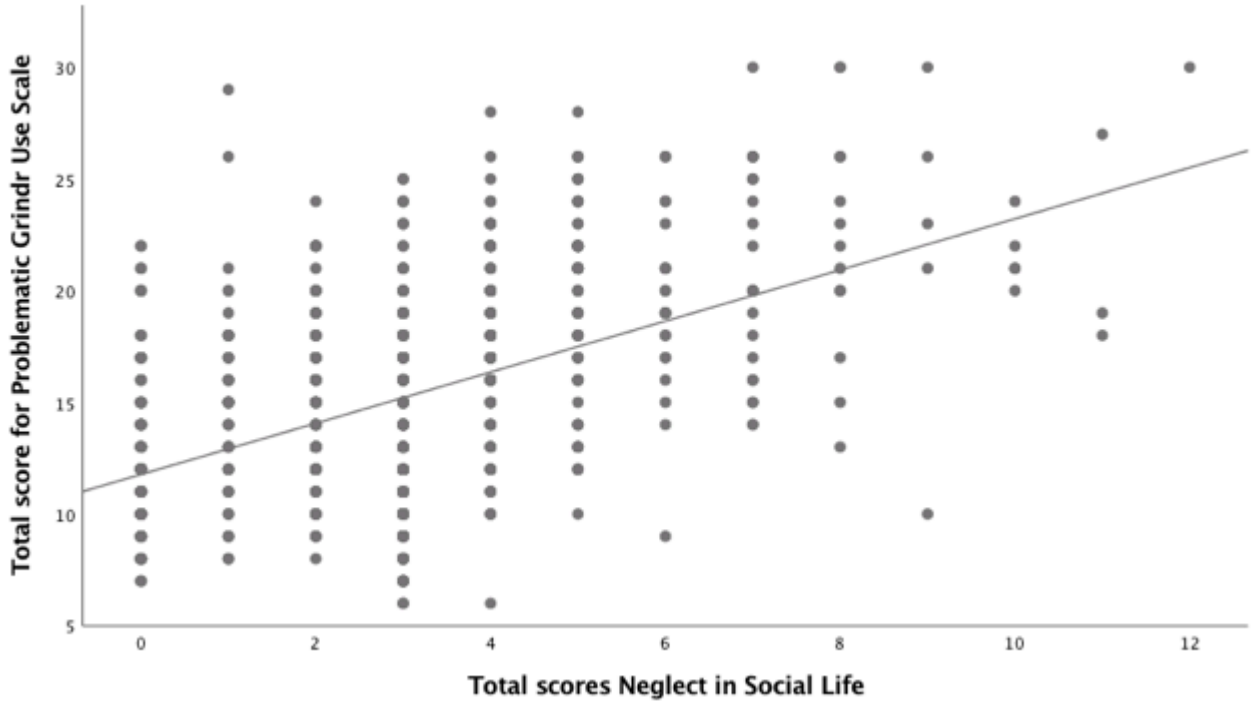


Figure 13. The association between PGUS and the Neglect in Social Life scores

To further verify if PGU was associated with neglect in social life, a total mean score for participants was obtained. An independent samples t-test was conducted to determine whether participants with non-problematic Grindr use (1st quartile) and those with PGU (3rd quartile) showed significant differences on neglect in social life scores. Table 15 shows the breakdown mean scores for the two extremes of the PGUS.

Table 15. Neglect in Social Life Mean Scores for the Two Extremes of the PGUS

	PGUS	N	Mean	Std. Deviation	Std. Error Mean
Mean score Neglect in Social Life	Non-problematic	199	.88	.486	.034
	Problematic	244	1.56	.703	.045

The analysis revealed that participants whose use of Grindr was problematic had significantly higher neglect in social life scores (M = 1.56, SD = .70) than non-problematic participants (M = .88, SD = .48) (t (430.160) = -12.164, p < .001, d = 1.11).

I also ran a Mann-Whitney test was further run to confirm the results from the parametric analysis, due to potential deviations from normality, flagged by the S-W test. The results indicated that participants whose use of Grindr was problematic had significantly higher neglect in social life scores (*Mdn = 1.33*) than non-problematic participants (*Mdn = 1.00*) (U = 9614.000, p <. 001). This result indicates that there is a significant difference in neglect in social life scores between problematic and non-problematic users, with problematic users reporting more neglect in their social lives (see Appendix P for the non-parametric table of results).

In order to be more inclusive of the total sample, the independent samples t-test was again conducted on the median split variable. A total of 785 participants were included in the analysis. Table 16 shows the breakdown of mean scores for the low and high PGU groups.

Table 16. Neglect in Social Life Mean Scores for the Low and High PGUS

	PGUS	N	Mean	Std. Deviation	Std. Error Mean
Mean score Neglect in Social Life	Low problematic	442	.98	.506	.024
	High Problematic	343	1.47	.674	.036

The analysis revealed that participants whose use of Grindr fell into the high problematic category had significantly higher neglect in social life scores (M = 1.47, SD = .67) than low problematic participants (M = .98, SD = .50) (t (615.204) = 11.066, p < .001, d =0.84). There were significant mean differences detected between levels of PGU regarding an individual's neglect in social life scores.

The Mann-Whitney test also revealed that participants whose use of Grindr was high problematic had significantly higher neglect in social life scores (Mdn = 1.33) as compared to low problematic participants (Mdn = 1.00), *(*U = 40436.000, p <.001). There were significant mean differences detected between level of PGU on individual's neglect in social life scores (see Appendix Q for non-parametric table of results).

4.4.6 Research question 6) to identify any associations between levels of minority stress and PGU among MSM

Research question 6 investigated whether there were any associations between people's experiences of minority stress and PGU. In order to explore this relationship, a reduced version of the Daily Heterosexist Experience Questionnaire (DHEQ) was used to measure participants' experiences of minority stress, with higher scores indicating greater emotional distress and perceived overall LGBT discrimination. The mean score for minority stress, as measured by the DHEQ, was 77.64 (*SD* = 21.223). Out of possible score of 192, the highest score was 159.

The hypothesis was tested, firstly, by applying correlation analysis where bivariate correlation was computed by using both the Pearson and Spearman's correlation coefficient to assess the relationship between scores on DHEQ and the PGUS scales. Spearman analysis was chosen because these two variables violated the thresholds for normality according to the S-W test. Figure 14 summarises the results graphically. There was a small, positive correlation, which was statistically significant (r (761) = .20, $p < .001$; r_s (761) = .17, $p < .001$). From the correlation analysis, it can be concluded that increased levels of minority stress scores were positively correlated with increased scores on the PGUS.

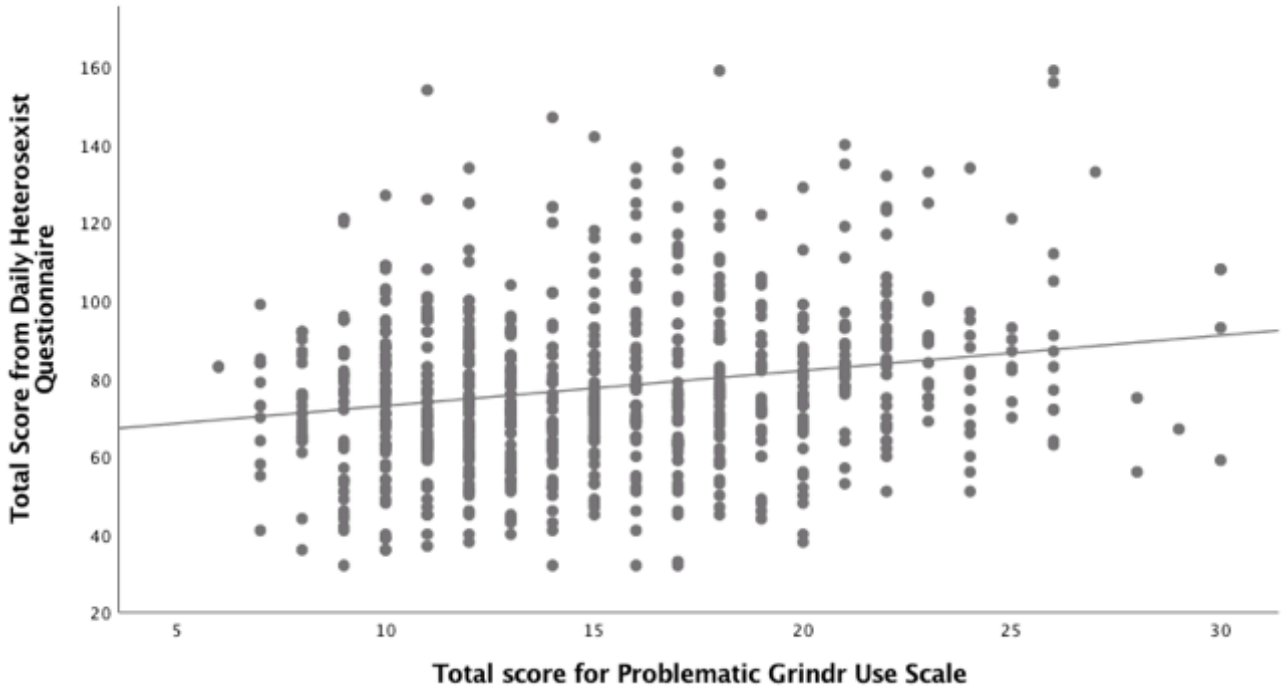


Figure 14. The relationship between scores on DHEQ and the PGUS scales

To further investigate the research question, an independent samples t-test was conducted to determine whether participants with non-problematic Grindr use and those with PGU showed significant differences on minority stress scores. Table 17 shows the breakdown mean scores for the extremes of the PGUS.

Table 17. Minority Stress Mean Scores for the Extremes of the PGUS

	PGUS	N	Mean	Std. Deviation	Std. Error Mean
Mean score Minority Stress	Not problematic	188	2.3108	.62204	.04537
	Problematic	235	2.6050	.70109	.04573

Participants whose use of Grindr was problematic had significantly higher minority stress scores (M = 2.60, SD = .70) than non-problematic participants (M = .2.31, SD = .62) (t (421) = -4.506, p < .001, d = 0.44). There were significant mean differences detected between non-problematic versus problematic Grindr use on minority stress.

I also ran a Mann-Whitney test to confirm the results from the parametric analysis. This test indicated that participants whose use of Grindr was problematic had significantly higher minority stress scores (*Mdn* = 2.45) than non-problematic participants (*Mdn = 2.28*) (U = 16979.500, p <. 001). There were significant mean differences detected between non-problematic versus problematic Grindr use on minority stress (see Appendix R for the non-parametric table of results).

In order to be more inclusive of the total sample, the independent samples t-test was also conducted on the median split variable. A total of 761 participants were included in the analysis. Table 18 shows the breakdown of mean scores for the low and high PGU group.

Table 18. Minority Stress Mean Scores by Low and High Problematic Grindr Use

	PGUS	N	Mean	Std. Deviation	Std. Error Mean
Mean score Minority Stress	Low problematic	425	2.3181	.60730	.02946
	High problematic	336	2.5661	.70103	.03824

Participants whose use of Grindr was high problematic had significantly higher minority stress scores (M = 2.56, SD = .70) than low problematic participants (M = 2.31, SD = .60) (t (665.390)

= -5.137, $p < .001$, $d =. 40$). There were significant mean differences detected between levels of PGU and minority stress.

The Mann-Whitney test also revealed that participants whose use of Grindr was high problematic had significantly higher minority stress scores (*Mdn* = 1.33) than low problematic participants (*Mdn* = 1.00) *(U* = 56770.500, $p <. 001$). There were significant mean differences detected between levels of PGU for individuals' minority stress scores (see Appendix S for non-parametric table of results).

4.4.7 Research question 7) to identify internal and external motives for using Grindr

Participants indicated to what extent they used Grindr for various motives. Descriptive analysis established a range of motivations for using the app. Table 19 shows the different motives of the sample. The first most common reason for using the app was for sexual experience (i.e. to find a one-night stand) where 59.5% of participants agreed and 25% somewhat agreed with this statement. The second most common reason for using the app was to connect with other people with the same sexual orientation, where 41.3% of participants agreed and 31.8% somewhat agreed, followed by using the app to pass time or for entertainment (39.4% agreed to this and 41.4% somewhat agreed), and for distraction/to combat boredom (38% agreed and 38.6% somewhat agreed). 77.2 % of participants disagreed with using Grindr because of peer pressure motivation and 64.5% of individuals reported that they did not use Grindr to get over their ex-partners. An interesting finding was that 32.6% of individuals disagreed with using Grindr to find someone for a serious relationship compared to only 19.3% of participants agreeing that they use Grindr for relationship finding.

Table 19. Participants' Motives for Using Grindr

Grindr Motives	Frequency	Percentage %
Social approval (i.e., to get self-validation or attention from others)		
Agree	133	16.1
Somewhat agree	215	26.0
Neither agree nor disagree	111	13.4
Somewhat disagree	92	11.1
Disagree	276	33.4
Total	827	99.4
Relationship seeking (i.e., to find someone for a serious relationship)		
Agree	160	19.3
Somewhat agree	227	27.4
Neither agree nor disagree	89	10.8
Somewhat disagree	81	9.8
Disagree	270	32.6
Total	827	99.4
Sexual experience (i.e., to find a one-night stand)		
Agree	490	59.5
Somewhat agree	206	25.0
Neither agree nor disagree	56	6.8
Somewhat disagree	28	3.4
Disagree	44	5.3
Total	824	99.0
Social skills (i.e., to improve my social skills or to increase my flirting experience)		
Agree	179	21.7
Somewhat agree	211	25.6
Neither agree nor disagree	124	15.0
Somewhat disagree	95	11.5
Disagree	216	26.2
Total	825	99.2
Travelling (i.e., to get tips from locals when travelling or to broaden my social network when on an abroad experience)		
Agree	102	12.4
Somewhat agree	157	19.0
Neither agree nor disagree	100	12.1
Somewhat disagree	109	13.2
Disagree	357	43.3
Total	825	99.2
Ex-purposes (i.e., to get over my ex)		
Agree	48	5.8
Somewhat agree	111	13.5
Neither agree nor disagree	66	8.0
Somewhat disagree	68	8.2
Disagree	532	64.5
Total	825	99.2
Belongingness (i.e., because everyone uses Grindr)		
Agree	58	7.0
Somewhat agree	153	18.5
Neither agree nor disagree	120	14.5
Somewhat disagree	102	12.4
Disagree	392	47.5
Total	825	99.2

Peer pressure (i.e., as suggested by friends)		
Agree	8	1.0
Somewhat agree	35	4.2
Neither agree nor disagree	66	8.0
Somewhat disagree	79	9.6
Disagree	636	77.2
Total	824	99.0
Socialising (i.e., to make new friends)		
Agree	207	25.1
Somewhat agree	341	41.3
Neither agree nor disagree	105	12.7
Somewhat disagree	41	5.0
Disagree	132	16.0
Total	826	99.3
Sexual orientation (i.e., to connect with other people with the same sexual orientation)		
Agree	340	41.3
Somewhat agree	262	31.8
Neither agree nor disagree	76	9.2
Somewhat disagree	38	4.6
Disagree	107	13.0
Total	823	98.9
Pass time/Entertainment (i.e., to occupy my time or because it is entertaining)		
Agree	326	39.4
Somewhat agree	343	41.4
Neither agree nor disagree	80	9.7
Somewhat disagree	28	3.4
Disagree	51	6.2
Total	828	99.5
Distraction (i.e., to combat boredom when working or studying)		
Agree	314	38.0
Somewhat agree	319	38.6
Neither agree nor disagree	60	7.3
Somewhat disagree	37	4.5
Disagree	97	11.7
Total	827	99.4
Curiosity (i.e., to see what the application is about)		
Agree	169	20.4
Somewhat agree	193	23.3
Neither agree nor disagree	143	17.3
Somewhat disagree	82	9.9
Disagree	240	29.0
Total	827	99.4

4.4.8 Research question 8) which motives are related to PGU

To investigate which motives were related to PGU, a number of chi-square tests were run on the quartile split variable. In order to interpret the findings more clearly, an adjusted version of Grindr Motives Scale was collapsed to create dichotomous categories: agree or disagree. Table 20 shows the motivations that showed significant results between non-problematic and problematic Grindr use.

PGU was significantly associated with social approval (x^2 (1, N=409) = 29.857, $p < .001$). As shown by the frequencies cross-tabulated in Table 20, 62.8% of individuals in the problematic group used Grindr to get self-validation or attention from others, compared to 34.6% of individuals who were in the non-problematic group. The majority of men in the non-problematic group disagreed with using Grindr for social approval (65.4%). Relationships for sex were found as a motivation at a significant level for problematic users (x^2 (1, N=447) = 14.777, $p < .001$). As shown by Table 20, 94.3% of individuals in the problematic group utilised the app to find casual sex partners compared to 82.5% of individuals in the non-problematic group.

PGU was also significantly associated with motivations related to their ex-partners (x^2 (1, N=435) = 14.180, $p < .001$). As shown by the frequencies cross-tabulated in Table 20, more individuals in the problematic group utilised the app to get over their ex-partners (31.0%) compared to the non-problematic group (15.0%). Moreover, PGU was also significantly associated with belongingness-based motivations (x^2 (1, N=407) = 23.414, $p < .001$). More individuals in the problematic group used Grindr because everyone uses it (44.3%) compared to only 20.9% in the non-problematic group. Sexual orientation motivation was also significantly associated with PGU (x^2 (1, N=430) = 5.520, $p = .017$). Table 20 shows that

85.1% of individuals in the problematic group used Grindr to connect with other people with the same sexual orientation compared to 75.7% of individuals in the non-problematic group.

PGU was also significantly associated with peer pressure (x^2 (1, N=437) = 5.402, p = .015). 10.0% of men in the problematic group used Grindr because their friends suggested it and they therefore felt obliged to use the app compared to 3.7% of men in the non-problematic group. Finally, distraction motivations were also significantly associated with PGU (x^2 (1, N=439) = 18.980, p < .001). More men in the PGU category utilised the app to combat boredom when working or studying (89.1%) than in the non-problematic group (72.4%; Table 20).

PGU was not significantly related to the relationship seeking (x^2 (1, N=423) = 1.304, p = .238), social skills (to improve my social skills or to increase my flirting experience) (x^2 (1, N=401) = 3.590, p = .053), travelling (to get tips from locals when travelling or to broaden my social network when on an abroad experience) (x^2 (1, N=413) = .037, p = .835), socialising (x^2 (1, N=412) = <. 0005, p = 1.000), pass time/entertainment (x^2 (1, N=435) = .901, p = .327*),* and curiosity (to try it out or to see what the application is about) (x^2 (1, N=398) = .027, p = .838) motivations.

