An Empirical Investigation of Responsible Gambling Tool Use, Responsible Gambling Tool Implementation, and the Early Signs of Online Problem Gambling

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Extended abstract

As technological advances and the availability of the internet increases, online gambling has also increased in frequency. Unavoidably, this increase in online gambling may influence the development of gambling problems because online gambling has propensities and features that may help this development. Nonetheless, online gambling has permitted a shift in research possibilities because it allows the carrying out of empirical research based on actual gambling behaviour. Due to the increase in gambling, this type of research is even more important as it helps to contribute to the reduction of gambling related harm. A collaborative approach with different stakeholders such as regulators, operators, reformed problem gamblers, and researchers, can help reduce gambling-related harm through responsible gambling (RG) approaches and initiatives. This thesis aims to assist different stakeholders such as gambling operators, gambling regulators, and gambling scholars because the findings from each of the studies in this thesis can be applied by stakeholders to their day-to-day practices. After a review on the psychology of gambling and a review of corporate social responsibility in relation to the gambling industry, five empirical studies are outlined.

In the first study, 50 leading online gambling operators with a "dot-com" suffix were evaluated in accordance with the RG information and RG tools that they offered. The communication with customer service was also evaluated to observe what interaction and information is provided to gamblers that may need help. The main finding in this study showed that most online gambling operators showed consistent RG information and that 68% of these operators showed information that gamblers needed to be 18 years or older to register an account. Commercial communication upon registration of the gambling account was sent by all gambling operators, but only almost half (47%) of this communication contained information

about RG. Inconsistencies were visible in the RG tools offered and also in the communication with customer service representatives.

The second (replication) study three years later with 50 leading gambling operators took a similar approach to assess whether regulatory pressures contributed to significant changes in the RG practices conducted by different online gambling operators. The results in this study did show that there was an improvement in the overall RG practices performed by the gambling operators. This was visible in the dedicated RG online pages, and the RG tool availability. Communication with customer service representatives had also improved. Although there was an evident increase in the RG practices of these online gambling operators, there were still some areas that needed improvement, such as the links to gambling blocking software, RG information in the first communication email, and customer service communication. There was an increase in the information in the RG dedicated page when it comes to mentioning gambling help organisations (from 84% in the 2017 study compared to 92% in the 2021 study), the presence of a self-assessment test (from 64% in the 2017 study compared to 84% in the 2021 study), information about RG tools (84% compared to 92%) and no promotional material present on the page (from 12% to 92%). Nonetheless, the presence of gambling blocking software decreased from the first study compared to the second study (60% to 54%). Age checks increased when comparing the data from 2017 to 2021 study (68% to 88%) and positive increases were also noted for the presence of RG tools; limit setting availability (90% to 98%), cooling off period availability (72% to 96%) and self-exclusion (86% to 96%). There were better interactions with customer service representative, such as communication about limits (from 60% to 86%), communication regarding RG breaks (44% to 78%), and communication for problem gamblers (50% to 62%), albeit the need to improve this communication as it may come at a moment where the customer needs most assistance.

As technological innovation has led to more RG tools which allow gamblers to limit their gambling, or take breaks from gambling, the third study was an exploratory study that examined the preferences to voluntary RG tools in relation to age and gender. The authors were given access to an anonymized sample of 18,635 gamblers registered with an online gambling operator (16.55% of the total population who had registered a new gambling account at the time of data collection). This study also examined at which point from the account creation date do gamblers prefer to set up voluntary RG tools. Results showed that deposit limit-setting was the most preferred RG tools across all groups examined (n = 16,344; 87.71%). Moreover, deposit limit was a more prominent choice among older age bands: 46-55 years (n=1721; 93%) and 56-65 years (n=648; 93.5%). There were significant differences noted when looking at age groups and the days from the creation of the online gambling account and the activation of the voluntary RG tool. Such examples include gamblers in the age group of 18-25 years were more likely to activate a voluntary RG tool in the first 91-120 days when compared to other age groups. Gamblers aged between 26-45 years of age were more likely to activate a voluntary RG tool during the first 1-7 days of their account activity.

With the increase in online gambling, the possibilities for new ways of researching gambling has been made possible through the use of online behavioural tracking. A number of studies have used voluntary self-exclusion (VSE) as a proxy measure for online problem gambling. Although some scholars have argued that VSE is not an ideal proxy measure for problem gambling, there have not been many studies looking into this. Consequently, the fourth study examined the reliability of using VSE as a proxy measure for online problem gambling by using real gambling data of gamblers who have used VSE (n = 7732), but also closed their gambling account due to self-reported gambling addiction (n =141). Approximately one-fifth of the gamblers (19.15%) that had chosen the six-month VSE option had less than one day activity on their online gambling account. Furthermore, half of the gamblers (50.39%) had less than a

week's activity prior to using a six-month VSE. Therefore, gamblers who use VSE are too diverse to be treated as a homogenous group and further shows that VSE is not a reliable proxy measure for problem gambling.