Table 20. Frequencies for Different Motivations for Non-Problematic and Problematic Grindr Use

Motivation	PGUS		Motivations		
			Agree	Disagree	Total
Social approval					
	Non-problematic		55	104	159
		%	34.6%	65.4%	100.0%
	Problematic		157	93	250
		%	62.8%	37.2%	100.0%
	Total		212	197	409
		%	51.8%	48.2%	100.0%
Sexual experience					
	Non-problematic		151	32	183
		%	82.5%	17.5%	100.0%
	Problematic		249	15	264
		%	94.3%	5.7%	100.0%
	Total		400	47	447
		%	89.5%	10.5%	100.0%
Ex-purposes					
	Non-problematic		28	159	187
		%	15.0%	85.0%	100.0%
	Problematic		77	171	248
		%	31.0%	69.0%	100.0%
	Total		105	330	435
		%	24.1%	75.9%	100.0%
Belongingness					
	Non-problematic		37	140	177
		%	20.9%	79.1%	100.0%
	Problematic		102	128	230
		%	44.3%	55.7%	100.0%
	Total		139	268	407
		%	34.2%	65.8%	100.0%
Sexual orientation					
	Non-problematic		137	44	181
		%	75.7%	24.3%	100.0%
	Problematic		212	37	249
		%	85.1%	14.9%	100.0%
	Total		349	81	430
		%	81.2%	18.8%	100.0%

Motivation	PGUS	Motivation		
		Agree	Disagree	Total

Peer pressure				
	Non-problematic	7	181	188
	%	3.7%	96.3%	100.0%
	Problematic	25	224	249
	%	10.0%	90.0%	100.0%
	Total	32	405	437
	%	7.3%	92.7%	100.0%
Distraction				
	Non-problematic	126	48	174
	%	72.4%	27.6%	100.0%
	Problematic	236	29	265
	%	89.1%	10.9%	100.0%
	Total	362	77	439
	%	82.5%	17.5%	100.0%

Additional findings

An independent samples t-test found no significant difference between those with PGU (M = 34.52, SD = 10.616) and those with non-problematic Grindr use (M = 35.21, SD = 11.760) in terms of their average ages (t (474) = .667, p = .505). Analysing the median split variable, there was also no significant difference between low PGU (M =35.02, SD = 11.412) and those with high PGU (M =34.82, SD = 10.865) in terms of their average ages (t (790) = .251, p = .802).

Additionally, a series of chi-square analysis found that there was also no significant relationship between participants' working status (working status was collapsed to create dichotomous categories: working or not working) and non-problematic Grindr use and PGU (x^2 (1, N=478) = .000, p = 1.000), relationship status (relationship status was collapsed to create dichotomous categories: single or not-single), non-problematic Grindr use and PGU (x^2 (1, N=478) = .024, p = .842), and education level (education level was collapsed to create dichotomous categories: low education or high education), non-problematic Grindr use and PGU (x^2 (1, N=478) = .204, p = .611).

However, a number of chi-square tests were carried out and a significant relationship was found between participants' length of Grindr usage (length of Grindr usage was collapsed to create

dichotomous categories: less than three years or more than three years) and non-problematic Grindr use and PGU (x^2 (1, N=478) = 13.492, p <. *001*). 65.9% of individuals in the problematic group had been using Grindr more than three years compared to 48.7% of individuals in the non-problematic group (Table 21). Additionally, there were also significant relationships found for duration of Grindr use daily (duration of daily Grindr use was collapsed to create dichotomous categories: less than three hours or more than three hours) and non-problematic Grindr use and PGU (x^2 (1, N=478) = 19.282, p <. 001). As shown by Table 21, 16.8% of individuals in the problematic group had been using Grindr more than three hours a day compared to 3.5% of individuals in the non-problematic group.

Finally, there were significant relationships found for the time of the day that participants were active (active particular time of the day or active most of the day) and non-problematic Grindr use and PGU (x^2 (1, N=478) = 18.490, p <. 001). 34.8% of individuals in the problematic group had been using Grindr most of the day compared to 16.6% of individuals in the non-problematic group (Table 21).

Table 21. Frequencies for Grindr Use Patterns for Variables that Showed Significant Differences between Non-Problematic and Problematic Users

Grindr User Patterns	PGUS		Grindr User Patterns		Total
Length of Grindr Usage			**<3 years**	**>3 years**	
	Non-problematic		102	97	199
		%	51.3%	48.7%	100.0%
	Problematic		95	184	279
		%	34.1%	65.9%	100.0%
	Total		197	281	478
		%	41.2%	58.8%	100.0%
Daily Grindr Use			**<3 hours**	**>3 hours**	
	Non-problematic		192	7	199
		%	96.5%	3.5%	100.0%
	Problematic		232	47	279
		%	83.2%	16.8%	100.0%
	Total		424	54	478
		%	88.7%	11.3%	100.0%
Active on Grindr			**Not most of the day**	**Most of the day**	
	Non-problematic		166	33	199
		%	83.4%	16.6%	100.0%
	Problematic		182	97	279
		%	65.2%	34.8%	100.0%
	Total		348	130	478
		%	72.8%	27.2%	100.0%

Summary of hypotheses and results

Information relating to the hypotheses and a summary of findings can be seen in Table 22.

Table 22. Summary of Hypothesis and Results

Hypothesis	Finding
Men who engage in PGU will have worse psychological health compared with non-problematic users.	Increases in PGUS scores were positively correlated with increases in K10 psychological distress scores. Participants whose use of Grindr was problematic reported significantly higher psychological distress.
Men who use Grindr problematically will exhibit low levels of psychological well-being compared to non-problematic users.	Increasing scores on the PGUS were negatively correlated with WEMWBS scores. Participants with PGU reported significantly lower psychological well-being compared to those with non-problematic users.
An individual's PGU will be associated with higher scores in neglect in social life than those with non-problematic Grindr use.	Increases in PGUS scores were positively correlated with increases in neglect in social life scores. Participants whose use of Grindr was problematic had significantly higher neglect in social life scores than non-problematic users.
Men who have increased experiences of minority stress will be more likely to engage in PGU than those with non-problematic Grindr use.	Increased levels of minority stress scores were positively correlated with increased scores on the PGUS. Participants whose use of Grindr was problematic had significantly higher minority stress scores than non-problematic participants.

4.9 Problematic Grindr Use Predictors

Exploratory regression analysis was also conducted to confirm and check which study variables predicted PGU. The usage of this methodology was supported by the large sample size of the study. Formal investigation of potential multicollinearity assumptions was also conducted. According to Myers (1990), a variance inflation factor (VIF) checks for multicollinearity in the regression model, and a value less than ten is considered an acceptable number. All predictor variables had VIF values of less than two and tolerances (in statistics, tolerance is the amount of variability in one independent variable that is not explained by the other independent variables) more than 0.2, indicating no problems with multicollinearity. Therefore, this suggests the degree of correlation is within accepted limits. A forward stepwise model selection method was employed with a selected confidence interval (CI) at 95% ($p < 0.05$). Due to exploratory nature of this study, some of the analyses were repeated using different variable themes to uncover the best predictors for PGU. To control for demographic variables, age, educational level, sexuality and type of community they been residing in the last year were also entered in all the equations.

4.10 Model building for motivations

First, a multiple regression analysis was carried out using the motivational variables that were statistically significant in the univariate analysis in section 4.4.8. The total scores of the PGU variable (as a continuous variable) was considered to be the dependent variable, and social approval, sexual experience, ex-purposes, belongingness, peer pressure, sexual orientation and distraction motivations were considered independent variables in the regression model analysis. The results are presented in Table 23.

Table 23. Multivariate Predictors of Problematic Grindr Use- Motivations

Predictors	Dependent variable: Problematic Grindr Use Coefficients						
	B	**SE**	***β***	***t***	**Sig.**	**R**	**R²**
(Constant)	9.731	.922		10.553	<.0005	.401	**.161**
Sexual experience	3.163	.816	.176	3.876	<.0005		
Belongingness	1.869	.543	.165	3.443	.001		
Social approval	1.621	.484	.160	3.350	.001		
Ex-purposes	1.600	.599	.125	2.672	.008		
Distraction	1.566	.597	.121	2.621	.009		

The results of the regression model were significant and indicated the five predictors explained 16% of the variance in PGU ($R^2 = .16$, F (5, 409) = 15.765, $p < .0005$). As shown in Table 23, sexual experience ($\beta = .176$, $p < .0005$), belongingness ($\beta = .165$, $p = .001$), social approval ($\beta = .160$, $p = .001$), Ex-purposes ($\beta = .125$, $p = .008$) and distraction ($\beta = .121$, $p = .009$) motivations significantly predicted PGU. Sexual experience as a motivator was the strongest predictor, followed by belongingness and social approval.

4.11 Model building for demographic and user behaviour

In order to investigate which demographic and behavioural variables predicted PGU, I again performed a multiple regression. The total scores of the PGU variable (as a continuous variable) was considered as the dependent variable, and age, sexuality, type of community, occupation status, relationship status, length of time since beginning using Grindr, daily Grindr use, and the time of day most active on Grindr were considered as independent variables in the regression model analysis. The results are presented in Table 24.

Table 24. Multivariate Predictors of Problematic Grindr Use- User Behaviour

Predictors	Dependent variable: Problematic Grindr Use Coefficients						
	B	**SE**	***β***	***t***	**Sig.**	**R**	**R²**
(Constant)	9.190	.643		14.292	<.0005	. 433	**.187**
Time spent on Grindr daily	2.033	.160	.410	12.719	<.0005		
Length of time since beginning using Grindr	.570	.167	.110	3.404	.001		

The results of the regression model were significant and indicated that the two predictors explained 19% of the variance in PGU ($R^2 = .19$, F (2, 788) = 90.904, $p < .0005$). As shown in Table 24, time spent on Grindr daily significantly predicted the PGU ($\beta = .410$, $p < .0005$), as did length of time since beginning using Grindr ($\beta = .110$, $p = .001$). The demographic variables appeared not to predict problematic use.

4.12 Model building for psychosocial variables

In order to investigate which psychosocial variables predicted PGU, I again undertook a multiple regression analysis. The total scores of the PGU variable were considered the dependent variable, and psychological well-being, psychological distress, minority stress and neglect in social life scores were considered as independent variables in the regression model analysis. The results are presented in Table 25.

Table 25. Multivariate Predictors of Problematic Grindr Use- Psychosocial Factors

Predictors	Dependent variable: Problematic Grindr Use Coefficients						
	B	**SE**	***β***	***t***	**Sig.**	**R**	**R²**
(Constant)	11.718	1.547		7.577	<.0005	.568	**.322**
Neglect in social life	.980	.072	.423	13.580	<.0005		
Psychological distress	.125	.027	.216	4.584	<.0005		
Psychological well-being	-.045	.023	-.093	-1.978	.048		
(Constant)	7.189	.690		10.419	.001	.571	**.326**
Neglect in social life	.985	.072	.425	13.697	<.0005		
Psychological distress	.177	.018	.305	9.590	<.0005		
Age	.039	.013	.090	2.905	.004		

The results of the regression model were significant and indicated the three predictors explained 32% of the variance in PGU (R^2 = .32, F (3, 740) = 117.206, p < .0005). As shown in Table 25, neglect in social life (β = .423, p < .0005), psychological distress (β = .216, p < .0005), and psychological well-being (β = -.093 p = .048) significantly predicted PGU. However, after allowing for demographics, age became a significant predictor and psychological well-being no longer was significant (β = .090, p = .004) (R^2 = .33, F (3, 739) = 119.120, p < .0005, with older users having more PGU.

4.13 Best Predictive Model

In order to investigate which of the above variables best predicted PGU, a multiple regression was again carried out. The total scores of the PGU variable were considered to be the dependent variable, and all the variables that were shown to be significant in the previous three regression analyses as the independent variables in the regression model analysis. The results are presented in Table 26.

Table 26. Multivariate Predictors of Problematic Grindr Use- Best Predictive Model

Predictors	Dependent variable: Problematic Grindr Use Coefficients						
	B	**SE**	***β***	***t***	**Sig.**	**R**	**R²**
(Constant)	3.114	1.011		3.081	.002	.698	**.487**
Neglect in social life	.873	.085	.373	10.264	<.0005		
Time spent on Grindr daily	1.388	.182	.271	7.640	<.0005		
Psychological distress	.144	.022	.242	6.664	<.0005		
Social approval motivation	1.245	.362	.124	3.436	.001		
Sex motivation	1.913	.601	.110	3.182	.002		
Belongingness motivation	1.072	.392	.097	2.734	.007		
Age	.035	.016	.075	2.104	.036		

The results of the regression model were significant and indicated that the seven predictors explained 49% of the variance in PGU ($R^2 = .49$, $F\ (7, 454) = 61.481$, $p < .0005$). As shown in Table 26, neglect in social life ($\beta = .373$, $p < .0005$), time spent on Grindr daily ($\beta = .271$, $p < .0005$), psychological distress ($\beta = .242$, $p < .0005$), social approval motivation ($\beta = .124$, $p = .001$), sexual experience motivation ($\beta = .110$, $p = .002$), belongingness motivation ($\beta = .097$, $p = .007$), and age ($\beta = .075$, $p = .036$) variables significantly predicted PGU. The variable with the strongest predictive power was neglect in social life, followed by time spent on Grindr daily and psychological distress.

4.14 Binary Logistic Regression

Binary logistic regression does not require meeting any normality assumptions and is therefore ideal to further support the results from the multiple regressions. Forward conditional binary logistic regression analysis was performed using both the median and quartile split variable with PGU as the dependent variable and independent variables including several demographic and other variables (see below). The dependent variable was assigned a binary value of '0' or '1' (dummy coding: non-problematic versus problematic). Logistic regression was chosen, as it measures the relationships among factors consisting of both categorical and continuous variables having a binary outcome (Wuensch, 2010). Table 27 shows the binary logistic regression results for the median split of the dependent variable, whereas Table 28 shows the results for the quartile split. To control for demographic variables, age, educational level, sexuality and type of community they been residing in the last year were also entered in all the equations.

The predictors included in the logistic regressions were the same variables as in the multiple regression analyses considered earlier:

- **Motivations**- social approval, sexual experience, ex-purposes, belongingness, peer pressure, sexual orientation and distraction
- **Demographic and user behaviour**- age, sexuality, type of community, occupation status, relationship status, length of time since beginning using Grindr, time spent on Grindr daily, and the time of day most active on Grindr
- **Psychosocial variables**- psychological well-being, psychological distress, minority stress and neglect in social life total scores

Table 27 shows the odds ratios for all the predictors entered into the logistic regressions that were significant. The results of the binary regression model for the median split variable for motivations were significant (x^2 (1, N=415) = 3.991, p = .046, R^2 = .105). The predictors with the highest odds ratio were sexual experience (*OR* = 3.271, p = .005*)*, social approval (*OR* = 1.809*, p* = .002), belongingness (*OR* = 1.744, *p* = .019*)* and distraction (*OR* = 1.730, *p* = .049*)*. These four predictors explain 11% of the variability of PGU. The regression results for the psychosocial variables were also significant (x^2 (5, N=743) = 12.141, p = .033, R^2 = .321). The predictors with the highest odds ratio were neglect in social life (*OR* = 1.618, p < .0005*),* psychological distress (*OR* = 1.087, p <. 0005), and age (*OR* = 1.025, p = .003*)*. The three predictors explain 32% of the variability of PGU. The results for the Grindr use behaviours were also significant (x^2 (3, N=791) = 8.178, p = .042, R^2 = .166). The risk, as measured by odds ratio for length of time since beginning using Grindr and time spent on Grindr was low, therefore suggesting that using Grindr less than 3 years and spending 2 hours or less on Grindr is less risky. In other words, using Grindr for more than 3 years, and spending more than 2 hours on Grindr daily is a significant contributing factor to PGU.

I also ran an additional binary logistic regression by examining the extremes through the quartile split variable. Table 28 shows the odds ratios for all the significant predictors entered into the logistic regression. The results for the quartile split variable for motivations were significant (x^2 (1, N=265) = 5.031, p = .025, R^2 = .177). The predictors leading to the highest odds ratio were sexual experience (*OR* = 3.298, p = .009), belongingness (*OR* = 2.276, p = .010), distraction motivation (*OR* = 2.153, p = .023), and social approval (*OR* = 1.936, p = .021*).* The regression results for the psychosocial variables were also significant (x^2 (1, N=412) = 64.097, p < .0005, R^2 = .505). The predictors with the highest odds ratio were neglect in

social life (*OR* = 1.945, *p* <. 0005) and psychological distress (*OR* = 1.131, *p* <. 0005). The results for the Grindr use behaviours were also significant (x^2 (3, N=476) = 10.214, *p* = .017, R^2 = .300). The risk, as measured by odds ratio for length of time since beginning using Grindr and time spent on Grindr was low, therefore suggesting that using Grindr less than 6 months and spending 2 hours or less on Grindr is less risky. In other words, using Grindr for more than 6 months, and spending more than 2 hours on Grindr daily is a significant contributing factor to PGU.

Table 27. Multivariate Predictors of Problematic Grindr Use- Binary Logistic Regression Results for the Median Split Variable

Predictor	*B*	*S.E.*	Wald x²	df	Sig.	*OR*	Lower	Upper
Grindr Use Motivations								
Sexual experience	1.815	.424	7.809	1	.005	3.271	1.425	7.510
Social approval	.593	.213	7.704	1	.006	1.809	1.190	2.748
Belongingness	.556	.237	5.524	1	.019	1.744	1.097	2.773
Distraction	.548	.279	3.867		.049	1.730	1.002	2.987
Constant	-2.215	.485	20.868	1	<.0005	.109		
Grindr User Behaviours								
Time spent on Grindr daily			83.445	3	<.0005			
Time spent on Grindr daily '1-2 hours per day'	-.780	.260	9.010	1	.003	.459	.276	763
Time spent on Grindr daily 'less than 1 hour per day'	-1.996	.273	53.340	1	<.0005	.136	.079	.232
Length of time began using Grindr			8.013	3	.046			
Length of time began using Grindr '1-3 years'	-.396	.186	4.552	1	.033	.673	.467	.968
Length of time began using Grindr 'less than 6 months'	-.670	.310	4.670	1	.031	.512	.279	.940
Constant	.926	.237	15.271	1	<.0005	2.523		
Psychosocial Variables								
Neglect in social life	.481	.054	80.759	1	<.0005	1.618	1.457	1.798
Psychological distress	.083	.011	54.063	1	<.0005	1.087	1.063	1.111
Age	.024	.008	8.664	1	.003	1.025	1.008	1.042
Constant	-4.454	.635	49.224	1	<.0005	.012		

Note: B = beta weight, *SE* = Standard error, df= degrees of freedom, Sig. = Significance, OR = Odds Ratio, Confidence interval 95%, p<.05

Table 28. Multivariate Predictors of Problematic Grindr Use - Binary Logistic Regression Results for the Quartile Split Variable

Predictor	*B*	*S.E.*	Wald x²	df	Sig.	*OR*	Lower	Upper
Grindr Use Motivations								
Sexual experience	1.193	.454	6.914	1	.009	3.298	1.355	8.027
Belongingness	.822	.320	6.600	1	.010	2.276	1.215	4.262
Distraction	.767	.336	5.195	1	.023	2.153	1.113	4.162
Social approval	.661	.286	5.331	1	.021	1.936	1.105	3.393
Constant	-1.817	.515	12.453	1	<.0005	.163		
Grindr User Behaviours								
Length of time began using Grindr			10.006	3	.019			
Length of time began using Grindr 'less than 6 months'	-1.133	.386	8.629	1	.003	.322	.151	.686
Time spent on Grindr daily			87.426	3	<.0005			
Time spent on Grindr daily '1-2 hours per day'	-1.109	.443	6.284	1	.012	.330	.139	.785
Time spent on Grindr daily 'less than 1 hour per day'	-2.792	.447	39.097	1	<.0005	.061	.026	.147
Constant	2.119	.418	25.674	1	<.0005	8.325		
Psychosocial Variables								
Neglect in social life	.665	.086	59.372	1	<.0005	1.945	1.642	2.304
Psychological distress	.123	.017	52.666	1	<.0005	1.131	1.094	1.169
Constant	-4.330	.465	86.666	1	<.0005	.013		

Note: B = beta weight, *SE* = Standard error, df= degrees of freedom, Sig. = Significance, OR = Odds Ratio, Confidence interval 95%, p<.05

4.15 Best Predictive Model

In order to investigate which of the above variables best predicted PGU, a binary logistic regression was again carried out on the median split. All the variables that were shown to be significant in the previous analyses were included as the independent variables in the regression model analysis. The results are presented in Table 29.

Table 29. Binary Logistic Regression Results for the Median Split Variable- Best Predictive Model

Predictor	*B*	*S.E.*	Wald x²	df	Sig.	*OR*	Lower	Upper
Sexual experience	.995	.472	4.448	1	.035	2.706	1.073	6.825
Neglect in social life	.518	.074	49.608	1	<.0005	1.678	1.453	1.938
Social approval	.512	.221	5.400	1	.020	1.669	1.084	2.572
Psychological distress	.074	.014	28.061	1	<.0005	1.077	1.048	1.107
Time spent on Grindr daily 'less than 1 hour per day'	-1.411	.402	12.336	1	<.0005	.244	.111	.536
Constant	-3.903	.709	30.300	1	<.0005	.020		

The results of the binary regression model for the median split variable was significant and five predictors explained 43% of the variance in PGU (x^2 (1, N=500) = 4.943, p = .026, R^2 = .425). Sexual experience motivation was the strongest predictor, followed by neglect in social life and social approval motivation. The best predictive results for the quartile split can be seen in Table 30 below.

Table 30. Binary Logistic Regression Results for the Quartile Split Variable- Best Predictive Model

Predictor	*B*	*S.E.*	Wald x²	df	Sig.	*OR*	Lower	Upper
Social approval	1.144	.375	9.290	1	.002	3.139	1.504	6.549
Neglect in social life	.722	.127	32.195	1	<.0005	2.059	1.604	2.643
Psychological distress	.126	.025	25.041	1	<.0005	1.134	1.080	1.191
Age	0.37	.019	3.941	1	.047	1.038	1.000	1.077
Time spent on Grindr daily			37.229	3	<.0005			
Time spent on Grindr daily 'less than 1 hour per day'	-3.014	.697	18.702	1	<.0005	.049	.013	.192
Constant	-4.668	1.186	15.501	1	<.0005	.009		

The results of the binary regression model for the quartile split variable was significant and five predictors explained 65% of the variance in PGU (x^2 (1, N=291) = 4.035, p = .045, R^2 = .653). Social approval motivation was the strongest predictor, followed by neglect in social life and psychological distress.

Chapter 5: Discussion

5.1 Chapter overview

An interesting observation throughout this research is that, apps such as Grindr empower sexual minorities, who have previously had very little power over their romantic and sex lives. Of particular importance, Grindr allows people to connect with one another in an easy and accessible way from the comfort of their own location, with just one click. However, some authors emphasise how ease of access and excessive use can be an important contributing factor to developing dependence (Griffiths & Barnes, 2008). Even as we approached the 10th anniversary of Grindr this year, very little information can be found in the literature on investigations into the characteristics and prevalence of any problematic use of Grindr, despite of its popularity worldwide. The main objective of the present study was to explore if PGU existed, based on the Griffith's (2005) six-component model of behavioural addiction and, if so, to explore the psychosocial impact of Grindr usage patterns amongst MSM. The chapter discusses the results and their significance, as well as considering the study's strengths, limitations, clinical relevance for practice and recommendations for future research. Finally, this chapter will close with a personal reflection on the experience of conducting this research. The study's findings are wide-ranging, however, I will pay attention specifically to some findings more than others. As this type of research has never been undertaken before, the findings will be discussed more generally and where relevant, it will consider literature from other problematic use of SNSs such as Facebook.

5.2 Overview of the findings

The utilisation of both the quartile and median split methods for statistical analyses indicated that some users demonstrated PGU and that their behaviour fulfilled a number of the Griffith's (2005) six-component criteria (salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse). Consistent with the study's hypotheses, the results suggested that problematic Grindr users differed significantly from non-problematic users across all psychometric measures. Problematic Grindr users reported lower psychological well-being, greater psychological distress, increased minority stress and increased neglect in their social life than non-problematic users. Similarly, the results also showed the same trend for the median split method, where low problematic users and high problematic users also significantly differed across all measures, respectively. Interestingly, although minority stress was positively associated with PGU at the bivariate level, the association was no longer significant in the multivariate model. It appears that when accounting for other psychosocial and demographic variables, minority stress is not as important as general psychological distress.

5.3 Demographics & Grindr use behaviours of the sample

The first aim in this study was to describe the demographic characteristics and Grindr use behaviours amongst MSM.

The findings of the study showed that the majority of participants using Grindr were in younger age groups. The average age of Grindr users in this study was 34, with the majority of the participants being in the 25 to 44 age group. However, previous studies in the literature reported the average age of Grindr users in their studies to be between 24 and 31 years (Goedel et al., 2016; Grosskoph et al., 2014; Lehmiller & Ioerger, 2014; Taylor et al., 2017). The reason for

the difference might be because the majority of respondents in these studies were under the age of 50. However, this study, unlike others, also shows a much broader age range, with a good proportion of participants in the 45 or over age group (20 per cent) offering further heterogeneity of the results. It is perhaps not surprising that a young demographic makes more use of Grindr, given both the more sexually liberated nature of this age group (Queiroz et al., 2017) and their comfort in employing digital technologies such as mobile-based apps (Grosskoph et al., 2014).

In line with previous studies (Goedel et al., 2016; Lehmiller & Ioerger, 2014), most users in this study identified themselves as gay, although a sizeable proportion of the participants were bisexuals, which corresponds with the previous findings looking at the use of dating apps among MSM. Mostly white participants (77 per cent) took part in the study, which is the same trend seen in previous studies conducted on Grindr (Lehmiller & Ioerger, 2014; Miller, 2015; Taylor et al., 2017). However, there was a good mix of other ethnic backgrounds in this study, which reflects the multi-ethnic population of London, which is where the majority of respondents were from. In terms of the educational background of users, the majority of respondents had high educational attainment, which mirrored trends seen in prior work by Grosskopf et al. (2014) and Jaspal et al. (2017). Although the majority of the users were single (68 per cent), a good proportion of users were partnered but in an open relationship (15 per cent). This finding is not unique, given that other studies in the literature also reported between 10 and 23 per cent of their users being either married or in open relationship (Holloway et al., 2014; Lehmiller & Ioerger, 2014; Rice et al., 2012). A recent study by GMFA (a gay men's health charity) in 2016 surveyed 1,006 gay men in the UK and found that 41% of men have previously experienced, or are currently in, an open relationship.

The study also found that users can spend large amounts of time on Grindr, with the majority of users (40 per cent) spending 1–2 hours per day on the app. In addition to this, most users had been using Grindr for more than three years (60 per cent) and most men were active in the evening (39 per cent). A similar pattern of results was also obtained by Goedel and Duncan's (2015) study on Grindr app usage patterns of MSM in Washington. An interesting finding of this study, which no previous studies have previously looked at, was the exploration of continuous use of Grindr throughout the day. A sizeable proportion of users (27 per cent) reported using Grindr most of the day. Interestingly, the study also found that 35% of individuals in the PGU group had been using Grindr most of the day, compared to only 17% of respondents in the non-problematic group. This therefore suggests that, Grindr is seen as an important part of some users' everyday routine.

A significant predictor for PGU in this study was time spent on Grindr daily and length of time since beginning using Grindr. This suggesting that, the longer one spends time on Grindr daily and the longer users have been using the app, the more problematic their Grindr use was. One likely explanation may be linked to the feature where push notifications can send a message to the user's phone anytime a tap or a message is received. This feature of Grindr might lead to continuous use of Grindr in some users as it encourages people to check the messages, therefore making it become harder to resist over time. The finding of excessive usage predicting PGU is consistent with other SNS studies where in a recent meta-analysis conducted by Marino et al. (2018) also found that the amount of time spent online was considered a component of problematic Facebook use. Similarly, in another study investigating Internet addiction in adolescents and students, it was found that excessive social online activities significantly increased the odds of being addicted to the Internet (Kuss et al., 2013; Kuss, Griffiths, & Binder 2013).

5.4 Motivations

Motivations for using Grindr were also sought from the participants. 'What are you looking for?' is a question often asked by many users in the early stages of conversations on Grindr (Purdie, 2016). The findings highlighted the use of Grindr for multiple purposes by its users, which also correspond with the versatility of gratification that Miller (2015) uncovered. However, Miller (2015) argued that Grindr is also frequently regarded as a 'hook-up' app, with its primary purpose being for the facilitation of finding sex partners. This viewpoint was certainly supported by this study, with an overwhelming number of users' motivation for Grindr use was being to find sexual encounters (85 per cent). This is a finding which, although not novel (Gudelunas 2012; Holloway et al., 2014; Philips et al., 2014), may be of particular concern, as these apps facilitate hook-ups faster than any other time in recent history and can pose challenges to relationship development and emotional commitment (Brubaker et al., 2016).

One likely explanation for the increased use of Grindr for sexual purposes might be that the relative convenience and accessibility that apps like Grindr offer could play a part in the upsurge of using apps for this purpose (Licoppe et al., 2015; Miller, 2015). Similarly, Cooper (1988) explained why sex on the Internet is especially achievable because of what he called the Triple A Engine: Access, Affordability and Anonymity. In terms of Grindr, it is accessible anytime and anyplace, given there is an Internet connection on your phone. Also, the majority of the time, sexual encounters take place at no cost when arranged through Grindr. Alternatively, more sexually active people may be more attracted to using these apps to find hook-ups. Whatever the explanation, the study confirms Licoppe et al. (2015) finding that 'casual hook-ups still remain the dominant orientation of Grindr users' (p.6).

The sexual health implications surrounding dating apps have been reviewed in section 1.11. The recent figures revealed by the European Centre for Disease Prevention and Control (ECDC) suggest that the UK was responsible for more than half of Europe's gonorrhoea (55 per cent) cases in 2017, with MSM accounting for almost half of the reported cases (ECDC, 2019). Dr Lawton, an expert from the British Association for Sexual Health and HIV, commented in the Daily Mail newspaper: 'The increases in gonorrhoea likely relate to an increase in frequency and number of partners, perhaps facilitated by online dating and hook-up apps' (Blanchard, 2019). However, more research is necessary in order to uncover the causal relationship between using dating apps and the start of sexual encounters.

Whichever the direction of the relationship, some qualitative studies found mixed results in the literature in terms of the app's impact on some its users. For some, the relative ease of finding sexual encounters were seen as a positive attribute of Grindr as it helps users to satisfy their sexual needs, empowering feelings of competence and control in their sex lives (Hobbs et al., 2017). For others, however, the highly sexualised nature of Grindr has been a negative element in the sense that they have been mistreated by other users when their purpose on Grindr was not for sexual partnering (Jaspal, 2017). The use of Grindr for sexual purposes led for some to discontinue their app use, as they were unable to find potential partners for a relationship (LeFebvre, 2018). This finding is not surprising, given that the current study found not everyone was looking for a relationship (43 per cent of the respondents stated that they were not looking for a relationship). Having said this, however, a previous study found that a third of men using dating apps stated having a casual sex partner they met through an app turn into a romantic partner (Lehmiller & Ioerger, 2014).

Participants also indicated other common motivations for their use of Grindr: pastime/entertainment (80 per cent), distraction (77 per cent), sexual orientation (73 per cent), socialising (66 per cent), relationship seeking (46 per cent), and for social approval (42 per cent). These findings build on the existing evidence found in previous studies exploring motivations of Grindr use in MSM in other countries (Goedel & Duncan, 2015; Landovitz et al., 2013; Rice et al., 2012; Van De Wiele & Tong, 2014). The pastime/entertainment motivation was the second most prevalent motive for Grindr users, after seeking sex. Intriguingly, a study conducted in London, found Tinder's peak usage hours to be 9 am and 18:00 pm, which are main travelling hours in London (Tyson et al., 2016). This alludes to the possibility that users are inclined to use Tinder to pass time during their daily commute. Various other U&G researchers have also found 'entertainment' to be a key motivation for the use of SNSs (Smock et al., 2011), suggesting that Grindr is following a wider trend. Worryingly, some studies exploring the entertainment function of Tinder found Tinder as a game that users play (LeFebvre, 2016; Seefeldt, 2014), which could be seen as some users not viewing these apps seriously to find romantic relationships and thereby may frustrate those users who are genuinely looking for romantic relationships.

This study also found that a high percentage of men also use Grindr to connect with other men with the same sexual orientation. This finding is important as it suggests that Grindr provides men a platform whereby it may offer an outlet that alleviates minority stress for some users and therefore may lead to feelings of acceptance. According to Maslow's hierarchy of needs theory (1943), social needs such as belongingness is a fundamental human need, and is gratified through friendships, social groups as well as community groups. Therefore, having a sense of belonging can help to cope with one's difficult emotional states and improves health and happiness (Hall, 2014). For instance, one study in the literature found Grindr helped their

participants to facilitate physical connections with other men and fostered a sense of belonging to a community (Hughto et al., 2017), which could be important in creating positive feelings in men. The Internet-Enhanced Self-Disclosure hypothesis (Valkenburg & Peter, 2009) predicts that online communication stimulates online self-disclosure, online self-disclosure enhances relationship quality and high-quality relationships promote well-being. A study exploring the consequences of intimate self-disclosure on Grindr found that men who participated in intimate self-disclosure through Grindr had lower levels of internalised homophobia compared to those who self-disclosed less. In another study on Grindr by Miller (2015) found that some participants reported how they made great friendships via these apps with people whom they would not have met otherwise and led them to feeling comfortable about being gay. These findings suggest the positive aspects of Grindr role in its users.

This study also found that a high percentage of men use Grindr to improve social skills (48 per cent), because it is hard to talk to people in real life, or to increase flirting experience. A similar finding was also found by Timmermans & De Caluwe's (2017) study on Tinder. This finding appears to fit with the social skill model proposed by Caplan (2005), in which individuals tend to get drawn into online social interactions simply because they lack the appropriate social skills to engage or communicate with people offline, and thereby preferring online connections to real life communications.

5.5 Overview of the results of the hypotheses

5.5.1 *The relationship between PGU and psychological distress & well-being*

The present study set out to investigate the relationship between PGU and both psychological distress and well-being among its users. The data demonstrated a significant positive relationship between PGU and psychological distress and a negative relationship between PGU and psychological well-being. Thus, low psychological well-being and high psychological distress were both associated with PGU. These findings are in concordance with existing literature examining problematic Facebook use (Denti et al., 2012; Sagioglu & Greitemeyer, 2014; Muuses et al., 2014; Wright et al. 2013). Therefore, these results build on previous research on problematic use of SNSs.

Different theories in the literature offer different justifications for the associations. The mood management theory proposed by Zillmann (1988) suggested that media use has the capacity to alter one's mood states, and therefore, users engage with media in an attempt to regulate negative mood states. For instance, Caplan's (2003) preference for online social interaction model suggests that unhappy individuals may be drawn to online spaces in order to obtain stimulating experiences, which could lead to various negative outcomes related with problematic use due to the overreliance on online social interaction. In terms of Grindr for example, it appears that people with psychological distress (such as anxiety or depression) use Grindr more problematically because they are using it to try and alter their mood state. This may temporarily be effective but as they are gaining short-term gratification from this, it means that they are using it more frequently, with little control over their use and therefore leading to problematic use (LaRose et al., 2003). This is different to men who are not distressed in that they are using Grindr for other reasons such as relationship seeking, socialising or entertainment purposes.

A qualitative study by Hobbs and colleagues (2017) found that engagement in dating apps could result in obtaining social approval regarding attractiveness. This can potentially lead to an improvement in self-esteem and positive feelings. Another study by Taylor et al. (2017) found that intimate self-disclosure on Grindr was associated with a positive impact on men's well-being and fewer feelings of internalised homophobia. Thus, Grindr has the potential to regulate negative mood states of its users, however, Muusses (2014) argues,

> *The incentive of consciously gratifying a need through media use motivates media consumption behaviour that may eventually become a conditioned response to certain moods and once self-regulation is impaired by media habits to alter one's mood, one is more prone to compulsive internet usage* (p. 23).

This description seems to fit with Beymer et al.'s (2016) results, which suggests that individuals with low self-control were significantly more likely to use Grindr more frequently compared to those men who had high self-control.

Some research also suggests that the addiction to SNSs predicts depression (Donnelly & Kuss, 2016; Jasso-Medrano et al., 2018). Spending significant time on SNSs has been also linked to various negative outcomes, such as depression, in individuals due to inducing self-comparison (Pantic et al., 2012). In terms of dating apps, for instance, a study on Tinder found that, compared to non-users, users reported less satisfaction with their faces and bodies and more shame about their bodies, along with a greater likelihood of monitoring their appearance, and stronger internalisation of societal appearance ideals and more frequent comparisons about appearance (Strubel & Petrie, 2017). Therefore, all of these could lead to adverse mental health outcomes in users.

An alternative reason as to why PGU might have been associated with higher psychological distress is that Grindr can be a platform that can expose users to various forms of negative experiences. The online disinhibition effect involves the act of individuals saying or doing certain things and behaviours in virtual space, but in reality, such acts might be things they are reluctant to do or say in face-to-face situations (Suler, 2004). Negative criticism (both getting and giving) may be a more common experience in online settings due to the anonymity that these dating apps provide (Gudelunas, 2012). Research suggests that marginalisation among the marginalised is a worryingly common experience (Stonewall, 2018) and online sexual racism on dating apps (e.g. 'Not attracted to Asians') is an everyday occurrence among some gay and bisexual men (Callander, Newman, & Holt, 2015). For instance, Grindr use has also been linked to exclusion and rejection of men due to particular attributes such as body type and age (Bonner-Thompson, 2017; Brubaker et al., 2017; Jaspal, 2017), as well as racism and discrimination (Wiele & Tong, 2014). One Grindr user giving an interview to NBC News said:

> *I did have people who would just message me to call me horrible names like 'fat pig' or 'disgusting', and then after they had their two cents, they could block me so I couldn't respond. This rejection crushed my soul. I would get super angry, or depressed, or even more aggressive in finding someone to hook-up with (*Fitzsimons, 2019).

Being excluded or ignored by others is reported to be psychologically painful, therefore leading to decreased self-esteem (Baron & Branscombe, 2011). This also compromises psychological well-being, increases psychosomatic symptoms and cardiovascular and psychological reactivity (Williams & Williams-Morris, 2000).

Additionally, previous findings also suggest that Grindr users were more likely to objectify other men compared to non-users (Anderson et al., 2017). A qualitative study found that one of the reasons for discontinuing Grindr use was due to the ways Grindr use can lead to the

objectification of gay men (Brubaker et al., 2017) and therefore a lack of desire to commit (Wiederhold, 2015). Objectification of the self and others amongst MSM has been associated with negative mental health outcomes (Agliata & Tantleff-Dunn, 2004), along with increased body shame and body dissatisfaction (Duggan & McCreary, 2004; Martins et al., 2007). Together, these findings suggest that Grindr use could also be the basis of individuals' psychological distress, and consequently lower well-being.

The association between PGU and both lower well-being and greater psychological distress can also be bidirectional, with each influencing the other. For instance, a person might feel bad about himself in which leads them to use Grindr more excessively to deal with this. However, this causes other problems in their life such as interference with their daily activities, which causes them more psychological distress, and this, then leads to increased Grindr use. However, more longitudinal studies are needed to work out the rather complex interactions between these variables as well as controlling for any confounding factors.

5.5.2 The relationship between PGU and neglect in social life scores

A significant positive relationship was also found between PGU and neglect in social life scores. Neglect in social life scores increased for those who were in the PGU category. A similar pattern of results was obtained by Kraut and colleagues (1998), who investigated the psychosocial consequences of Internet use, and found that greater use of the Internet was associated with a decline in spending time with friends and family, along with increases in their depression and loneliness. These findings also echo those of Bevan et al. (2014), who found that excessive time on Facebook had a negative impact on individuals' quality of life, with a decline in face-to-face social interactions (Pollet et al., 2011), resulting in depressive symptoms.