In the final study, the nine DSM-5 criteria for gambling disorder were explored to understand how these can be operationalised as actual markers of harm. This has been done by using account-based gambling data, and the data points are explained to ensure the possibility for online gambling operators to use these findings to minimise gambling related harm. Access to an anonymised sample of 982 gamblers registered with an online gambling operator was provided. This study was the first to examine the application of the DSM-5 criteria for gambling disorder to actual online gambling data. The data points used varied from customer service contacts, number of active days, deposit amounts, and frequency of requesting bonuses through customer service amongst others. For each behavioural measure, the data was extracted from the sample of customers and for each behavioural measure, a descriptive statistical analysis was provided. Each of the behavioural measure, z-score normalisation was applied to allow comparability, and a two-step cluster analysis was done so to present natural grouping of the dataset. Four clusters emerged. The first cluster had the majority of the gamblers (n = 646; 65.78%) and were termed as the non-problem gamblers. In this group, the gamblers scored negatively on all the criteria. The second cluster contained few customers (n = 3; 0.31%) and this group of customers showed predominantly higher values in the criteria that covered gambling expenditure and were termed as financially vulnerable gamblers The third group of customers were termed as emotionally vulnerable gamblers (n = 9; 0.92%) as this group showed more markers of harm that were more emotional rather than financial. The last cluster contained a group of customers were named as at-risk gamblers, and these accounted for almost 30% of the whole sample (n = 324; 32.99%). This group of customers had specific criteria which were higher mean values when compared to the rest of the group.

These five empirical studies that form this thesis can be applied to reduce gambling-related harm. The initial two studies that looked into the consumer protection availability on the 50 most advertised online gambling companies give an insight to which RG areas policymakers and regulators should look into and examine. The study looking at the preferences to voluntary RG tools in relation to age and gender, can provide insight to operators for which RG tools may create more adherence and favourability for consumers to use. The study that focused on the reliability of VSE as a proxy measure for problem gambling gives an insight using online behavioural tracking to gambling operators on determining what can be used as a proxy measure for online problem gambling. The last study which looked into operationalising the DSM-5 criteria for gambling disorder, can be used by online gambling operators and regulators in determining the markers of harm that can be used to assist gamblers at an earlier stage to minimise gambling related harm. Therefore, gambling operators can benefit from the findings in this thesis because the findings can be applied for policy and procedure improvement for online gambling operators. Gambling regulators may also utilise these findings to examine and determine which specific aspects can be used to reduce gambling-related harm.

The findings from each study can assist online gambling operators to apply the findings in productive manner to reduce gambling-related harm. Through the studies that looked at the availability of consumer protection amongst the top 50 online gambling operators, these exploratory studies provide insight not only in what is available for the consumers, but also which RG areas need more emphasis and improvement. In the empirical study looking at the preferred RG tool activated when looking at gender and age groups, this information can assist online gambling operators to promote a personalised approach to the preferred RG tool options for these demographic groups, ensuring not only better uptake of RG tools, but also more adherence to these tools. The study which looked at whether or not VSE is a good proxy measure for problem gambling challenges previous research and approaches that used this

proxy measure but may give better possibilities to helping operators and regulators in approaching harm minimisation possibilities. The final study looking at operationalising the DSM5 criteria for gambling disorder, can assist online gambling operators to apply scientific concepts to real gambling data, and minimise gambling harm through the use of online behavioural markers of harm.

All the studies may assist gambling operators to improve their policies and procedures in the field of RG. The application of the findings from these studies, such as optimising the markers of harm, the needed improvement in customer service communication, the information of RG on the online gambling website, and analysing data from gambling disorder closures, amongst others can make tangible changes that directly decrease gambling-related harm. Even so, the same application of these findings can be utilised by gambling regulators. Only by encouraging a collaboration with the different gambling stakeholders, such as policymakers, researchers, and gambling operators, is it possible to achieve initiatives that ensure the best possible consumer protection.

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Declaration

This thesis compromises the candidate's own original work. All research conducted has been done by the candidate, and any research publications that have occurred were a result of the candidate's own work.