Qualitative studies on Grindr have also revealed that Grindr use, for some partners, led to jealousy and a lack of trust, therefore leading to resentment and arguments between partners (Macapagal et al., 2017). Additionally, partners spending excessive time on Grindr resulted in less social time and dialogue with their other halves. A similar conclusion was reached by Jaspal's (2017) study, where some interviewees who spent excessive time on Grindr noticed that it prevented them from getting on with their social lives. This finding is also consistent with Brubaker et al.'s (2016) study on the reasons for discontinuation of Grindr.

5.5.3 *The relationship between minority stress and PGU*

A significant positive relationship was found between minority stress and PGU. The effect size was, however, small. Previous research also found that, internalised homophobia was significantly associated with compulsive Internet use (DeLonga et al., 2011).

This finding can be discussed in terms of the minority stress theory put forward by Meyer (2003). According to this theory, discrimination, prejudice and social marginalisation generate excessive stress for sexual minorities, which can in turn affect their psychological health and well-being negatively. Given this social context, a common finding in the literature is that minority stress (e.g. prejudice events, internalised homophobia, and concealing one's sexual orientation) is associated with low quality of life (Balsam et al., 2013) and psychological distress such as anxiety and depression (Boone, Cook, & Wilson, 2016; Swim et al., 2009; Szymanski, 2009). However, as discussed in section 5.4.1, in order to regulate negative emotional states, individuals can get drawn into using dating apps as one way of reaching out for connections with the same sex, acceptance or support. One study found that using Grindr helped to reduce stigma about users' gay identity due to frequent self-disclosure happening on

the app (Taylor et al., 2017). This finding also emphasises the importance of having a sense of connection to the gay community, and Miller (2015) found that gay men turned to Grindr to meet like-minded guys and to feel more comfortable about being gay. The author concluded that connections on Grindr led to positive links with homosexuality and the gay community, which is important for forming a positive gay identity. Interestingly, the current study also found that using Grindr to connect with other people with the same sexual orientation was not associated with PGU, suggesting that having a sense of connection to the gay community via Grindr might be a protective factor for not developing PGU.

5.6 *Predictors of PGU*

5.6.1 Relationships between PGU and motivations for using Grindr

The study also examined the potential predictors of PGU. In terms of motivations, users whose motivations for Grindr are for sexual experience, belongingness, social approval, getting over ex-partners and distraction appeared to be significant predictors and explained 16% of the variance in PGU. As such, U&G theory (Katz, 1974) could be used to understand these findings. As discussed in section 1.10, individuals use certain media platforms so that they can satisfy particular needs or desires (Rubin, 1993). For instance, Grindr is used to facilitate hook-ups for some users. Therefore, if a Grindr user with the aim of searching for sexual partners is successful in meeting this need, then the Grindr user will be more likely to continue using the app in this way. As their needs are met through their Grindr usage, the potential for developing PGU may increase as a consequence.

The largest ever multi-national survey of sexual behaviour amongst MSM asked men: “What is your idea of the best sex life?” A total of 12,129 men took part from the UK. The most common response was a desire for a relationship with another man. Over a third of men also

indicated their wish for some form of loving, intimate or trusting connection with their sexual partner. Interestingly, 30 per cent of men also defined the best sex life in terms of quantity of sex or sexual partners (Bourne et al., 2013). Given this study has found a large proportion of men looking for sexual partners, it may be that users are trying to search for an intimate connection with other men on Grindr. For some users Grindr may be a platform where it facilitates sexual well-being for some users.

In terms of maintenance of such behaviours, the operant conditioning theory plays an important role (Griffiths, 2012). For instance, according to Griffith's (2012), 'viewing sexually explicit material online and/or engaging in cybersex with other 'netizens' leads to a sexual outlet and potential sexual gratification and thus it functions as a positive reinforcer' (p. 6). He argues that these behaviours are negatively reinforced and in some way, and online sex is used for coping with many different stressors in individual's life (Griffiths, 2012). This reinforcement usually happens on a variable-ratio schedule, which has been said to be especially efficient in continuing the engagement in the specified behaviour (Schwartz, 1984). As well as operant conditioning, classical conditioning also seems to play a crucial role in the maintenance of problematic sexual activities online. For instance, Griffiths' (2012) reports, 'through repeated pairing of online use for sexual purposes with physical arousal, the latter becomes conditioned in such way that it is elicited by engaging with the technology, the conditioned stimulus, itself' (p.7). It seems like traditional behaviourism is useful in illuminating why people continue using Grindr for sex. According to Turban (2018):

> *Apps like Grindr are designed to make finding sex easy. And that can make them hard to stop using. Grindr, intentionally or not, also leverages a psychological concept called variable ratio reinforcement, in which rewards for clicking come at unpredictable intervals. You may find a hook-up immediately, or you may be on your phone for an hour before you find one. Variable ratio reinforcement is one of the most effective ways to reinforce behaviour, and it makes stopping that behaviour extremely difficult.*

The finding that social approval motivation also predicted PGU seems to be consistent with other research that found strong relationships between low self-esteem and problematic online behaviours (e.g., Armstrong et al., 2000; Yang & Tung, 2007). In terms of dating apps, a study exploring Tinder usage also found that some people utilised Tinder to overcome a difficult break-up and feelings of either rejection, or feeling undesirable, as they considered matches on Tinder a means of social approval regarding attractiveness (Hobbs et al., 2017). Similarly, other studies also reported that self-worth validation motivation led users to engage in Tinder use in order to obtain compliments about their appearance (Sumter et al., 2017). This motivation was also associated with using Tinder more frequently. A related finding was also reported in a study investigating Grindr usage (Wiele & Tong, 2014). It seems like Grindr might represent a tool to foster individual self-esteem, by fulfilling the need of belonging through communicating and enhancing peer acceptance (Marino et al., 2018).

In summary, looking for sexual encounters or using Grindr to gain social approval, can be explanations of developing PGU. This is consistent with findings exploring factors associated with problematic Tinder use in heterosexual groups (Orosz et al., 2018). However, unlike in previous studies that explored Tinder using a heterosexual sample (Orosz et al., 2018), relationship seeking was not a predictor of PGU in this study. A possible reason as to why this might be the case is because those users who are looking for a genuine relationship does not spend too much time on the app due to highly sexualised nature of Grindr.

5.6.2 Results from Modelling

The best predictive model for explaining PGU in the multiple regression was, neglect in social life, time spent on Grindr daily, psychological distress, social approval, sex and belongingness motivation and age, in this order of importance, accounted for 49% of the variance in PGU.

The results of this study, however, only partially explain PGU. There is recognition that the regression modelling undertaken in this study has somewhat of a low goodness of fit. Future studies need to explore the remaining variance, not identified by this study.

The results for the binary logistic regression were very similar to the findings in the multiple regression analyses for both the use of median and quartile split variables. Motivational modelling revealed the same results found in the multiple regression analysis, with the sex motivation contributing to the highest odds ratio. Individuals using Grindr to find sexual partners were three times more likely (227 per cent) to be in the PGU category compared with those individuals who are not using Grindr for sex purposes. Similarly, neglect in social life and psychological distress were also found to be contributing towards PGU. On the other hand, using Grindr for fewer than three years and less than two hours a day was associated with lower odds of the use becoming problematic.

5.7 Strengths of the current study

A particular strength of this study was the large sample of MSM who generously participated. The study's completion rate from the hard-to-reach group was exceptionally high (90 per cent), which has been very important for the credibility of the research results.

The study required answering previously validated self-report measures in assessing the study's key variables. While respondents might not have truthfully chosen the correct form of response, the study used an online survey which was completely anonymous, and it is possible that this aspect of this research aided in reducing the social desirability effect, thus leading the users to answer truthfully.

A further strength was the study's recruitment strategy. Recruitment to the study was possible via several avenues, including through Grindr, SNSs (Facebook & Twitter) and LGBT specific forums across the UK. This approach therefore allowed for a larger and more geographically varied sample of participants across the nation.

Some of the participants who were able to provide individual feedback made comments on some parts of the study, which can be seen in Table 31.

Table 31. Feedback from Participants

- The study topic can shed a lot of light on important issues
- Questions were not intrusive at all and they were interesting
- Survey was straightforward, clear, simple and thorough
- Short questions and straight to the point
- Easy to follow and very insightful
- Light and easy to digest
- 'It will make me think about how much time I spend on Grindr'
- Interesting study. Maybe of one the relationship choices could have been widowed.

5.8 Limitations of the current study

Although the study has discovered important relationships and provided insight with regards to the PGU, it is important that certain limitations within this are recognised.

Firstly, the data collected were cross-sectional. As a result, the findings can only be applied to one point in time. The nature of the design also strictly limits making any causal conclusions between the study variables, as well as regarding the direction of potential causal relationships. Secondly, the study used a non-probability sampling technique, which is a non-randomised selection method. A limitation of this method is that it is difficult to gauge whether the sample is representative of the wider population of Grindr users (Sharma, 2017). However, the study, as discussed above, recruited participants from different online avenues in order to increase the representativeness of the population that it was researching. It is also important to note that the lack of information on the non-respondents due to an open access sampling approach could also have some implications for the study variables investigated.

Another limitation was that the majority of the participants were White men with a high education level (bachelor's and master's degree were common). The findings therefore need to be interpreted cautiously. Furthermore, only Grindr users were canvassed. Therefore, findings of this study might not be generalisable to other users who may utilise different dating apps.

In order to explore the social impact of Grindr use patterns, a reduced version of IAT was undertaken. However, the scale had rather low Cronbach's alphas in the present sample. A more suitable scale for the purposes of this research would have been the UCLA loneliness scale, which might have results in better form to investigate the social aspect of dating apps.

A final notable limitation is that, although the study was advertised across multiple avenues to achieve diversity of representations, the majority of the participants who completed the study did so after hearing about it through the researcher's Grindr profile, which was based

geographically in London. Usage of Grindr is likely to be wide-ranging in different regions, depending on many different circumstances.

5.9 Suggestions for future work

Despite the aforementioned limitations, the findings of this study can be a springboard for discussion and further research. Some possible suggestions for future work can be seen in Table 32.

Table 32. Suggestions for Future Work

- Future studies should continue to explore dating app usage patterns among users and likely predictors of problematic usage. Studies could also explore the risky amount of daily use so that users could be advised and work towards preventing their use from becoming problematic if they wanted to.

- The issue of appropriate cut-off scores for problematic use needs further investigation in order to help clinicians working with these issues in terms of clinical assessment and intervention.

- It is also imperative to conduct further qualitative studies in order to learn more about if problematic usage leads to significant functional impairment and distress in its users.

- The study only explored Grindr use patterns. It would be useful to also investigate other popular location-based dating apps to explore whether a similar trend exists in terms of differences in user behaviour, demographics and psychosocial well-being.

- Given that the majority of participants in this study use Grindr to find sexual partners, it might also be important to explore compulsive sexual behaviour among this population.

- Future investigations using longitudinal designs are essential in order to validate the kinds of conclusions that can be drawn from this study, as it is likely that the usage patterns of MSM can fluctuate over time. Therefore, the use of longitudinal methods could help to shed a light on the factors contributing to PGU, as well as better addressing the directionality amongst key study interests.

- Future studies on the problematic use of dating apps could also be fruitful in the heterosexual community, as well as in other sexual minority groups, in order to establish if problematic dating app usage exists in them, and if so, whether it shows similar patterns to that of MSM in this study.

- Finally, the social context of PGU should also be investigated in future studies in addition to individual characteristics (De Timary & Phillipot, 2015). For example, there could be different contexts or important life events in which Grindr use can become more prominent in users' lives. Grindr use can increase if moving area, experiencing relationship break-up or dissatisfaction in life, leading to using Grindr more problematically. Future studies could also explore these factors, in order to increase our understanding of the mechanisms involved behind problematic usage.

5.10 Study implications

The findings suggest several implications for practice and policy. Like with any behaviour, the use of dating apps can be harmless and enjoyable in healthy amounts, but it can create various negative outcomes with problematic or 'addictive' use. A high percentage of men in this study thought about Grindr quite often (56 per cent), while many spent much more time on Grindr

than initially intended (50 per cent). 17% users also used Grindr to reduce negative feelings (such as anxiety and depression). Lastly, a small proportion of users have often or always tried to cut down on their Grindr use without success (17 per cent). These findings do certainly warrant clinical attention particularly from the growing area of Cyberpsychologists and should be taken seriously by the psychological community to help those who are struggling.

Findings from the current study suggest that PGU does exist, however, it is not clear as yet whether PGU can lead to psychosocial issues or, if those issues make an individual vulnerable to PGU. However, the costs of Grindr overuse can be life changing for some individuals (see qualitative studies by Brubaker et al., 2016; Jaspal, 2017; Macapagal et al., 2017). It is, therefore, important to increase awareness of this issue among psychologists and educate users and society about the potential risks associated with problematic use. Griffith (2018) suggests that, for the small number of users who are addicted to social media use, the most promising treatment option appears to be cognitive-behavioural therapy, focusing on controlled use rather than total abstinence, as he believes it is unrealistic and impractical to prevent someone from using devices that have Internet access. For clinicians, especially those working with gay and bisexual men, it might be important to ask questions about their dating practices as a part of a larger assessment package. Such questions might be whether the person currently uses dating apps, and if so, to enquire more about their usage in general in order to ascertain whether the individual feels their use is problematic or not. Some people might not be aware of whether their usage is problematic and therefore a few simple questions from clinicians could help. For instance, the questions below are adapted from Griffith's (2018) questionnaire on addiction to social media use:

- Do you spend a lot of time thinking about Grindr?
- Do you feel urges to use Grindr more and more?
- Do you use Grindr to forget about personal problems?
- Do you often try to reduce your use of Grindr, without success?

- Do you become restless or troubled if you are unable to use Grindr?
- Do you use Grindr so much that it has had a negative impact on your job, relationships or studies?

If the answer is 'yes' to some or all of the above questions, it is likely that the individual is struggling with their usage and therefore should seek professional help or engage in strategies to reduce the amount of time they spend on dating apps. Clinicians should also take into consideration any coexisting and related emotional or behavioural problems. However, if the answer to the above questions is mostly 'no', then this may suggest that the level of interference in daily activities is minimal.

From a research perspective, more investigation is needed to clearly establish the psychosocial health implications of problematic use. From a mental health perspective, PGU is associated with interpersonal relationship problems and both reduced mental health and psychological well-being. In addition, the findings of this study also indicate that, for those who want monogamous romantic relationships, the convenience and choice of sexual encounters offered by apps like Grindr do not appear to help achieve this goal.

Griffith's (2018) states that:

> *When it comes to solving the problem of reducing individuals' use of social media there is no magic bullet. While individuals are ultimately responsible for their own social media use, policymakers, social media operators, employers, and educational establishments all need to play their part in reducing excessive social media use.*

Operators such as Grindr could start engaging in actions that might help to minimise risks of developing PGU. It is important that users should be advised of potential 'addiction' issues such as disclaimer notifications on apps. This way, users can make informed choices regarding their Grindr use and be aware of measures to protect themselves. For instance, Griffith's (2018) advice that Facebook could start using their behavioural data to identify excessive users and provide strategies to limit time spent on their products could also be applied to Grindr. He

argues that this strategy is already being put in place in the online gambling industry (Auer & Griffiths, 2012), and can simply be used by SNSs. This same strategy could be used for apps such as Grindr.

Orosz et al. (2018) argue that certain built-in characteristics of dating apps could also lead to problematic use. For instance, Grindr's built in characteristics (e.g. the infinite scroll option for paying members as well as Grindr rolled out a tapping feature recently, which let users 'tap' someone they fancy rather than greet them textually) and how the app functions (it is free and relatively easy to use and it does not take long to create a profile) can be powerful tools in encouraging users to use the app in a continuous way, and thus can lead to increased risk of problematic use of the app. For instance, until recently only premium users could receive push notifications (is the delivery of information to a computing device from an application server) when another user messaged or tapped them but now all users in the UK gets push notifications automatically. For individuals whose use is already problematic, this feature could further fuel their excessive use and make it hard for them to stop logging onto the app.

Grindr also publicizes on the app using catchphrases such as '6x the profile, 6x the possibilities' and '2 months for less, sweet sale'. These ads could also result in an increase in excessive use of the app by some its users by encouraging them to purchase these deals and therefore fuel problematic use for some. More recently, Grindr published the following ad: 'the future of Grindr is here; unlimited in June 2019' (Grindr, 2019). These ads can have the potential to be damaging, and Grindr should start to reconsider some of their marketing tactics, thinking about how some of their strategies could be contributing to some users' app dependence. There are significant numbers of pop up ads appearing on the app already and simple strategies from

Grindr such as pop up advertisements about mental health resources on the app could prove significant for those who are really struggling with problematic use.

Interestingly, the founder of a heterosexual dating app Bumble recently said in the Telegraph newspaper: 'we are responsible in part for this epidemic of social media obsession and it was time to encourage our users to focus on themselves and mental health and not trapped in this warp of a never ending stream of connection' (Wolfe, 2018, cited in Murphy, 2018). Bumble now added a new 'snooze' function, which suspends the app for a certain time and is the first dating app that took action for concerns surrounding dependency (Murphy, 2018). Grindr and other apps could implement this.

On a positive note, more recently, Grindr has initiated the Kindr Grindr campaign as a way to fight against hostility, racism, discrimination and body shaming among its users (The Voice, 2018). It has introduced a new website with a motto at its heart: 'Kindness is our preference' (kindr.Grindr.com, 2019). The website also encourages users to report any toxic behaviour occurring on Grindr, stating that it could lead to the removal of prohibited content or a permanent ban from the app. This campaign is incredibly important, especially for thinking about the mental health and well-being of users, because of the psychological consequences of some of negative behaviours occurring on the app. Grindr is trying to improve in this respect and started to take responsibility for the intolerant behaviour that is happening on the app in order to better it's users' experiences, as some users are having to navigate prejudice on a daily basis, which can have serious psychological and emotional impacts. On their website they also have provided anti-bullying resources kit for individuals who might want to seek further support. However, we must wait to hear from users regarding whether their strategy will prove to be an effective intervention. Grindr could also be changing how the app is functioning, such

as, removal of filtering men on the basis of race as some users feel it contributes to racist discourses on Grindr (Shield, 2019).

Very recently, some SNSs, such as Facebook and YouTube, have been the subject of increased scrutiny from government officials regarding their lack of responsibility in removing hate speeches from their platforms (Wakefield, 2019). According to the BBC (2019), 'the government has proposed measures to regulate social media companies over harmful content, including 'substantial' fines and the ability to block services that do not stick to the rules'. At a policy development level, the Online Harms White Paper (2019) has been proposed by the government, which puts forward plans for a new system of accountability and oversight for tech companies, with a new regulatory framework for online safety. This regulatory framework will apply to Grindr as well. The current problems the paper identified with regards to online harms among others included illegal and unacceptable content on the Internet, and that the Internet can be a resource to bully, harass or abuse others. The white paper also mentions the emerging challenge of possible addictions or compulsive behaviours associated with some digital services. In terms of future action, the paper states that: 'we expect the regulator will continue to support research in this area to inform future action, and if necessary, set clear expectations for companies to prevent harm for their users' (p. 27). Interestingly, they also comment on the design practices: 'we also expect companies to be transparent about design practices which encourage extended engagement, and to engage with researchers to understand the impact of these practices on their users' (p. 75). It is positive to see that the white paper is pointing out some of the issues discussed above in terms of how design functions on apps could fuel dependency. Interestingly, a Chinese dating app, Momo, geared towards the heterosexual community, has recently experienced an extensive change of technical features and marketing

strategies to move clear of its reputation as a sex app, due to governmental regulations and market pressure (Wu & Ward, 2018).

5.11 Conclusions

The findings of this study add to a growing body of literature on the use of dating apps by MSM. The study represents an initial step towards enhancing our understanding of Grindr app use patterns and the relationships between psychosocial well-being, distress and problematic patterns of Grindr use, even though it is hard to know how the causality operates. Relatively easy access to these apps and lack of education regarding the risks means that more and more people's use can become problematic without realising. Given that the popularity of online dating has increased significantly since its beginnings – in the UK alone 27% of relationships nowadays start online (Mintel, 2015) – location-based dating apps will continue to exist and their popularity grow. It has been forecasted that by 2031, the majority of relationships (just over 50 per cent) will begin via online dating in the UK (Future Foundation, 2013). Therefore, more research into dating apps is certainly merited from a psychological standpoint in order to deepen our awareness of the potential benefits and costs, and to develop meaningful and evidence-based intervention strategies.

5.12 A personal reflection

As an intermittent Grindr user of 10 years, a final year clinical psychologist trainee, and a person who has spent the last two years of my life researching the topic of dating apps, spending a lot of my time thinking about some of the issues presented, I would like to end this thesis by giving my personal reflections on the journey so far. First of all, I must admit that being an 'insider' researcher, having a good knowledge of the app itself as well as some issues pertinent to the gay community had its advantages throughout the process of conducting this research.

For instance, during the recruitment stage, for some users, me being a gay researcher and able to discuss their concerns surrounding the apps was an important factor in their decision to take part in the study. However, I am also aware of the downsides of being an insider researcher, where passion can sometimes blur the lines and one can lose sight of objectivity. Looking at it through a different lens might bring fresh perspectives into the subject matter.

Secondly, there is no denial in that dating apps have considerably revolutionised the way we meet, connect, socialise and pursue romantic relationships. It is important that we do not lose sight of the potential benefits that these dating apps offer, some of which were discussed in section 2.5.1 (identity development, community integration, coping with gay-related stressors, relationship formation). However, Grindr can also be very seductive, alluring, sexually exciting and also potentially 'addictive'. It can lead to some users spending a lot of time on the app without even realising it, where sexualised conversations, objectification of self and other, stigma and discrimination, and body-shaming are a common experience (see section 2.5). We live in a world where we are increasingly being judged on the way we look, and certain dating apps may very much fuel this experience and thereby contribute to a culture of human disposability. Whitley (2018) in his Psychology Today article on, 'Are Dating Apps Damaging Our Mental Health?' argues, 'all this may be driven by a 'tranny of choice' as dating apps have millions of users, and users may be simultaneously messaging many other users. This can lead to a superficial breadth, rather than meaningful depth, of connections.'

As a final comment, I also came across a paper by Billieux et al. (2015), 'Are We Overpathologizing Everyday Life?' which really made me think about the concept of overpathologising in the behavioural addictions research. Some argue that: 'the excessive involvement in the targeted behaviours tends to be fairly transient for most individuals. Importantly, excessive behaviours are often context-dependent, and that spontaneous recovery

is frequent' (Thege, Woodin, Hodgins & Williams, 2015, cited by Billieux et al., 2015, p.5). Therefore, as mentioned before, I believe that it is important to assess the context in which individuals find themselves using the dating apps, as there could be important life events, which could lead to a person's increased use of the apps beyond the usual. Recent research also suggests that assessment of long-term functional impairment in clinical settings by health professionals could also be very important, given that some longitudinal studies have found some excessive behaviours rather short-lived and periodic, as opposed to being steady in nature (Kardefelt-Winther et al., 2017).

I have learnt a lot about the process of conducting quantitative research in this study. I must also add; I consider both quantitative and qualitative research to be effective methodologies. I believe that quantitative data can help us to discover what is happening, but with the cost of not having an in-depth description of experiences, while qualitative research can provide us with insights into 'why' by raising issues through comprehensive and open-ended questions. With this, I should also point out that we all bring our own perceptions, values, beliefs, and experiences to our research, and it is imperative to be mindful of this too, regardless of the type of research.

I received incredible support and encouragement from users who very generously have contributed their time to help to shed a light on this topic. I once again sincerely thank each and every one of you. I am proud of what I achieved and my contribution to the LGBT research. It has been a long journey, but one that has been immensely worthwhile.

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Appendix A–Summary and Evaluation of Studies in the Systematic Literature Review

Title; Location	Participants	Research methodology	Summary of study and key findings	Strengths & Limitations
1. iObjectify: Self- and other-objectification on Grindr, a geosocial networking application designed for men who have sex with men (Anderson, Holland, Koc & Haslam, 2018) **<u>Australia</u>**	• **Study 1**- 169 MSM, use Grindr versus not recently used Grindr • **Study 2**- 1400 Grindr profiles of users • **Study 3**- 300 men who were current users of Grindr	**3 different studies** • **<u>Study 1:</u>** Quantitative study (self-objectification Q, Objectification of Men Q) • **<u>Study 2</u>:** Quantitative study- Content analysis (body focus index) • **<u>Study 3</u>**: Quantitative study	Explored if Grindr use was associated with self-and other-objectification. • Grindr users were more likely to objectify other men compared to those not using Grindr. • Objectification and self-objectification scores were strongly correlated. Explored if objectifying self-presentation on Grindr (i.e., sexualized and/or body-focused presentations) could be predicted by the reported purpose for using Grindr (i.e., looking for chats, dates, friends, networking, relationships or sexual partners) • Individuals reporting the use of Grindr to find sexual partners were approximately three times more likely to have a sexualized than a non-sexualized profile picture.	+clear research aims and hypothesis for each study +made use of previously validated questionnaires. +all studies included large sample size +each profile was blind double-coded- inter-rater reliability was exceptionally high +limitations and future directions presented. -brief ethical issues considered -non-users in study 1 may raise validity concerns- as study could not find MSM who had never used Grindr and therefore made use of participants who had not recently used grindr.

			• Using Grindr to seek out sexual partners predicted higher body focus scores. **Study3** Explored how reported and visual objectification related to one another and impacted Grindr usage, risky sexual behaviour, and self-disclosure. • Profile sexualization, self-objectification, and other-objectification scores were associated with a greater frequency of using Grindr to find sex partners.	-only used Grindr users- might not be generable to other dating apps.
2. Assessing self-control and geosocial networking app behavior among an online sample of men who have sex with men (Beymer, Rossi, & Shu, 2016) **<u>USA</u>**	146 men who were users of GSN apps	Quantitative study (The Tangney Self-control Scale)	Explored the type, number, and frequency of apps used, as well as described how trait-based self-control is related to app user behaviors. • The most common apps used were Grindr (78%), followed by Scruff (19%), Growlr (12%), and Jack'd (12%). • Individuals with low self-control were significantly more likely to report a higher number of hours using GSN apps and a higher number of sexual partners compared to	+clear research aims presented +large sample size +used previously validated scales +good detailed results section +used clear tables to report frequencies +recruitment from geographically varied states in the US +limitations and future work discussed

			individuals with high self-control.	-no sample size calculation details reported -cross-sectional design- can't draw conclusions for longitudinal GSN app use behaviours. -demographic questions were not asked in both phases -other outcomes possibly related to self-control were not measured i.e. substance use, STDs -Recruitment from Amazon's Mechanical Turk- biased?
3. 'The meat market': production and regulation of masculinities on the Grindr grid in Newcastle-upon-Tyne, UK (Bonner-Thompson, 2017) **<u>England</u>**	30 gay men who live in Newcastle	Qualitative study, 30 semi structured interviews, Grounded theory approach	Explored how masculinities and sexualities are negotiated and produced through the Grindr grid to understand the lived experience of being a man who uses Grindr. • As a way to resist ageism on Grindr, some participants attempt to draw more attention to unclothed skin by showing flesh on their profile.	+Aims clearly reported +Author was self-reflective and engaged ethically in the study +Examples were given for each theme and supported by quotes +30 participants (saturation considered) and included four participant research diaries -Only gay men were included

				-Only men who use Grindr in Newcastle city -Only one analyst
4. Departing glances: a sociotechnical account of 'leaving' grindr (Brubaker, Ananny, & Crawford, 2016) **<u>USA</u>**	16 men who stopped using Grindr	Qualitative study Semi-structured interviews Grounded theory approach	Explored why users leave Grindr? • Participants talked about Grindr being a 'waste of time, where it was seen as a distraction that interfered with other activities such as office work and it failed to help participants meet the 'right kind of person'. • Participants frequently shared realizations about the amount of time they were spending on Grindr and how Grindr distracted them from other activities. • One participant described keeping Grindr open during study sessions at the library, habitually taking breaks when the latest message arrived. • The long durations and unpredictable nature of Grindr conversations led participants to say that Grindr	-Only included participants using Grindr in urban settings -Saturation not considered. -Ethics not mentioned +loads of quotes to supplement themes +clear recruitment pathway indicated. +examples clear for each theme +clearly defined aims.

			was ineffective. One participant was frustrated with the inability to establish 'meaning connections; with other users as participants generally felt that Grindr was a tool for facilitating casual sex.	
5. Managing uncertainty in mobile dating applications: Goals, concerns of use, and information seeking in Grindr (Corriero & Tong, 2016) **<u>USA</u>**	62 Grindr users in study 1 326 users in study 2	Qualitative study Thematic analysis approach	Explored the particular concerns associated with Grindr use • The most commonly reported concern revolved around the user's misrepresentation of personal or social information • Some users reported being somewhat apprehensive regarding physical harassment and stalking: 'I'm still hesitant of meeting guys for fear I'll get harmed'. • Others noted that recognition on the application could be a problem for those who were not 'out' in terms of their sexual identity. • Social stigma/judgment e.g., slut-shaming (being judged my other gay men simply by using Grindr	+clear research aims, and directional hypothesis reported +multiple recruitment strategies adopted +multiple coders +large sample size in study 2 +limitations and future work discussed in detail -snowball sampling strategy -ethics not considered -self-report nature of study increases social desirability bias -lack of ethnic diversity in the sample

6. Liquid love? Dating apps, sex, relationships and the digital transformation of intimacy (Hobbs, Owen, & Gerber, 2017) **<u>Australia</u>**	365 respondents with mixed gender and sexuality who used Tinder, OKCupid, Happn, Grindr	Mixed method, online survey & in-depth interviews	Explored the extent to which the networks of romantic possibility offered by dating apps may be eroding traditional ideas of monogamy, commitment and the notion of romantic love. Explored emerging patterns of usage and their potential social consequences. • Many individuals using the dating apps with the intention of finding a long-term partner rather than giving rise to a rampant hook-up culture. • However, some individuals are using the apps to engage in casual sexual encounters. One participant discussed the ways in which Tinder allowed her to get over a painful break-up not long after her child was born, and to work through feelings of rejection and feeling undesirable. • Some participants spoke about how Tinder and similar apps allowed them to quantify their desirability through the number of matches they received. • Some heterosexual male participants expressed	+mixed method, participants had diverse nationalities +large sample size (365) with varying sexualities. +detailed sample demographics provided +ethics were considered +clear aims stated +clear themes with quotes to illustrate themes +provides areas for future work +multiple dating apps was utilised. -only 6 participants went through in-depth interviews which mostly were straight -research questions not clearly stated for the survey -no mention of how themes arranged or how many analysts there were -validity of questionnaires unknown.

			frustration regarding a lack of potential 'matches.	-no response rate provided. -saturation of data not reported.
7. Gay men's construction and management of identity on Grindr **(Jaspal, 2017)** **<u>UK</u>**	18 British gay men	Qualitative study IPA, semi-structured interviews.	Explored gay men's construction and management of identity on Grindr • Participants widely acknowledged the sexualization of Grindr. Some interviewees felt frustrated at their inability to establish non-sexual friendships and relationships on Grindr. • Respondents expressed the view that Grindr needed to be 'used widely' and 'in moderation' given that it could reportedly 'lead to addiction' like alcohol or drugs might. • Some interviewees believed that they were spending an excessive amount of time on Grindr, which distracted them from other important daily activities- psychological consequences of Grindr- participants described grindr as 'taking over my life' and others felt 'like an idiot due to	+clear research aims stated +recruitment from multiple cities +clear themes identified with examples of participant quotes. +talks about how further research could be conducted -participants were mainly White British -ethical considerations not discussed -triangulation not considered.

			his activity on application'- clear sense of shame in relation to their use of Grindr. • Some users expressed concern about possible addiction to it. Individuals in this position actively strove to reduce their use of Grindr or to delete it altogether. Failure to meet this objective often resulted in feelings of decreased self-esteem, and crucially, self-efficacy given their perceived lack of self-control.	
8. Social consequences of Grindr use: extending the internet-enhanced self-disclosure hypothesis (Taylor, Hutson, & Alicea, 2017) **USA**	274 Grindr users	Quantitative study	Explored the social consequences of Grindr use for men. The internet-enhanced self-disclosure hypothesis was used to understand how Grindr may impact a user's well-being and to study the association between frequent Grindr use on loneliness. • Intimate self-disclosure happening on Grindr is associated with less loneliness among Grindr users because of the reduction in internalized homophobia associated with intimate self-disclosure on the application. They demonstrated that	+very clear aims and hypothesis to be tested +large sample size +previously validates scales utilised +multiple recruitment avenues +limitations and further research stated +results clear with confidence intervals reported -cross sectional design- can't indicate causal relationships

			frequent Grindr use can improve user's well-being. • Men looking for a hook-up on Grindr reported higher amounts of sexting than men looking for dates on the applications. • Frequency of Grindr use predicted greater amounts of intimate self-disclosure and sexting. • Individuals with greater feelings of internalized homophobia reported greater loneliness than individuals who feel minimal internalized stigma about their sexual identity. • Sexting on Grindr was not associated with internalized homophobia or loneliness.	-sample mainly Caucasian and educated- limiting generalizability -self-report bias?
9. 'You can't just walk down the street and meet someone': The intersection of social-sexual networking technology, stigma, and	29 men who used some form of mobile applications (e.g., Grindr), websites (Manhunt) or phone chat lines (Hardline)	Qualitative study, semi-structured interviews Inductive approach- relying on techniques borrowed from grounded theory	Explored the role of technology in the lives of gay and bisexual men in two small cities. • For gay men in small cities, social networking technologies can assist men in connecting with one another and also foster a sense of belonging.	+the study focuses on the experiences of men in smaller cities +clear aims stated +detailed participant demographics listed +multiple recruitment avenues utilised +provided inclusion criteria for the study

health among gay and bisexual men in the small city (Hughto, Pachankis, Eldaha, & Keene, 2017) **<u>USA</u>**			• Virtual technologies frequently highlighted the insular nature of small city gay communities, where men often knew one another. A participant described his frustration because it was like the same people every day. • Some participants perceived men he knew from the nonvirtual community to be safer in terms of risks for HIV and other STIs, than men he might meet online. • Several men enjoyed the comfort of accessing virtual communities where they could disclose their preference for sexual behaviours that their peers might consider taboo (e.g., condomless anal sex), while others enjoyed the security of being able to disclose other stigmatized traits such as their HIV- positive status. One participant described how Grindr has a poz community where are HIV-positive (can find each other).	+data saturation considered and was achieved. +diverse age range +mixture of gay and bisexual participants +multiple analysts-coded transcripts were compared to ensure consistency +clear themes with quotes present +study implications and potential further study ideas presented. -briefly considered ethics -only included men in two small cities- the findings might not be generalizable

10. There's an app for that: The uses and gratifications of online social networks for gay men. **(Gudelunas, 2012)** **<u>USA</u>**	141 gay men	Qualitative study 6 different focus groups & intercept interviews Thematic analysis	Explored the needs and motivations that bring gay men online to SNSs and how they manage multiple identities online and perceived benefits of SNSs. • Many respondents said that they belonged to at least one social network that primarily designed to facilitate sexual encounters. This was the single most mentioned primary use of all SNSs among gay men. • Grindr served a dual purpose of facilitating both friendships and sexual activities. • Gay men were more likely to reveal more about themselves on those SNSs that had a sexual focus compared to general audience sites where some users were likely to edit or conceal part of their identities- their ability to freely express their sexual identity and desires was seen by respondents as being a significant gratification.	+6 different focus groups differing from sizes to 8 and 16 participants- in total 141 men- large sample size +researcher also carried out one-on-one intercept interviews to clarify data gathered during focus groups. +participant demographics were varied- good description of sample characteristics +good reliability +clear themes with loads of quotes +discusses what further research could be undertaken -limited sexuality-only gay men -only one analyst in reading and coding transcripts for major themes -small geographical area -researchers own position not considered.

11. Love me Tinder: body image and psychosocial functioning among men and women (Strubel & Petrie, 2017) **<u>USA</u>**	913 women, 234 men 69 women tinder users versus 31 men tinder user Versus Non-users 844 women, 203 men	Quantitative study (tinder use, body satisfaction Q, appearance comparisons Q, internalization Q, body shame Q, self-esteem Q)	Explored the interaction of gender and Tinder use in relation to internalization, body image concerns, and self-esteem. • Across all measures, regardless of gender, tinder users and non-users differed significantly (the exception being self-esteem). • Tinder users reported less satisfaction with their facies and bodies, more shame about their bodies, greater likelihood of monitoring their appearance and viewing themselves from an external perspective, stronger internalization of societal appearance ideals, and more frequent comparisons about appearance than non-users. • Male tinder users had lower levels of self-esteem than men and women who avoided Tinder.	+large sample size +previously validated scales utilised. +clear aims and hypothesis stated. +limitations of research and future directions discussed. -briefly considered ethics -relatively few tinder users as a comparison -cross sectional methodology- limits conclusions to be drawn.
12. The personality, motivational, and need-based background of	**Study 1-** 414 Hungarian participants (246 female)	Quantitative study (Tinder use motivation scale, problematic tinder use scale, big five inventory, Rosenberg self-esteem	Explored the motivational, personality and basic psychological need-related background of problematic tinder use. • Women were more likely to use Tinder to find 'true love'	+large sample size +clear aims and hypothesis indicated. +ethical issues discussed.