Publications arising from the thesis

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Chapter 1: The Psychology of Gambling

1.1 Introduction

Gambling is an activity which is popular across different cultures (Calado & Griffiths, 2016). Most individuals gamble frequently (Wardle et al., 2012), whereas some individuals gamble at some point in their lives (Meyer et al., 2009). Despite its popularity, gambling is a public health issue due to the social and health-related harms that impact not the only individuals who gamble, but also their relatives and the wider community (Thomas & Thomas, 2015). Gambling availability has increased significantly due to technological advances especially due to the emergence of the internet (Potenza et al., 2011). Inevitably, due to the accessibility of the internet and innovative technologies, gambling has increased in frequency (Gainsbury & Blaszczynski, 2017; Griffiths & Wood, 2000; Kuss & Griffiths, 2012). Internet gambling differs from land-based gambling due to the different mode of accessibility. Online gambling uptake is influenced through different factors such as accessibility and availability, making this form of gambling convenient and available all the time and every day (Yu et al., 2013). Moreover, online gambling has different features and propensities when compared to offline gambling which may influence the development of gambling problems (Blaszczynski & Nower, 2002; Delfabbro, 2004; Korn et al., 2003; Shaffer & Korn, 2002). For most, gambling can be a form of entertainment, whereas for a small minority, this activity can cause problems. Problematic gambling has been described through different terminologies, such as 'addictive', 'pathological', and 'impulsive' amongst other terminologies (Griffiths & Delfabbro, 2001). According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), gambling disorder is a behavioural addiction which involves repeated problem gambling behaviour that meets the diagnostic criteria (American Psychiatric Association [APA], 2013). When referring to problem gamblers, these individuals may not be showing all

the core components of addiction, such as tolerance, mood modification, and relapse among others (Griffiths, 2005a). As asserted by Griffiths (2016), all gambling addicts (disordered gamblers) are problem gamblers, not all problem gamblers are gambling addicts (disordered gamblers).

A beneficial aspect of online gambling growth is the shift in the research possibilities where due to online gambling, empirical research can be conducted based on actual gambling behaviour rather than self-reported behaviour (Shaffer et al., 2010). This means the research has some advantages over self-reporting in that gamblers may have difficulties reporting the details as there are multiple factors involved, such as odds, losses, and patterns of wins (Shaffer & Martin, 2011). Research in this area is needed as gambling-related harms have expanded due to the increase in gambling opportunities, both land-based and online (Deans et al., 2016a). Furthermore, understanding the relationship between gambling accessibility and potential problem gambling is needed, not only to minimise harm, but also for policymaking and consumer protection (Hing & Nisbet, 2010).

Despite gambling being a harmless and enjoyable activity for most gamblers, it can create severe harmful consequences for some individuals. These individuals overly engage financially and may struggle to limit the time that they spend gambling (Petry et al., 2005). These consequences can include bankruptcy, breakdown of familial relationships, and criminal behaviour (Shaffer & Martin, 2011). With online gambling, there are additional risks on top of the potential vulnerabilities of the gamblers. These include situational and structural characteristics such as anonymity and accessibility, which may increase the chance of an individual developing a gambling disorder (McCormack & Griffiths, 2013). With increasing use and acceptance of the internet, individuals have become more at ease engaging in activities

online, and this may result in individuals feeling in more control than they actually are (Cantinotti et al., 2004), which may also impose further risk.

1.2 Gambling disorder as a behavioural addiction

Initially, addiction was used as a terminology for substance-based dependence, but this has expanded to behaviours such as addictions to sex, shopping, internet, and gambling (Griffiths, 1997). Pathological gambling was considered as an impulse control disorder in the DSM-III, DSM-III-R, and DSM-IV (APA, 1980, 1987, 1994). There was a diagnostic change in the DSM-5 (APA, 2013) in which 'pathological gambling' was changed to 'gambling disorder' and the disorder was categorized as a behavioural addiction rather than a disorder of impulse control. This change is of high importance as it involves the shift of addictive behaviours not being restricted to the ingestion of a psychoactive substance but to other possible behavioural addictions in the future (Ukhov et al., 2021). It is estimated that lifetime prevalence rates of problem gambling and disordered gambling jointly range from 0.7-6.5% (Calado & Griffiths, 2016). When considering the individuals impacted due to gambling disorder, the percentage of who it affects increases as the significant harm due to gambling disorder affects those around the gambler (Dowling et al., 2014; Downs & Woolrych, 2010; Ku et al., 2017). Although addiction has been dominantly represented by the medical model, this can be problematic as it accentuates the vulnerabilities of the individual, rather than also considering the agency of the individual going through the disorder (Clark, 2011). In the remainder of this chapter, different conceptual frameworks will be presented, namely the biological, social, and psychological perspectives of gambling and gambling disorder (Bartolo & Clark, 2012).