problematic tinder use (Orosz, Benyo, Berkes, Nikoletti, et al., 2018) **<u>Hungary</u>**	**Study 2-** 346 participants (165 female) **Study 3-** 298 participants (177 female)	scale, basic psychological need satisfaction and need frustration scale) **Study 1-** the psychometric properties of a new Tinder Use Motivation Scale (TUMS) were tested. **Study2-** Tinder-use motivations and general personality traits were investigated as potential predictors of problematic tinder use. **Study 3-**general self-esteem, the need-related background, and tinder use motivations were examined as predictors of problematic tinder.	and to boost their self-esteem, whereas men were more likely to use Tinder to find casual sex. Older users were slightly more likely to use Tinder to find casual sex partners. • The strongest predictor of problematic tinder use was self-esteem enhancement motivation. Sex and love motivational factors had smaller and positive relationship with problematic tinder use. The big five personality traits did not have any significant direct effect on problematic tinder use • Instead of global self-esteem, relatedness need frustration was the strongest predictor of self-esteem enhancement tinder-use motivation, which in turn, was the strongest predictor of problematic tinder use.	+clear results with tables presented. -scales are self-reported- social desirability bias? -cross-sectional design-cannot infer causation
13. 'They're the modern-day gay bar': Exploring the uses and	143 gay or bi men who used social networking mobile app or website	Qualitative thematic analysis of open-ended survey data	Used a uses and gratification theory framework to explore the motivations behind men's utilization of MSM-based social networking platforms.	+included gay, bisexual and other MSM. +clear aims stated

gratifications of social networks for men who have sex with men (Miller, 2015) **<u>USA</u>**			• When men were asked how they felt after using MSM-specific social networks, many expressed negative emotions, indicating incongruence between what they want and what they receive. The majority of men (n=48) reported negative feelings, compared to primarily positive (n=31) or mixed (n-21) feelings about their media use. Descriptions of negative feelings included anxiousness, wasted time and life, sexual indignity (trashy, slutty, cheap), loneliness, adverse feelings about self (hopes, unattractive, let down), frustration (agitated or annoyed) and embarrassment or shame. Clearly, not all men in the sample felt that MSM-specific social networking left them in a good emotional and mental space. • Connectivity	+multiple recruitment strategy used. +large sample size +detailed participant characteristics in the results section. +clear themes with plenty of quotes to illustrate points. +geographically varied-both city wise as well as included other countries in the recruitment. +clinical implications and possible future study areas discussed. -Ethical issues not considered. -researchers impact on study not stated -unclear on how many analysts derived themes.
14. Geosocial networking app use among men	323 partnered men	Mixed Method-Quantitative and Qualitative- thematic	Explored patterns of GSN app use among MSM in serious relationships and examined positive and negative	+clear aims stated

who have sex with men in serious romantic relationships (Macapagal et al., 2016) **<u>USA</u>**		analysis for open-ended questions.	effects of app use on their relationship. • Participants most frequently described how the apps helped to fulfil sexual needs not met in their primary relationship. • Participants also described how the app improved the quality of their primary relationship i.e. openness to discussing desires, fantasies, and sexual interests; as well as feelings of closeness and trust with one's primary partner. • Apps also provided participants and their partners with outlets for social networking. Meeting friends through apps or reducing feelings of social isolation and gave a sense of connection to community. • Few participants described using the app for self-improvement i.e. psychological improvements such as less stress and improve self-esteem.	+detailed inclusion and exclusion criteria provided. +good detailed info on how they derived sample size +detailed survey for quantitative aspect of the study -large sample size +multiple coders- excellent intercoder reliability +detailed info for analysis for both methods +clear results + quotes to illustrate themes -ethics briefly considered -most men were white and over the age of 40 who were in non-monogamous relationships- results might not generalize wider as a result -the study only surveyed MSM in serious relationships currently using dating

			• Participants described drawback that app use takes focus away from their primary relationship- oneself or one's partner spending too much time using the apps and not investing enough time in their primary relationship. • App use led to conflict in relationship- tension, stress arising within the relationship.	apps and not representing those who previously used the apps. -survey was done on a phone or tablet rather than face-to-face- limited depth of information
15. Swiping me off my feet: explicating relationship initiation on Tinder (LeFebvre, 2018) **USA**	395 participants who use Tinder	Mixed method Quantitative- descriptive statistics Qualitative- thematic analysis for open ended questions	Explored how people engage in relationship initiation behaviours through Tinder and reasons for selecting and deleting tinder. • Some participants sought the app to seek interpersonal relationships- some felt lonely and wanted to see whether they could find companionship. • Half of the participants had deleted their accounts between 1 and 7 times. Some participants deleted the app because they were in a relationship and felt dishonest looking at it while committed to another. Some participants were unsuccessful (34.7%) or	+clear research aims presented +large sample size and diverse ethnic backgrounds and community types included in the study. +clear inclusion/exclusion criteria reported. +multiple analyst coding themes -relatively young age range (18-34) -recruitment from Amazon's Mechanical Turk- findings might not be generalizable

			unable to find potential partners, obtain matches or receive (positive) responses. Some participants spoke about not finding what they wanted i.e. relationship not a one-night stand.	-study implications brief -No future recommendations made -ethics not considered.
16. Breaking Boundaries: the uses and gratifications of Grindr **(Van De Wiele & Tom Tong, 2014)** **USA**	**Study 1:** 63 Grindr users **Study 2:** 525 Grindr users **Study 3**: 318 Grindr users	Mixed method Quantitative Qualitative- open ended questions- thematic analysis	Explored user motivations for using Grindr. Examined how different motives for use affect self-disclosure on Grindr. • Some participants spoke about how Grindr creates a sense of community. It always you to meet part of the gay community around you. • Another motive was social inclusion and appeared to center around approval-seeking and social acceptance. One participant noted how Grindr helped him fulfil that need for self-validation. • Men living in smaller urban clusters reported that the friendship/social network factor was significantly more important than those men who resided in larger urban areas.	+clear study aims and methodological information for both methods +detailed sample characteristics indicated. +multiple recruitment strategies utilised. +saturation of data discussed +two coders examined the data +large sample size in study 2 & 3 +22% sample came from 25 different countries +used previously validated questionnaires +limitations and future research ideas presented

			• Romantic relationship motives were most likely to be associated with self-disclosure behavior. Specifically, users who seek partners for dating relationships engage in more frequent self-disclosure on Grindr and are more honest in those self-disclosure as well.	-young age range (M=22) in study 1 -ethics briefly covered -snowball sampling design- not a truly random sample -given the subject, social desirability bias may exist
17. Love me Tinder: Untangling emerging adults' motivations for using the dating application Tinder (Sumter et al., 2017) **The Netherlands**	163 Tinder users	Quantitative study Exploratory factor analysis (use of tinder Q)	Explored the primary motivations of emerging adults to use Tinder. They also explored how do tinder motivations relate to the frequency of using Tinder and tinder offline outcomes. • Ease of communication was one motivation for use of tinder and reflected a psycho-social need i.e. feelings of being more at ease making connections online than offline. • Participants also identified the self-worth validation motivation for using tinder to receive positive feedback about one's appearance and feeling more confident and happier by receiving	+clear research aims stated. +clear tables presented to illustrate results +large sample size -younger age group -only Dutch nationals were used. -cross-sectional design and convenience sample- limits generalizability of findings -the motivations scale developed part of the study needs cross-validation

			validation in general (psycho-social need). • Self-worth validation was the only motivation that significantly related to a higher tinder use.	
18. Seeing and being seen: Co-situation and impression formation using Grindr, a location-aware gay dating app (Blackwell et al., 2014) **<u>USA</u>**	36 Grindr users	Qualitative study-semi-structured interviews Thematic analysis	Explored how do Grindr users experience proximity-based co-situation, and how do people manage identity and identifiability concerns on Grindr. • A clear theme was that participants viewed Grindr as a virtual place in which they were co-situated with other MSM, across multiple physical spaces and places. • For many in more rural and isolated areas, the creation of a virtual place was important because there may not be physical gay places. – Grindr is seen as a virtual place for connection.	+researchers draw on their own experiences in crafting out interview protocol +clear aims presented +multiple coders (user and non-user of Grindr) +considered their own positionality with regard to MSM and Grindr +quotes from participants to illustrate themes. -limitations and future work discussed -young age range -ethics not considered -no participant demographics were clearly outlined -only studied men in two places in USA

Appendix B–*Table 2. CASP Quality Criteria for Qualitative Studies*

√ = Criteria met X = Criteria not met ? = Can't tell	**Bonner - Thompson (2017)**	**Brubaker, Ananny, & Crawford, 2016)**	**Jaspal (2017)**	**Hughto, Pachankis, Eldaha, & Keene, (2017)**	**Miller, (2015)**	**Blackwell et al., (2014)**	**Gudelunas (2012)**
Was there a clear statement of the aims of the research?	√	√	√	√	√	√	√
Is a qualitative methodology appropriate?	√	√	√	√	√	√	√
Research design appropriate?	√	√	√	√	√	?	√
Recruitment strategy appropriate?	√	√	?	√	√	√	√
Data collected in a way that addressed the research issue?	√	√	√	√	√	√	√
Has the relationship between researcher and participants adequately considered?	√	X	X	?	X	√	X
Ethical issues considered?	√	X	X	√	X	X	√
Data analysis sufficiently rigorous?	√	√	√	√	√	√	?
Clear statement of findings?	?	√	√	√	√	√	√
How valuable is the research?	?	?	√	√	√	√	√

Appendix B1 –*Table 3. Quality Criteria for Mixed Methods Studies (GRAMMS, O'Cathain, Murphy, and Nicholl (2008)*

√ = Yes X = No ? = Can't tell	**Hobbs, Owen, & Gerber, (2017)**	**Macapagal et al., (2016)**	**LeFebvre, (2018)**	**Van De Wiele & Tom Tong, (2014)**	**Corriero & Tong, (2016)**
Describe the justification for using a mixed method approach to the research question	√	√	√	√	√
Describe the design in terms of the purpose, priority, and sequence of methods	?	√	√	√	√
Describe each method in terms of sampling, data collection and analysis	√	√	√	√	√
Describe where integration has occurred, how it has occurred, and who has participated in it	?	?	X	√	?
Describe any limitation of one method associated with the presence of the other method	X	√	X	√	√
Describe any insights gained from mixing or integrating methods	?	√	?	√	√

Appendix B2 –*Table 4. The NIH Quality Assessment Tool for Cross-Sectional Studies*

√ = Yes X = No ? = Other (CD-cannot determine, NR-not reported, NA-not applicable)	**Anderson, Holland, Koc & Haslam, (2018)**	**Beymer, Rossi, & Shu, (2016)**	**Taylor, Hutson, Alicea, (2017)**	**Strubel & Petrie, (2017)**	**Orosz, Benyo, Berkes, Nikoletti et al., (2018)**	**Sumter et al., (2017)**
1. Was the research question or objective in this paper clearly stated?	√	√	√	√	√	√
2. Was the study population clearly specified and defined?	√	√	√	√	√	√
3. Was the participation rate of eligible persons at least 50%?	√	√	√	√	√	√
4. Were all the subjects selected or recruited from the same or similar populations?	√	√	√	√	√	√
5. Was a sample size justification, power description, or variance and effect estimates provided?	X	X	X	X	X	X
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?	√	√	√	√	√	√
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?	√	√	√	√	√	√
8. For exposures that can vary in amount or level, did the study examine different levels of the	√	√	√	√	√	√

exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?						
9. Were the independent variables clearly defined, reliable, and implemented consistently across all study participants?	√	√	√	√	√	√
10. Was the exposure(s) assessed more than once over time?	NA	NA	NA	NA	NA	NA
11. Were the dependent variables clearly defined, reliable, and implemented consistently across all study participants?	√	√	√	√	√	√
12. Were the outcome assessors blinded to the exposure status of participants?	√	X	NR	X	√	NR
13. Was loss to follow-up after baseline 20% or less?	NA	?	NR	NR	NR	NR
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	√	√	√	√	√	√

Appendix C – *Demographic Information Measure*

Q12 Please select the sexual orientation best describes you

- ○ Gay (1)
- ○ Bisexual (2)
- ○ Other (3)

Q13 What is your age?

_____

Q14 Which of the following best describes your ethnicity

- ○ Asian (1)
- ○ White (2)
- ○ Black (3)
- ○ Latino (4)
- ○ Middle Eastern (5)
- ○ Mixed (6)
- ○ South Asian (7)
- ○ Other (8) _____

Q15 Please state your country of residence

- ○ UK (1)
- ○ Non UK (2)

Q16 What type of community have you been residing in the past year?

- ○ Rural (1)
- ○ Small town (2)
- ○ Midsize city (3)
- ○ Metropolitan city (4)

Q17 What is your highest completed education level?

- ○ GCSE (1)
- ○ A-levels (2)
- ○ College (3)
- ○ Bachelor's degree (4)
- ○ Masters degree (5)
- ○ Doctoral degree (6)

Q18 What is your occupation status?

- ○ Working (1)
- ○ Studying (2)
- ○ Unemployed (3)
- ○ Retired (4)
- ○ Unable to work (5)
- ○ Other (6)

Q19 How would you describe your current relationship status

- ○ Single (1)
- ○ Partnered (2)
- ○ Partnered (in an open relationship) (3)
- ○ Married (4)
- ○ Engaged (5)
- ○ Dating (6)

Appendix D – ***Grindr user behaviour Measure***

Q20 How long you been using Grindr?

- ○ Less than 6 months (1)
- ○ 6 months- 1 year (2)
- ○ 1-3 years (3)
- ○ More than 3 years (4)

Q21 On average, how many minutes or hours do you spend on Grindr each day?

- ○ Less than 1 hour per day (1)
- ○ 1-2 hours per day (2)
- ○ 2-3 hours per day (3)
- ○ More than 3 hours per day (4)

Q22 What part of the week are you most active on Grindr?

- ○ Weekdays (1)
- ○ Weekends (2)

Q23 What time of day you are most active on Grindr?

- ○ Early Morning (1)
- ○ Morning (2)
- ○ Afternoon (3)
- ○ Evening (4)
- ○ Late night (5)
- ○ Most of the day (6)

Q24 Do you use other mobile dating apps? If yes, which ones?

- ○ Yes (1) _____
- ○ No (2)

Appendix E – ***Grindr Motives Scale***

The next part of the questionnaire asks your reasons for using Grindr. Answer each of the questions by selecting one response alternative (ranging from "agree" to "disagree") that best describes you.

I use Grindr for:

	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)
Social Approval (i.e. To get self-validation or attention from others) (1)	○	○	○	○	○
Relationship Seeking (i.e. To find someone for a serious relationship) (2)	○	○	○	○	○
Sexual Experience (i.e. To find a one-night stand) (3)	○	○	○	○	○
Flirting/Social Skills (i.e. To improve my social skills or to increase my flirting experience) (4)	○	○	○	○	○
Travelling (i.e. To get tips from locals when travelling or to broaden my social network when on an abroad experience) (5)	○	○	○	○	○
Ex purposes (i.e. To get over my ex) (6)	○	○	○	○	○

Belongingness (i.e. Because everyone uses Grindr) (7)	○	○	○	○	○
Peer Pressure (i.e. As suggested by friends) (8)	○	○	○	○	○
Socializing (i.e. To make new friends) (9)	○	○	○	○	○
Sexual Orientation (i.e. To connect with other people with the same sexual orientation) (10)	○	○	○	○	○
Pass Time/Entertainment (i.e. To occupy my time or because it is entertaining) (11)	○	○	○	○	○
Distraction (i.e. To combat boredom when working or studying) (12)	○	○	○	○	○
Curiosity (i.e. To try it out or to see what the application is about) (13)	○	○	○	○	○

Appendix F – ***Problematic Grindr Use Scale***

Below you find 6 questions related to Grindr use. Answer each of the 6 questions by selecting one response alternative (ranging from "never" to "always") that best describes you.

During the last year, how often have you ...

	1-Never (1)	2- Rarely (2)	3- Sometimes (3)	4- Often (4)	5- Always (5)
thought about Grindr? (1)	○	○	○	○	○
spent much more time on Grindr than initially intended? (2)	○	○	○	○	○
become restless or troubled if you have been prohibited from Grindr use? (3)	○	○	○	○	○
deprioritized other hobbies and leisure activities because of your Grindr use? (4)	○	○	○	○	○
used Grindr in order to reduce feelings of guilt, anxiety, helplessness and depression? (5)	○	○	○	○	○
tried to cut down on Grindr use without success? (6)	○	○	○	○	○

Appendix G – ***The Warwick-Edinburgh Mental Well-being Scale***

Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over **the last 2 weeks.**

	None of the time (1)	Rarely (2)	Some of the time (3)	Often (4)	All of the time (5)
I've been feeling optimistic about the future (1)	○	○	○	○	○
I've been feeling useful (2)	○	○	○	○	○
I've been feeling relaxed (3)	○	○	○	○	○
I've been feeling interested in other people (4)	○	○	○	○	○
I've had energy to spare (5)	○	○	○	○	○
I've been dealing with problems well (6)	○	○	○	○	○
I've been thinking clearly (7)	○	○	○	○	○
I've been feeling good about myself (8)	○	○	○	○	○
I've been feeling close to other people (9)	○	○	○	○	○
I've been feeling	○	○	○	○	○

confident (10)					
I've been able to make up my own mind about things (11)	○	○	○	○	○
I've been feeling loved (12)	○	○	○	○	○
I've been interested in new things (13)	○	○	○	○	○
I've been feeling cheerful (14)	○	○	○	○	○

Appendix H – ***Kessler Psychological Distress Scale***

Please tick the answer that is correct for you. **In the past 4 weeks**, about how often did you feel ...

	All of the time (1)	Most of the time (2)	Some of the time (3)	A little of the time (4)	None of the time (5)
tired out for no good reason? (1)	○	○	○	○	○
nervous? (2)	○	○	○	○	○
so nervous that nothing could calm you down? (3)	○	○	○	○	○
hopeless? (4)	○	○	○	○	○
restless or fidgety? (5)	○	○	○	○	○
so restless you could not sit still? (6)	○	○	○	○	○
depressed? (7)	○	○	○	○	○
that everything was an effort? (8)	○	○	○	○	○
so sad that nothing could cheer you up? (9)	○	○	○	○	○
worthless? (10)	○	○	○	○	○

Appendix I – ***Neglect in Social Life Scale***

Please answer the following questions by using the below scale.

	Rarely (1)	Occasionally (2)	Frequently (3)	Often (4)	Always (5)	Does not apply (6)
How often do you prefer the excitement of the Grindr to intimacy with your partner? (1)	○	○	○	○	○	○
How often do you form new relationships with fellow online users? (2)	○	○	○	○	○	○
How often do others in your life complain to you about the amount of time you spend on Grindr? (3)	○	○	○	○	○	○
How often do you choose to spend more time on Grindr over going out with others? (4)	○	○	○	○	○	○
How often do you snap, yell, or act annoyed if someone bothers you while you are on Grindr? (5)	○	○	○	○	○	○

Appendix J – ***Daily Heterosexist Experience Questionnaire***

The following is a list of experiences that LGBT people sometimes have. Please read each one carefully, and then respond to the following question:

How much has this problem distressed or bothered you **during the past 12 months?**

	Did not happen/Not applicable to me (1)	NOT AT ALL (2)	A LITTLE BIT (3)	MODERATELY (4)	QUITE A BIT (5)	EXTREMELY (6)
Difficulty finding a partner because you are LGBT (1)	○	○	○	○	○	○
Difficulty finding LGBT friends (2)	○	○	○	○	○	○
Having very few people you can talk to about being LGBT (3)	○	○	○	○	○	○
Watching what you say and do around heterosexual people (4)	○	○	○	○	○	○
Hearing about LGBT people you know being treated unfairly (5)	○	○	○	○	○	○

Hearing about LGBT people you don't know being treated unfairly (6)	○	○	○	○	○	○
Hearing about hate crimes (e.g., vandalism, physical or sexual assault) that happened to LGBT people you don't know (7)	○	○	○	○	○	○
Being called names such as "fag" or "dyke" (8)	○	○	○	○	○	○
Hearing other people being called names such as "fag" or "dyke" (9)	○	○	○	○	○	○
Hearing someone make jokes about LGBT people (10)	○	○	○	○	○	○
Family members not accepting your partner as a part of the family (11)	○	○	○	○	○	○
Your family avoiding	○	○	○	○	○	○

talking about your LGBT identity (12)						
Feeling like you don't fit in with other LGBT people (13)	○	○	○	○	○	○
Pretending that you have an opposite-sex partner (14)	○	○	○	○	○	○
Pretending that you are heterosexual (15)	○	○	○	○	○	○
Hiding your relationship from other people (16)	○	○	○	○	○	○
People staring at you when you are out in public because you are LGBT (17)	○	○	○	○	○	○
Being rejected by your mother for being LGBT (18)	○	○	○	○	○	○
Being rejected by your father for being LGBT (19)	○	○	○	○	○	○
Being rejected by a sibling or siblings because you	○	○	○	○	○	○

are LGBT (20)						
Being verbally harassed by strangers because you are LGBT (21)	○	○	○	○	○	○
Being verbally harassed by people you know because you are LGBT (22)	○	○	○	○	○	○
Being treated unfairly in stores or restaurants because you are LGBT (23)	○	○	○	○	○	○
People laughing at you or making jokes at your expense because you are LGBT (24)	○	○	○	○	○	○
Hearing politicians say negative things about LGBT people (25)	○	○	○	○	○	○
Avoiding talking about your current or past	○	○	○	○	○	○

relationships when you are at work (26)						
Hiding part of your life from other people (27)	○	○	○	○	○	○
Being punched, hit, kicked, or beaten because you are LGBT (28)	○	○	○	○	○	○
Being assaulted with a weapon because you are LGBT (29)	○	○	○	○	○	○
Being raped or sexually assaulted because you are LGBT (30)	○	○	○	○	○	○
Having objects thrown at you because you are LGBT (31)	○	○	○	○	○	○
Being rejected by other relatives because you are LGBT (32)	○	○	○	○	○	○

Appendix K – ***First Page of the Survey***

Welcome

Participant Information Sheet

Do you use Grindr? If so, we want to hear from you...