1.3 Biological perspectives on gambling

A conventional view of addiction which is accepted by many scholars is that addiction comes from one biological process (Peele, 1998). According to Moss and Dyer (2010), this

model known as the 'medical model' focuses on the brain physiology and the need for balance, which is upset when a drug is used. Addiction is seen as a disease, which through this perspective, individuals are always in recovery (Reinarman, 2005). In the medical (disease) model, addiction is due to the processes, structure, and brain functions (Vrecko, 2010). Through this biological view, there is no elasticity needed in defining addiction (Reinarman, 1995). The American National Institute on Drug Abuse (NIDA) defines addiction as a chronic and relapsing brain disease, that even though harmful consequences are experienced, the individual will continuously seek out and use the substance (NIDA, 2007). Due to the brain constantly seeking balance, when drugs are used, the brain will try to minimise the impact by trying to seek balance again (Moss & Dyer, 2010). This neuroadaptation is impacted through weakened functioning of the pre-frontal cortex and corticostriatal pathways which renders the addicted state to be maintained (Meyer & Quenzer, 2019).

This biomedical model emphasises that there is a neurobiological abnormality which is either due to genetics or environmental predispositions, which may result in individuals reacting to mere exposure of a behaviour such as being exposed to gambling with uncontrolled play (Schull, 2012). Supporting this view is that genetic variations impact dopamine transmission among problem gamblers (Lobo et al., 2014). Trait impulsivity is characterised by a change in the brain reward circuitry (Miedl et al., 2012). This is visible in problem gamblers (Lawrence et al., 2009). In fact, the changes in the brain structure are a major component of the medical model (Leshner, 1997). Nonetheless, it needs to be considered that physiological changes in the brain are not only limited to addiction, but also to other issues such as epilepsy and brain cancer, as proven through the diagnosis of post-mortem studies (Meyer & Quenzer, 2019). This physiological change is also evident through more normalised behaviours such as meeting a loved one or supporting a specific football team (Lewis, 2016).

When an individual continuously uses a psychoactive substance, there is a decrease in the reward pathway activity, which corresponds to various aspects such as neurotransmitter activity, synaptic plasticity, and alteration in dendritic branching (Meyer & Quenzer, 2019). The "common pathway" hypothesis is a popular aspect in neuropharmacological research (Nestler & Malenka, 2004). This encapsulates the changes in the brain function along the pathway, but not limited to drug use, but also to adrenaline-inducing behaviours, such as gambling (Goleman, 1989). This research is centred on utilising magnetic resonance imaging (MRI) to observe the pleasure centre of the brain (Leshner, 1997). In fact, although different substances will involve different neurotransmitter systems, practically all substances increase the dopamine levels in the same pathway (i.e., the mesolimbic dopamine system reward pathway) (Pierce & Kumaresan, 2006). It is posited that once the substance or behaviour is repeated, the brain changes would stay in place even when the behaviour is stopped (Leshner, 1997).

Pleasurable experiences such as psychoactive substance use, sex, exercise, and gambling will increase the dopamine levels (Henden et al., 2013). During the adolescent years, there is a higher risk for these behaviours to become addictive since the brain is constantly developing and is more sensitive to stimulation (Castellanos-Ryan & Conrod, 2013; Yu et al., 2013), therefore onset of the problematic behaviour is more probable (Bondolfi et al., 2000). In fact, one study reported that the onset age for gambling is lower for problem gamblers (15.6 years) when compared to non-problem gamblers (19.9 years) (Volberg et al., 2001). Although most individuals will not experience disordered gambling, gambling disorder becomes an issue when individuals continue gambling despite the consequences being adverse, control is lost, and craving occurs (Shaffer & Martin, 2011). There are several cognitive psychopathologies resulting from gambling problems (Toneatto, 1999). These range from superstitious beliefs, the

gambler's fallacy, high self-confidence, and ignoring the high losses occurring (Johansson et al., 2009).

Problem gamblers also experience more physiological issues, such as an increase in heart rate and norepinephrine levels during the whole gambling session when compared to non-problem gamblers (Meyer et al., 2003). Physiological changes for gamblers also include physiological responses such as winning where the expectancy of winning money contributed to an increase in heart rate (Wulfert et al., 2005). There are similarities on a biological level between problem gambling and substance use disorders (Wareham & Potenza, 2010). This is also the case with harms experienced by problem gambling and harms due to major depressive disorder (Browne et al., 2016). When considering psychiatric disorders, problem gamblers tend to develop more of these disorders compared to non-problem gamblers (Shaffer & Martin, 2011). Problem gamblers are more likely to develop a mood disorder and anxiety disorder (Kessler et al., 2008).