Introduction

You are being invited to take part in a study conducted by Bahir Altan, a Trainee Clinical Psychologist at the University of Hertfordshire. This thesis is supervised by Dr Keith Sullivan, who is a researcher and lecturer at the University of Hertfordshire as well as Consultant Clinical Psychologist, Dr Stuart Gibson at Barts Health NHS Trust.

Title of Research

Location-based dating app use: exploring the psychosocial impact of Grindr use patterns among gay and bisexual men

What is the aim of the study?

I am looking for members of the general population to complete a series of online questionnaires as part of my thesis research. The research aims to explore the psychological and social impact of Grindr use patterns among gay and bisexual men. Therefore, some questions will ask about experiences related to anxiety, depression and quality of life. This information will help explore if Grindr overuse can impact on interpersonal relationships and psychological wellbeing within gay and bisexual community.

What does taking part involve?

It is completely up to you whether or not you decide to take part in this study. If you do agree to take part, you will be asked to give your consent to complete a number of online questionnaires as well as some information about yourself (age, ethnicity, Grindr use patterns, etc.). It should not take more than 15 minutes to complete all the questionnaires.

Can I take part in this study?

To take part, you need to be a user of Grindr dating app, be at least 18 years of age or older, and identify yourself as a gay or bisexual man. Your participation in this study is entirely voluntary. You are free to withdraw at any time during the study, without giving a reason and any data provided will not be used in the results. If you would like to support this research further, I would be grateful if you would forward to the link to your contacts that might meet the eligibility criteria.

What are the benefits of taking part?

Despite the increased popularity of dating apps, little is known about the impact that these apps have on user's mental health and psychosocial well-being. In this study, we hope to gain a better understanding of these issues and so we can increase awareness and potential support for those who may want it.

What are the possible disadvantages of taking part?

While the survey asks sensitive questions and may cause some discomfort, it has been widely used in research. If you are concerned about this, we recommend speaking with your GP or other health professional. Other sources of support can be found at:
Anxiety UK (www.anxietyuk.org.uk) phone 08444 775 774 (Mon-Fri, 09:30am – 5:30pm)
Mind info line: 0300 123 3393
Switchboard LGBT helpline 0300 330 0630 (10 am-10 pm every day)

Confidentiality

All information you provide in this study is completely anonymous and confidential and will be used only for research purposes. Responses cannot be attributed to any person. Your data will be stored in accordance with the Data Protection Act 1998, and only research team will have access to the data. The data will be stored on a password-protected computer.

What will happen to the results of this study?

The data collected during the study will be used as a part of a Doctoral Clinical Psychology project at the University of Hertfordshire. Research findings will be submitted as part of doctoral thesis. In addition, I will write up an article for publication in a journal, again no participant will be identifiable. Ethical approval for this study has been obtained from the University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority and the UH ethics protocol number is: LMS/PGR/UH/03266

Taking part in this study

If you wish to take part in this study, then please click next to proceed further. If you decided that you would not like to take part, then you may simply close your browser window.

Further information

If you would like further information about the study or any problem experienced with the online survey, please contact the researcher by email (ka16ack@herts.ac.uk).

Although we hope it is not the case, if you have any complaints or concerns about any aspect of the way you have been approached or treated during the course of this study, please write to the University's Secretary and Registrar at the following address: Secretary and Registrar University of Hertfordshire College Lane Hatfield Herts AL10 9AB

Thank you very much for reading this information and giving consideration to take part in this study.

Consent Form

Please read the following statements before you agree to take part in this study.

Q3 I confirm that I have read and understood the participant information sheet and I understand what my participation in this study involves.

- ○ Yes (1)
- ○ No (2)

Q8 I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. If I withdraw from the study, the data that I have submitted will also be withdrawn at my request.

- ○ Yes (1)
- ○ No (2)

Q9 I understand that the information that I will submit will be confidential and anonymous, used only for the purpose of this study.

- ○ Yes (1)
- ○ No (2)

Q10 I agree that research data gathered for the study may be published and if this occurs precautions will be taken to protect my anonymity.

- ○ Yes (1)
- ○ No (2)

Q11 I agree to take part in the above study

- ○ Yes (1)
- ○ No (2)

Q32 Where did you hear about the study?

- ○ Grindr (1)
- ○ Social networking websites (i.e. Facebook, twitter) (2)
- ○ LBGT forums (3)
- ○ Word of mouth (4)
- ○ Third sector organisations (i.e. London friend, metro, GMFA, antidote) (5)
- ○ Other (13) _____

Appendix L – ***Debriefing Page***

Debriefing Information

We sincerely thank you for taking the time to complete this survey.

Your input will be invaluable to the research and in furthering its aims.

I hope that completing this questionnaire has been a positive experience for you. Should it have brought any difficult feelings or concerns up for you, please make contact with any existing support networks, or speak with your GP. Other sources of support can be found at:

Anxiety UK (www.anxietyuk.org.uk) phone 08444 775 774 (Mon-Fri, 09:30am – 5:30pm)
Mind info line: 0300 123 3393
Switchboard LGBT helpline 0300 330 0630 (10 am-10 pm every day)

If you have any further questions or would like to be informed as to the outcome of this study, then please contact me on this email address: ka16ack@herts.ac.uk

Thank you again for participating in this study.

Appendix M – ***UH Ethics Approval Certificate***

University of Hertfordshire UH

HEALTH SCIENCE ENGINEERING & TECHNOLOGY ECDA

ETHICS APPROVAL NOTIFICATION

TO Kaan Altan

CC Dr Keith Sullivan

FROM Dr Simon Trainis, Health, Science, Engineering & Technology ECDA Chair

DATE 29/03/2018

Protocol number: LMS/PGR/UH/03266

Title of study: Problematic location-based dating app use: exploring the psychosocial impact

of Grindr use patterns among gay and bisexual men

Your application for ethics approval has been accepted and approved by the ECDA for your School and includes work undertaken for this study by the named additional workers below:

This approval is valid:
From: 29/03/2018
To: 01/09/2018
Additional workers: Dr Keith Sullivan

Please note:

If your research involves invasive procedures you are required to complete and submit an EC7 Protocol Monitoring Form, and your completed consent paperwork to this ECDA once your study is complete. You are also required to complete and submit an EC7 Protocol Monitoring Form if you are a member of staff. This form is available via the Ethics Approval StudyNet Site via the 'Application Forms' page
http://www.studynet1.herts.ac.uk/ptl/common/ethics.nsf/Teaching+Documents?Openview&count=9999&restricttocategory=Application+Forms

Any necessary permissions for the use of premises/location and accessing participants for your study must be obtained in writing prior to any data collection commencing. Failure to obtain adequate permissions may be considered a breach of this protocol.

Approval applies specifically to the research study/methodology and timings as detailed in your Form EC1A. Should you amend any aspect of your research, or wish to apply for an extension to your study, you will need your supervisor's approval (if you are a student) and must complete and submit form EC2. In cases where the amendments to the original study are deemed to be substantial, a new Form EC1A may need to be completed prior to the study being undertaken.

Should adverse circumstances arise during this study such as physical reaction/harm, mental/emotional harm, intrusion of privacy or breach of confidentiality this must be reported to the approving Committee immediately. Failure to report adverse circumstance/s would be considered misconduct.

Ensure you quote the UH protocol number and the name of the approving Committee on all paperwork, including recruitment advertisements/online requests, for this study.

Students must include this Approval Notification with their submission.

Appendix N – ***Presentation Slides for the BPS Conference***

MRP- presentation SG (page 1 of 10) — Edited

Search

Background

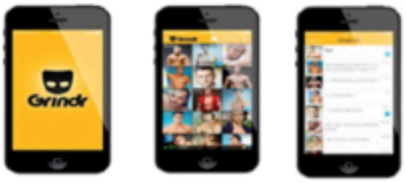
- A rise in demand for interpersonal, mass communication technology has boosted smartphone development (Pearson, 2015)
- 78% adults owned smartphones in the UK (Ofcom, 2018). People reported spending a total of one day a week online, more than the double the amount of time in 2011.
- In the UK, 27% of relationships start online (Mintel, 2015)
- Level of internet use has always been high among LGBT people – discreet arena, easy connections to the gay community, perceived sense of safety.
- *The need for safe space is probably the single most important factor that underlies the formation of digital queer spaces…* (Dasgupta, 2012, p.116).
- Since smartphones started to use geo-location-based apps, a new era of online dating has emerged, with Grindr being the leader of these applications in the gay community.

I do think it's [Grindr] taking over my life a bit… You're watching a film on Netflix and you go 'I'll just check my messages' and then you're on until like four in the morning, just chatting and chatting and trying to hook up… it feels like a massive waste of time sometimes, but I'm hooked.

When I go on holiday like somewhere new it's there's like a massive curiosity I have about what the guys are like, who is online. I've spent the whole day in my holiday room just looking for a hook-up, when I could have been like actually talking in a human way and like exploring the place and what have you'

(Jaspal, 2016, participants talking about their experiences of being addicted to Grindr)

Problematic versus non-problematic location-based dating app use: Exploring the psychosocial impact of Grindr app use patterns among gay and bisexual men



Kaan Altan (Trainee Clinical Psychologist, Cognitive-Behavioural Psychotherapist)

Supervised by:
Dr Keith Sullivan (University of Hertfordshire) & Dr Stuart Gibson (Berry Health NHS Trust)

Grindr is a 'modern-day gay bar'

- Accessible in 196 countries, with USA, UK & Brazil containing the most profiles (Miles, 2018).
- In 2015, London has the most active users.
- Over 27 millions users worldwide, with 3.6 million users checking into Grindr daily (Miles, 2018).
- Earliest research on gay dating apps and health has primarily centred on sexual health implications.
- With the rise of SNSs, recent research indicates their usage has increased considerably in recent years, which may lead to some social and psychological problems (Kuss & Griffiths, 2012; Xu & Tan, 2012).
- Although there are many positive views on the use of mobile dating apps; there are also anecdotes stressing the addictive side of using these apps.

Apps like Grindr are designed to make finding sex easy. And that can make them hard to stop using. Grindr, intentionally or not, also leverages a psychological concept called variable ratio reinforcement, in which rewards for clicking come at unpredictable intervals.

You may find a hook-up immediately, or you may be on your phone for an hour before you find one. Variable ratio reinforcement is one of the most effective ways to reinforce behaviour, and it makes stopping that behaviour extremely difficult (Turban, 2018)

Rationale & Aims

- A recent survey by technology website *Time Well Spent (TWS)* asked 200,000 iPhone users about different apps they use and whether those apps make them 'happy' or 'unhappy'.
- 77% of Grindr users said it left them feeling 'unhappy'.
- TWS reported a clear association between how long people spend using apps and unhappiness.
- On average, 'Unhappy' use is 2.4 X more than 'Happy' use.
- However, no research has explored the psychosocial impact of such usage patterns.

The Telegraph

My sociopathic curiosity and appetite for constant validation is fueled by Tinder's addictive function. I started consuming hundreds of profiles on boring journeys or in queues for a slow barista (Kent, 2015).

It was also a lot easier to spend all my time swiping right and left on my phone. The act of Tindering itself was addictive, the dating part was non-existent (Borkin, 2015).

The Six-Component Model (Griffiths, 2005)

Gambling, sex, exercise, videogame playing & Internet use

1. **Salience** (Grindr use dominates thinking and behaviour)
2. **Mood modification** (Grindr use modifies/improves mood)
3. **Tolerance** (increasing amount of Grindr use are required)
4. **Withdrawal** (occurrence of unpleasant feelings when Grindr use is discontinued)
5. **Conflict** (Grindr use compromises social relationships and other activities)
6. **Relapse** (tendency for reversion to earlier patterns of Grindr use after abstinence or control).

- Facilitating friendships
- Increased community-a sense of connection- positive alternative to the scene
- Lasting connections formed- partners, friends
- Improved quality of their primary relationship- discussing desires and fantasies- promoting transparency
- Less loneliness- reduction of internalised homophobia
- Safer space
- Virtual space for connection for people who live in rural and isolated areas
- Occurrence of intimate self-disclosure
- Enables to disclose other stigmatised traits i.e. HIV + via community on Grindr

SOCIAL IMPACT OF GRINDR USE

- Not investing enough time in the relationship- arguments + adverse challenges for people who are in relationships
- Inability to establish meaningful and fulfilling connections
- Only facilitating hook-ups- difficult establishing non-sexual friendships and relationships
- Social isolation
- Social stigma/judgment- 'slut shaming

Hypotheses

- Men who engage in problematic Grindr use have worse psychological health compared with non-problematic users.
- Men who use Grindr problematically may exhibit low levels of psychological wellbeing compared to non-problematic users.
- An individual's problematic Grindr use has a negative impact on his social network.
- Men who have increased experiences of heterosexist stress are more likely to engage in problematic Grindr use.

- Positive self-esteem – social validation regarding desirability
- Allowing to control romantic and sexual encounters
- Positive sexual health identity and sexual empowerment
- Intimate self-disclosure- positive wellbeing
- Enabling a sense of self-efficacy

PSYCHOLOGICAL IMPACT OF GRINDR USE

- Mental health impacts- depression & anxiety
- Addiction or compulsion- spending significant time on them- sense of 'shame'- low self-control
- Experience of harmful stigmatisation, marginalisation, exclusion
- Racism or race based aggression, ageism, anti-effeminate messaging-men privileging masculinity
- Negative sexual health identity formation- sexual indignity
- Less satisfaction with body image
- Rejection- lack of potential matches or others not being interested in you
- Physical harassment and stalking
- Toxic online dis-inhibition
- Self- or other objectification
- LSE
- Disjointedness between their self-presentation online and offline- a threat to psychological coherence

Main aims

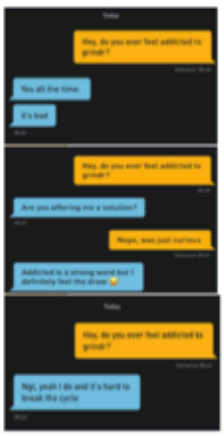
- To determine the characteristics of participants who use the Grindr dating app.
- To investigate the relationships amongst problematic Grindr use and mental health symptoms among gay or bisexual men.
- To examine the associations, if any, between problematic use of Grindr and psychological wellbeing.
- To investigate the impact of problematic Grindr use on one's social support network.

Secondary aims

- To identify internal and external motives for using Grindr.
- To investigate which motives are related to problematic Grindr usage?
- To compare men living in rural/suburban areas and those who live in metropolitan cities in terms of their motivations for using Grindr.
- To identify any associations between levels of minority stress and problematic use of Grindr.

Instruments

- Demographic information (*e.g., age, ethnicity, education, current relationship status*)
- Questions on Grindr use patterns (*e.g., duration of participant's Grindr usage, time spent on Grindr each day etc.)*
- Tinder Motives Scale (*e.g., I use Grindr for social approval, relationship seeking, sexual experience etc.*)
- Problematic Tinder Use Scale (*e.g., During last year how often have you… thought about Grindr?, tried to cut down on Grindr use without success?*)



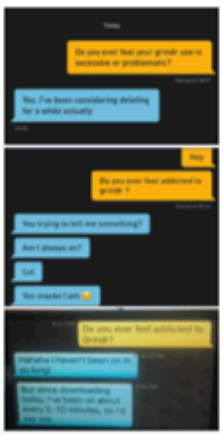


Figure 5 Final sample sizes in study sub-sections

Gay	719	87
Bisexual	94	11.3
Other	18	2.2
Ethnicity		
Asian	37	4.4
White	641	77
Black	20	2.4
Latino	23	2.8
Middle Eastern	14	1.7
Mixed	38	4.6
South Asian	46	5.5
Other	12	1.4
Type of community		
Rural	44	5.3
Small town	103	12.3
Midsize city	121	14.5
Metropolitan city	563	67.9
Education level		
GCSE	40	4.8
A-levels	100	120
College	113	136
Bachelor's degree	343	412
Master's degree	200	24
Doctoral degree	36	4.3
Current relationship status		
Single	567	68.1
Partnered	61	7.3
Partnered (in an open relationship)	124	14.9
Married	53	6.4
Engaged	2	.2

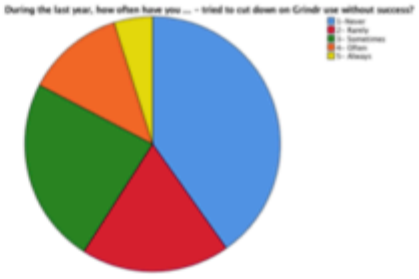
Use of other mobile dating apps		
Yes	514	61.3
No	313	38.7
How many other dating apps		
One	279	33.5
Two	132	15.9
Three	55	6.6
Four	26	3.1
Five	12	1.4
Six	5	.6
Use of Tinder	201	24.2
Use of Scruff	229	27.5
Use of Chappy	84	10.1

Instruments

- The Warwick-Edinburgh Mental Well-Being Scale (*e.g., I've been feeling useful, I've been feeling cheerful*)
- Kessler Psychological Distress Scale (*e.g., In the past 4 weeks, how often did you feel nervous? Depressed?*)
- Internet Addiction Test (*e.g., How often do you choose to spend more time on Grindr over going out with others?*)
- Daily Heterosexist Experiences Questionnaire (*e.g., Difficulty finding a partner because you are LGBT*).