Although biological processes are encompassed in addiction, an individual cannot be considered by their (bio)chemistry (Clark, 2011). The medical model is an approach which views problem gambling as a disease (Reinarman, 2005), and implies that the individual lives in a social vacuum (Marinaci et al., 2020). Nonetheless, more scholars and researchers are looking into the relationships between problem gambling and other aspects, such as exposure, social contexts, and availability (Williams et al., 2012), and therefore shifting from only considering the individual to more social aspects (Sammut & Buhagiar, 2017). Furthermore, another limitation of the medical model is that this model requires abstinence as recovery, but with some behaviours, such as sex, work, and exercise, this may not always be possible (Griffiths, 2018).

In a review by Gyollai et al. (2014), 21 empirical studies on the genetics of problem and gambling disorder were reviewed. The studies based on twin studies examined genetic associations and identified a number of important findings. In the twin studies it was noted that the genetic factors do contribute to the formation of both problem gambling and gambling disorder, whereas shared environmental factors such as shared friends and family events, do not. Six studies (Comings & Gade-Andavolu, 2001; Comings et al., 1996, 1997; Ibanez et al., 2001; Lobo et al., 2007, 2010) did show a significant association between the dopamine D2 receptor gene and gambling disorder. In addition to this, other genes involved in the serotonin metabolism were also associated with gambling disorder.

As can be seen from the study by Alexander (1970), where rats were allowed to be highly social, substance use was decreased (Alexander, 2010). Subsequently, social factors should also be considered when looking at gambling disorder. This will be further explained in the next section looking into the social perspective of addiction.

1.4 Social perspectives on gambling

Although some scholars insist that addiction is a brain disease, there are those that insist that addiction is a myth (Hammersley & Reid, 2002). Within the social sciences, addiction is a social construct which is justified through a variety of social control forms (Dunbar et al., 2010). What is considered as an underlying addiction disease model is a variety of behaviours that are present as symptoms under specific circumstances (Clark, 2011). Although social scientists need to also consider the biological aspects (Kushner, 2006), there is a sociological addiction construct which examines addictive behaviour as something acquired through socialisation, either within the family, their peers, or the adoption of the deviant role (Clark, 2011).

By taking a socio-cultural approach, there are social contexts in the onset of the maladaptive behavioural patterns (Reith & Dobbie, 2011; 2013). Social aspects are major

predictors for the onset of psychoactive substance use (Pollard et al., 2010). Through peer pressure, there is a higher chance for individuals to use such substances (Russel et al., 2015), which usually starts as an early experimentation stage (Simpson et al., 1986). In gambling, there are many regulatory measures to ensure that individuals younger than 18 years of age are not permitted to gamble (Griffiths, 2003), but these are difficult to regulate and enforce (Public Health England, 2013). When it comes to online gambling, underage gamblers may easily access this form of gambling (Canale et al., 2016a; Griffiths & Parke, 2010). Online gambling is easier for younger people as it is easier to hide and engage in without parental supervision (Delfabbro et al., 2009).

Underage gambling imposes higher risk for adult gambling problems (Griffiths, 2011), which may also lead to psychoactive substance use issues at a later stage (Grant et al., 2010). Gambling among youths is a public health issue in most jurisdictions (Calado et al., 2016). From a social perspective, youth gambling may occur if the individual experiences poor academic performance (Froberg et al., 2015). It has also been concluded that poor parental supervision may contribute to higher chances of problem gambling (Shaffer & Korn, 2002). This is also applicable to psychoactive substance use, where the lack of parental support increases the chances of the onset for substance addiction (NIDA, 1999; Zimic & Jukic, 2012). Furthermore, when gambling is accepted by family members, this may result in a higher risk for eventual gambling problems (Dowling et al., 2010).

The weakening of social bonds, the disconnection in social ties, lack of social support, and perceived isolation all increase the chance of individuals engaging in harmful behaviours (De Jong et al., 2018; Ngwenya et al., 2018; Patton et al., 2006). Although several studies have been conducted to understand how socio-demographic characteristics contribute to the incidence of problem gambling (Abbott et al., 2018; Delfabbro et al., 2018; Subramanian et al.,

2015), they have not been inconclusive. The social model considers learning occurs through the socialisation from various groups such as peer groups and family members (McMurran, 1994). The social model is considered both as a risk factor and a protective factor, as it contributes to the onset, escalation, maintenance and the relapse of addictive behaviours (Griffiths & Parke, 2002). For example, peers that use psychoactive substances are a risk factor when it comes to onset and escalation (Bauman & Ennet, 1996).

It is evident that the dynamics between the individual and the different social groups has a strong influence on addiction (Griffiths & Parke, 2002). When there is a lack of social support for an individual, this increases the motivation for the individual to use coping mechanisms such as gambling to reduce stress (Petry & Weiss, 2009). Several associations have been found between harmful gambling and social issues (Korman et al., 2008; Markham et al., 2016; Suomi et al., 2013). When considering online gambling, there are other social aspects that need to be considered. Online gambling is changing family entertainment because families are seeking entertainment through interactive services, and they gain leisure time through in-house systems (Griffiths & Wood, 2000).

Another aspect to consider is how problem gambling is viewed on a societal level. In a study looking at the Maltese population, online gambling was not associated with its potential harmful consequences or as a high-risk behaviour, but this may be due to online gambling being promoted locally as an economic matter and not a potential public health issue (Marinaci et al., 2020). There are other environmental variables that should be considered, for example, older adults may use gambling as a form of socialisation and therefore in some cases, may not view specific products, such as playing the lottery as a form of gambling (Ariyabuddhiphongs, 2010).

In other scenarios, gambling is even more integrated. Examples include situations such as sports fans pooling money together to place group bets (Forrest & Simmons, 2003). This

may further contribute to normalising mechanisms when gambling is considered as a group activity or when it is endorsed through celebrities in advertising (Thomas et al., 2015). Younger gamblers feel that when they gamble with friends, is socially acceptable and therefore low risk or no risk (Deans et al., 2017; Gavriel et al., 2010). Advertising may also contribute to exposure of gambling to the younger generation (Pitt et al., 2016a), although researching this topic may be limited due to the use of self-report data (Gainsbury et al., 2016; Hing et al., 2017).

Socioeconomic status may contribute to higher risk for gambling disorder, as individuals with a lower socioeconomic status are at a higher risk of developing a gambling problem (Welte et al., 2008). Another risk for gambling problems, are individuals who are on social welfare (Volberg et al., 2001). Furthermore, specific social inhibitors may increase the chance of the onset of gambling issues such as a lack of employment when the individuals are young (Green et al., 2010). On the contrary, individuals with higher income or coming from households with higher income, may also have a risk to gambling issues (Bondolfi et al., 2000; Wardle, 2007). As aforementioned, endorsement and acceptance of gambling by the family and their peers increase the risk for problem gambling (Abbott et al., 1995). Social impact may also contribute to stigmatisation of the disordered gambler, and therefore hinder recovery or disclosure of the gambling issue. Individuals that experience a gambling disorder face social judgments as they may be perceived by their social group as weak individuals rather than someone who is fighting an internal battle (Bernhard, 2007). Individuals experiencing a gambling disorder go through a never-ending struggle between two selves: the addicted and the normal self (Carnes, 2001). Social stigma may impact the ability for the disordered gambler to seek help and recover (Lopez-Gonzalez et al., 2018). In social situations, individuals would be treated through a sympathetic view (Reinarman, 2005). A clear example of this is the experiences of Judy Garland and Billie Holiday who were socially treated differently due to their racial identity

(Hari, 2015). The next section will present the different psychological perspectives on addictions.

1.5 Psychological perspectives on gambling

Psychology focuses on the individual and is a vital perspective to understanding addiction (Gifford & Humphreys, 2007). Psychology as an approach made major contributions to addiction studies (Humphreys & Rappaport, 1993). Through this approach, there is a consideration of the individual in this context, through the constant destructive behaviour, to the availability of the substance/behaviour and the environmental effects from a scientific perspective (Gifford & Humphreys, 2007).

1.5.1 Psychoanalytic perspectives on gambling

Psychodynamic approaches posit that gambling problems are due to underlying neurosis due to a regression in the psychosocial stages during childhood development (Rosenthal, 2008). Freud (1928) examined disordered gambling as a method of punishment through which gamblers play to lose, in which Bergler (1957) also supported the punishment view but its reason is due to the oedipal complex. Despite this importance in the addiction field, this psychological approach, behavioural addictions have been criticised due to the over-psychologising every day behaviours and focusing on the individual's biases, which may contribute to the addiction as less serious (Gifford & Humphreys, 2007). Furthermore, due to the presence of the internet, problematic behaviours may be amplified or belittled by the media (Aiken, 2016).