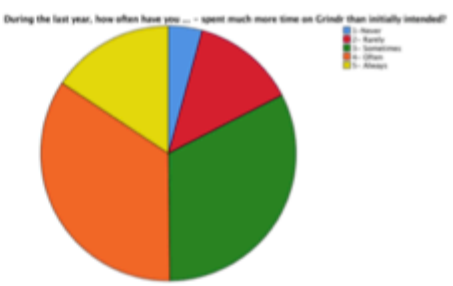
App use patterns	Frequency	Percentage %
Length of Grindr usage		
Less than 6 months	65	7.8
6 months-1 year	71	8.5
1-3 years	193	23.3
More than 3 years	493	60
Time spent on Grindr each day		
Less than 1 hour per day	302	363
1-2 hours per day	331	398
2-3 hours per day	110	132
More than 3 hours per day	88	106
Part of the week most active on Grindr		
Weekdays	471	566
Weekends	359	431
Time of the day most active on Grindr		
Early Morning	31	3.7
Morning	46	5.5
Afternoon	98	118
Evening	326	392
Late night	107	129
Most of the day	224	269

Socializing		
Agree	207	24.9
Somewhat agree	341	41
Neither agree nor disagree	105	12.6
Somewhat disagree	51	6.1
Disagree	122	15.3
Sexual orientation		
Agree	340	409
Somewhat agree	262	315
Neither agree nor disagree	76	9.1
Somewhat disagree	38	4.6
Disagree	107	129
Past time/Entertainment		
Agree	326	392
Somewhat agree	343	412
Neither agree nor disagree	80	9.6
Somewhat disagree	28	3.4
Disagree	51	6.1
Distraction		
Agree	314	377
Somewhat agree	319	383
Neither agree nor disagree	60	7.2
Somewhat disagree	37	4.4
Disagree	97	117

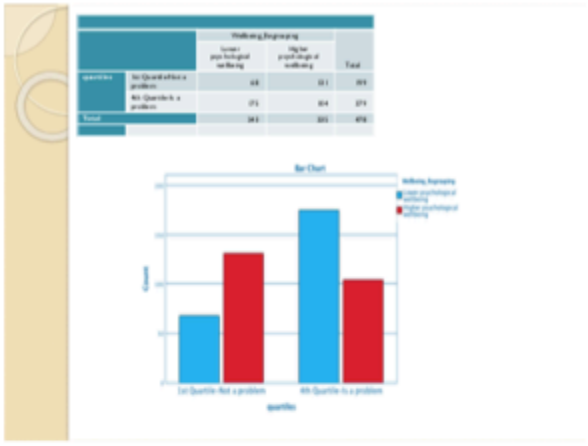


17% often/always tried to cut down the amount of Grindr use but failed

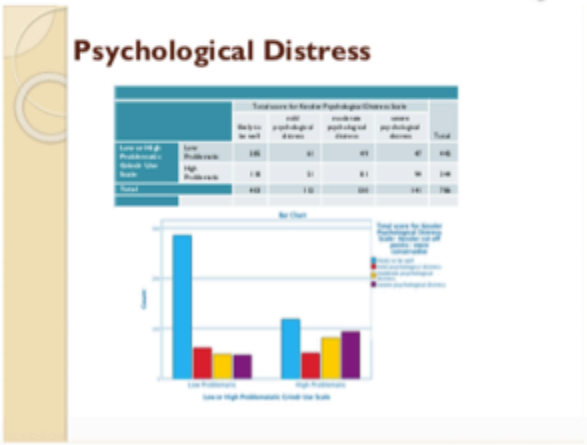
Grindr Motives	Frequency	Percent %
Social approval		
Agree	133	160
Somewhat agree	215	258
Neither agree nor disagree	111	133
Somewhat disagree	92	111
Disagree	276	332
Relationship seeking		
Agree	160	192
Somewhat agree	227	273
Neither agree nor disagree	89	107
Somewhat disagree	81	9.7
Disagree	270	325
Sexual experience		
Agree	490	589
Somewhat agree	206	248
Neither agree nor disagree	56	6.7
Somewhat disagree	28	3.4
Disagree	44	5.3



51% of men often/always spent more time on Grindr than initially intended

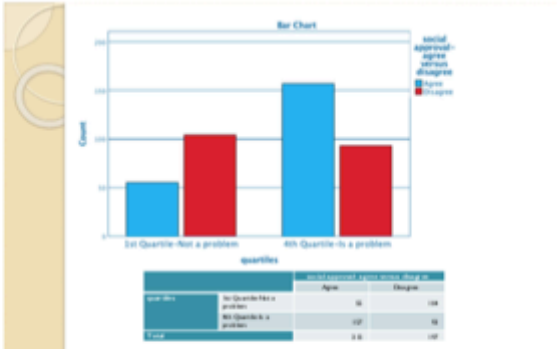


Psychological Distress

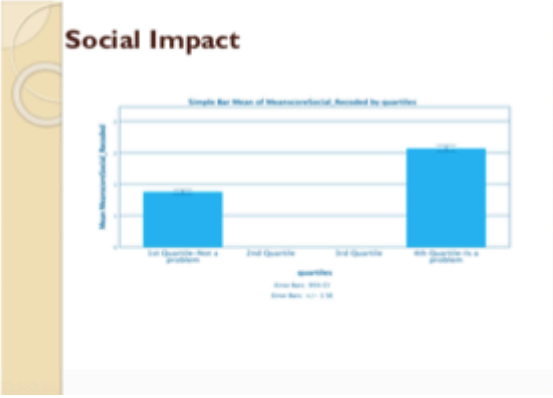


Psychological Wellbeing

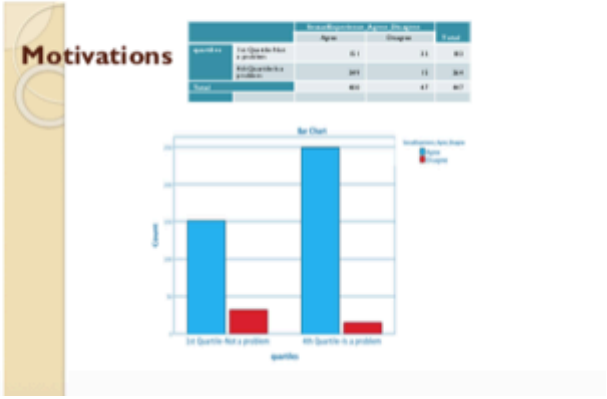
Minority stress



Social Impact



Motivations



Clinical Implications

- Like alcohol, Grindr can be fun, harmless and pleasant in healthy doses -- but it can create various negative outcomes with problematic or 'addictive' use
- From a mental health perspective, problematic Grindr use is associated with interpersonal relationship problems and reduced psychological well-being
- For those who want monogamous romantic relationships, the convenience and choice for sexual encounters offered by apps like Grindr do not appear to help achieve this goal
- More research is needed to establish additional personal and social health implications

Strengths & Limitations

- Large sample size (*n*=833), diverse age range
- Across United Kingdom- not just London
- Scales used were psychometrically reliable and valid
- Multiple recruitment methods to ensure representation

HOWEVER

- Only Grindr users were canvassed - results might not be generalizable to users of other dating apps
- Cross-sectional design -- causal relationships can't be inferred by results
- Snowball sampling strategy- a 'real' random sample?
- Self-report nature increases social-desirability bias
- Highly educated sample - limiting generalisability

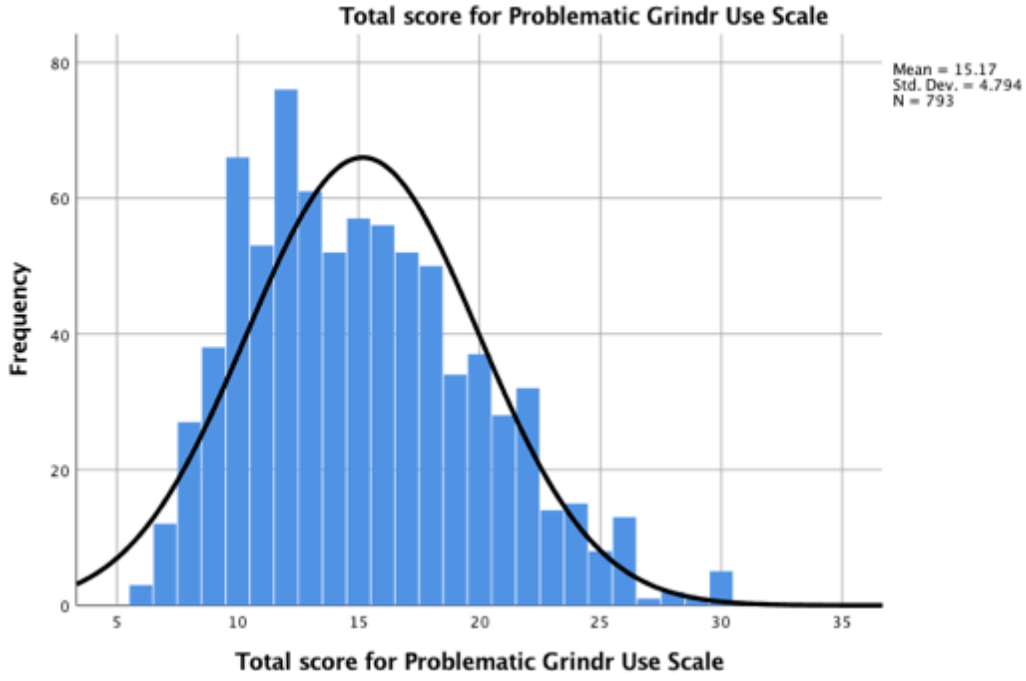
Summary

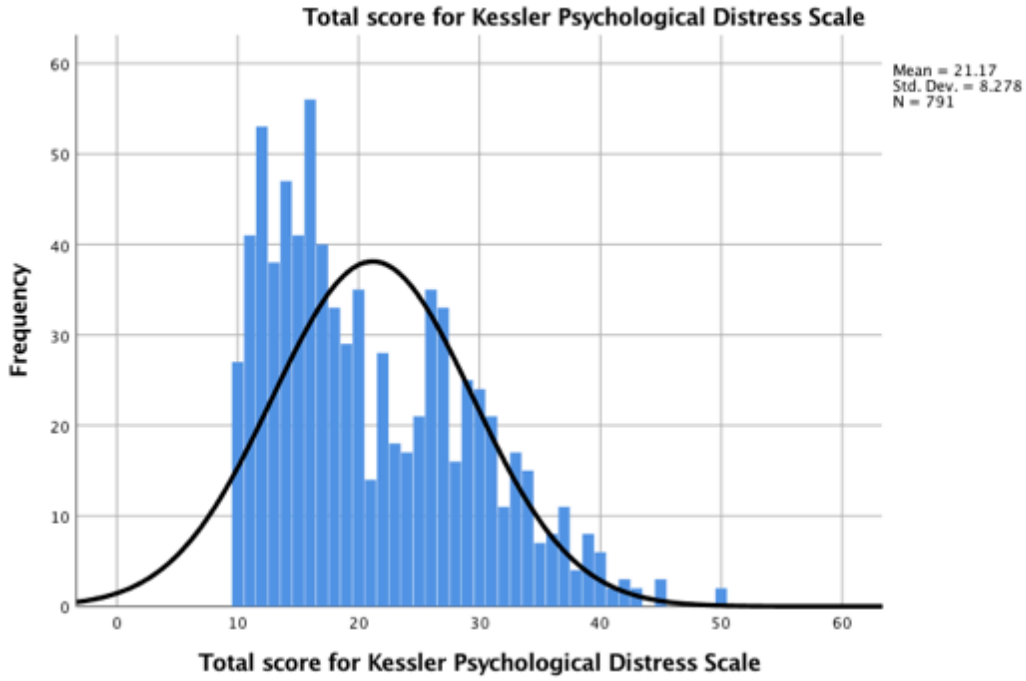
- Men who engage in problematic Grindr use have worse psychological health compared with non-problematic users ✓
- Men who use Grindr problematically may exhibit low levels of psychological wellbeing compared to non-problematic users ✓
- An individual's problematic Grindr use has a negative impact on his social network ✓
- Men who report heterosexist stress are more likely to engage in problematic Grindr use ✓

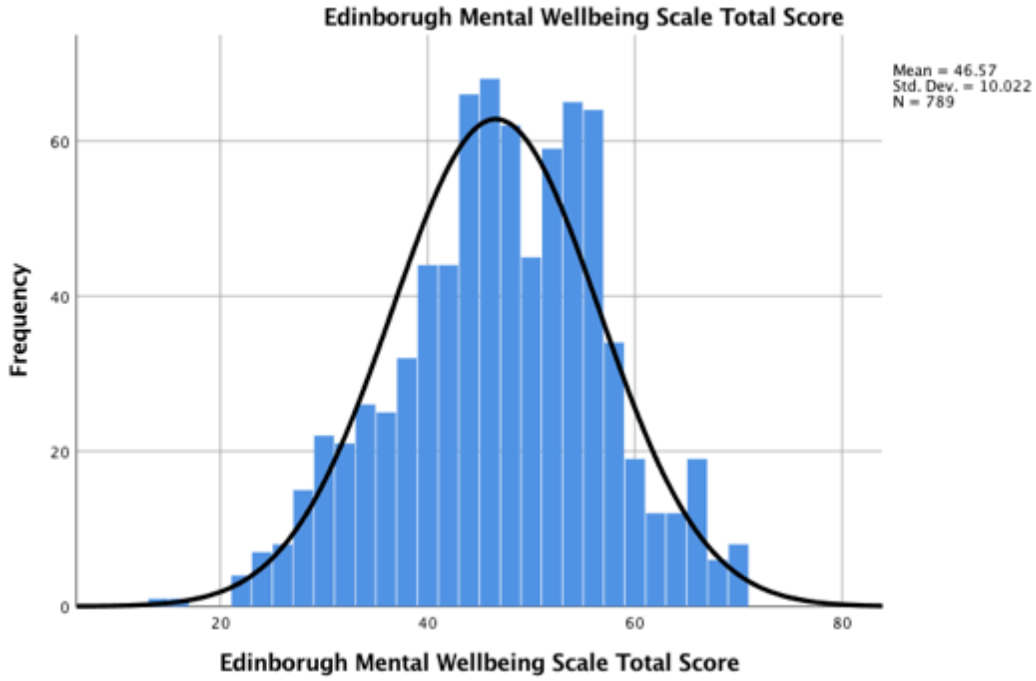
Recommendations

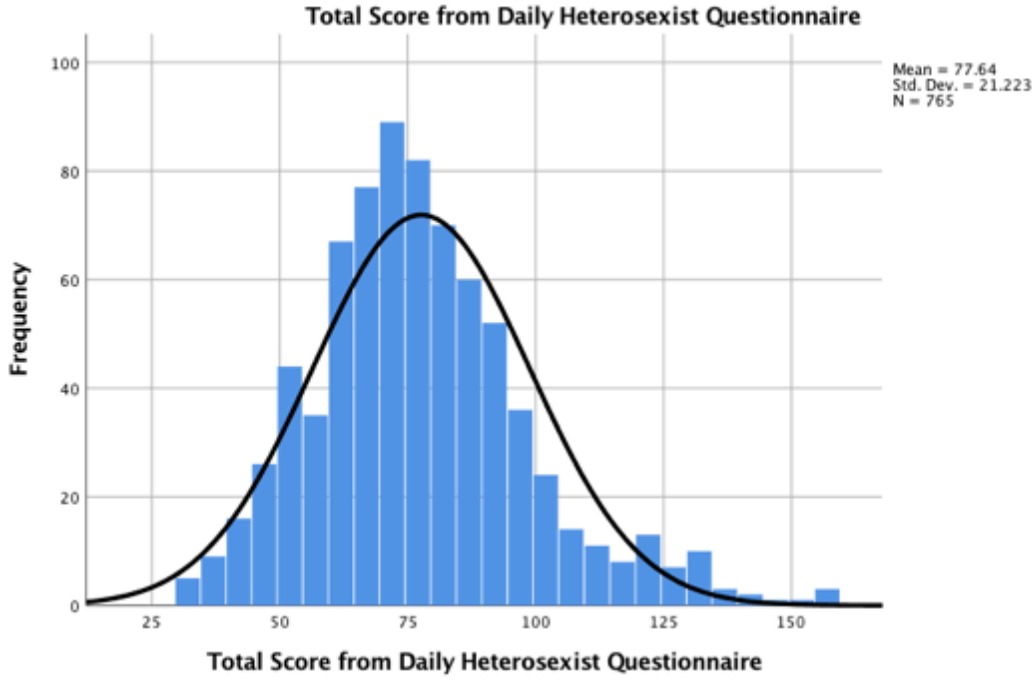
- Grindr could start targeting those who use the app excessively and provide strategies to limit time spent on their app.
- They could also start advertising resources to address such personal and social problems associated with problematic use

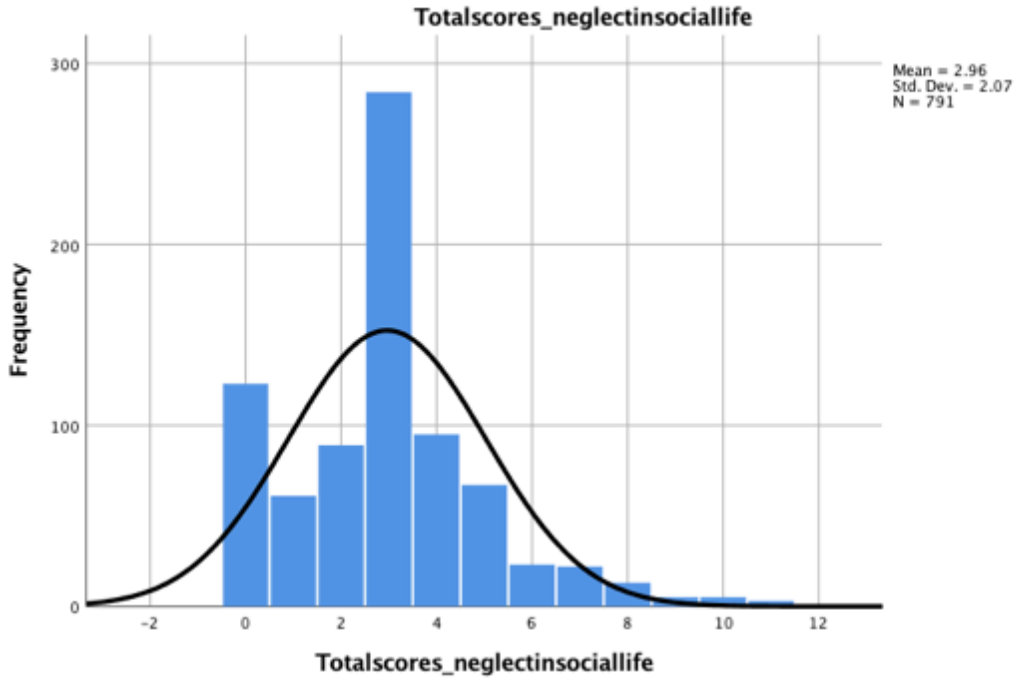
Appendix O – ***Visual Inspection of Histograms for Test of Normal Distribution***






Edinborough Mental Wellbeing Scale Total Score
Mean = 46.57
Std. Dev. = 10.022
N = 789
Frequency
0
20
40
60
20
40
60
80
Edinborough Mental Wellbeing Scale Total Score


Total Score from Daily Heterosexist Questionnaire
Mean = 77.64
Std. Dev. = 21.223
N = 765
Frequency
0
20
40
60
80
100
25
50
75
100
125
150
Total Score from Daily Heterosexist Questionnaire


Totalscores_neglectinsociallife
Mean = 2.96
Std. Dev. = 2.07
N = 791
Frequency
300
200
100
0
-2
0
2
4
6
8
10
12
Totalscores_neglectinsociallife

Appendix P – ***Non-parametric results for Neglect in Social Life Mean Scores for the Two Extremes of the PGUS***

	PGUS	N	Mean Rank	Sum of Ranks
Mean score neglect in social life	Non-problematic	199	148.31	29514.00
	Problematic	244	282.10	68832.00
	Total	443		

Appendix Q – ***Non-parametric results for Neglect in Social Life Mean Scores for the Low and High PGUS***

	PGUS	N	Mean Rank	Sum of Ranks
Mean score neglect in social life	Low Problematic	442	312.98	138339.00
	High Problematic	343	496.11	170166.00
	Total	785		

Appendix R – ***Non-parametric results for Minority Stress Mean Scores for the Extremes of the PGUS***

	PGUS	N	Mean Rank	Sum of Ranks
Mean score Minority Stress	Non-problematic	188	184.82	34745.50
	Problematic	235	233.75	54930.50
	Total	423		

Appendix S – ***Non-parametric results for Minority Stress Mean Scores by Low and High Problematic Grindr Use***

	PGUS	N	Mean Rank	Sum of Ranks
Mean score Minority Stress	Low Problematic	425	346.58	147295.50
	High Problematic	336	424.54	142645.50
	Total	761		

Appendix T – ***Glossary of Terms and Definitions***

BB: a term used to refer to having unprotected anal sex

Faggots: a pejorative term used to refer to a gay male

Flamers: effeminate gay male

Neg: HIV-Negative

NSA: an acronym meaning “No Strings Attached”

Poz: a slang word that means HIV-positive

Redneck: a working-class white person