1.5.2 Behavioural perspectives on gambling

Individuals gain positive reinforcement because substances or the behaviour makes them feel good (Glautier, 2004), or through negative reinforcement because the behaviour may

reduce negative feelings (Eissenberg, 2004). Through operant conditioning, individuals prefer quick rewarding compared to longer-term rewards (Bickel & Marsch, 2001). Due to interactions between the individual and the environment, stressors may impact the neuropsychological development which may incur detrimental coping mechanisms (Lewis, 2016). Behavioural addictions, such as gambling addiction, has no ingestion of a psychoactive substance and no chemical agent is involved, which from a psychological perspective presents a pure addiction (Lyons, 2006). One aspect of this field is the learning theory, and therefore to better understand gambling psychology it is vital to understand these learning processes (Ramnero et al., 2019). Learning theory considers the interactions between the individuals and their environment, which creates a unique bridge between them (Yu et al., 2013). Reinforcement of the gambling behaviour may occur which may be influenced through different aspects such as attention, motivation, and perception (Yu et al., 2013).

Gambling is enjoyed by many as it has several reinforcing consequences, and therefore it will push gamblers to keep on engaging in the behaviour. Through principles from Thorndike (1911), a framework of interactions between the addictive behaviour and the environment is provided. In other work by Skinner (1969), there was a definition of the reinforcement schedule to be mainly a simple temporal order of response and consequence. The latter is positive would reward the behaviour, whereas if it's negative, it would create a punishing effect. When the reinforcer is withdrawn, the behaviour will extinguish, but if the reinforcement is intermittent, this will make it harder for it to become extinct. A reinforcer which is random will give the strongest conditioning and this is the hardest behaviour to extinguish, which is evident in games of chance which may create a problem gambling development (Johansson et al., 2009). When drug use is considered, the reinforcing effect has a likelihood of occurring every time the substance is used (Ramnero et al., 2019). When it comes to gambling, this occurs at an unpredictable low rate (James & Tunney, 2017). The responses following gambling are both

physiological and psychological arousal causing, and therefore gambling cues creates arousal (Sharpe et al., 1995). It also needs to be taken into account that gambling rewards are also associated with financial and social motivators which may include reasons for gamblers to play (Adebisi et al., 2020).

There are still individual differences despite the fact that every gambler experiences this unpredictable reinforcement schedule, and not everyone becomes a disordered gambler (Ramnero et al., 2019). Individual differences impact the effectiveness of reinforcement schedules, therefore what occurs prior to the behaviour is also to be considered (Michael, 1982). This reinforcement schedule may also be impacted through early wins as this may create a skill orientation (Gilovich, 1983). This would render the individual to try again to achieve the same win. This is also evident in the concept of the 'near miss' which is in accordance to operant principles (Griffiths, 1991). This response to winning and losing is a result of the learning history, where gamblers feel that they have control over imagining winning due to the higher levels of arousal (Sharpe, 2000). In fact, the conditioning between the arousal and the gambling is dependent on the early patterns of losses and wins (Sharpe, 2002).

Gambling also involves classical conditioning; appetitive classical conditioning and aversive classical conditioning (Brunborg et al., 2012). Through the excitement that is associated with winning, appetitive conditioning can be produced (Sharpe & Tarrier, 1993). On the contrary, the loss attributed due to gambling may in turn create aversive conditioning, which may also lead to a decrease in the gambling activity (Brunborg et al., 2012). Learning theory is not something to be considered on its own because the arousal that occurs through gambling is both cognitive-behavioural (Sharpe & Tarrier, 1993) and behavioural (Brown, 1987). Furthermore, learning theories not only consider different perspectives of psychology but also other disciplines, such as the neurobiology of addiction which validate the molecular and the

neurochemical systems which demonstrate casual relationships in these addictive processes (Spanagel & Heilig, 2005). Rewards are equally "liked" and "wanted," but these processes are intermediated by various neural circuitries. "Wanting" a reward is driven by mesolimbic dopamine, while the experience of "liking" a reward is facilitated by smaller and more fragile neural systems. The incentive-sensitization theory implies that addiction is considered by excessive "wanting" without a corresponding increase in "liking," due to enduring changes in dopamine-related motivation systems. This theory is adopted by growing evidence and is now being employed to a range of behavioural disorders (Berridge & Robinson, 2016).

Different psychological dimensions in relation to reward may impose different harm potential. One such example is the speed of play (Harris & Griffiths, 2018). Lotteries have a natural delay as time passes between ticket purchasing and the results being drawn. On the other hand, electronic gambling machines ensure rapid play, and the next bet can be done instantly (Murch & Clark, 2016).

Chasing involves increasing the size of the monetary gambling stake in an effort to recover the losses that have already incurred (Corless & Dickerson, 1989; Goudriaan et al., 2014; McBride et al., 2010; Sacco et al., 2011). Consequently, chasing is one of the core diagnostic criteria for gambling disorder in the DSM-5 and previous editions (APA, 1987; 1994; 2013). When investigating the relationship between chasing, craving, and delay discounting, research shows that the heightened levels of craving are associated with gambling severity which increases the chance of chasing (Ciccarelli et al., 2019). Chasing losses is an issue for gambling disorder although this is an attribute that needs further research (Ciccarelli et al., 2019).

One of the aspects that encourages chasing losses is the craving which is the powerful desire to continue the behaviour, and this not only creates commitment to the gambling disorder

but also increases the chance for relapsing behaviour (Blaszczynski & Nower, 2002; Drummond et al., 2000). According to Tiffany and Conklin (2000), craving may be associated with negative and positive reinforcement; the former because the gambling would increase the relief from negative feelings, whereas the latter because gambling provides excitement (Ciccarelli et al., 2019). The gambler will persist in the behaviour because the reward is craved, and it provides a temporary relief from the stress caused by the various losses (McNaughton & Corr, 2009). Chasing losses is a characteristic present in disordered gamblers (but it is also common among non-problem gamblers, especially within-session) and is not only a problem gambling discriminator but also increases the involvement of gambling (Corless & Dickerson, 1989; Linnet et al., 2006; Stinchfield et al., 2005).

1.5.3 Cognitive perspectives on gambling

Cognitive theories have also contributed to the study of gambling by examining attitude roles and the irrational cognitions, and how these relate to each other in terms of risk for gambling problems (Sharpe, 2002). Cognitive theories can explain different emotional disorders such as depression (Alloy et al., 1999) or anxiety disorders (Richards et al., 1992), and these disorders may influence attentional biases. Cognitive distortions such as illusion of control, where perceived control is higher than it actually is, and gambler's fallacy, believing that a positive outcome will be followed by another positive outcome, are integral in not only the development and maintenance of gambling disorder, but also its treatment (Goodie & Fortune, 2013).

As aforementioned, one type of cognitive distortion is the illusion of control, where the probability of personal success is inappropriately higher than the objective probability would be (Johansson et al., 2009). Such cognitive biases may contribute to problem gambling and therefore increase gambling among disordered gamblers (MacKay & Hodgins, 2012). These

may impose a risk for gambling disorder through the influence the cognitive distortions would have on the gambling behaviour, such as superstitions, selective recall, and flawed perceptions of randomness (Blaszczynski & Nower, 2007; Hodgins & Holub, 2007). This is also applicable in internet gambling, where 374 undergraduate students were asked to complete an online survey examining luck constructs, illusion of control, and their gambling involvement, and the results showed that among online gamblers, more distorted beliefs were associated with problem gambling severity (MacKay & Hodgins, 2012). In fact, individuals with a gambling disorder experience cognitive distortions such as gambler's fallacy where their beliefs concerning gambling are not logically coherent (MacLaren et al., 2012).

1.5.4 Psychological perspectives on gambling

The need-state models suggest that addictive behaviours help to fulfil unmet psychological needs. This can be the desire to escape from negative emotional states such as anxiety, depression, and boredom (Blaszczynski & Nower, 2002). According to this perspective, gambling and other addictive behaviours are used as a means of coping with negative emotions, and individuals engage in these behaviours because they offer a temporary escape from unpleasant feelings. Research has shown that individuals with gambling problems are more likely to experience symptoms of anxiety and depression than non-problem gamblers (Ledgerwood & Petry, 2006). Moreover, individuals who report higher levels of negative feelings are more likely to engage in disordered gambling behaviour (Lorains et al., 2011).

One of the leading theories that explains the role of negative feelings in gambling behaviour is the self-medication hypothesis (Khantzian, 1985). According to this theory, individuals with substance misuse or behavioural disorders use substances or behaviours as a way to self-medicate or relieve their negative emotional states.

1.6 Product risk perspectives on gambling

Structural characteristics may also contribute to problematic gambling, such as cashing out features, and event frequency. The type of gambling may also impose a major risk for problem gambling such as gambling forms that promote continuous gambling forms (Dowling et al., 2005). Risk is also increased when the gambling opportunities are higher (Barrault & Varescon, 2012). Through online gambling, these opportunities increase which may result in problematic issues for individuals that are vulnerable, as the situational and structural properties increase this (Griffiths et al., 2009; Kuss & Griffiths, 2012; McCormack & Griffiths, 2013).

Most online disordered gamblers relate higher issues to situational characteristics rather than their individual characteristics (Hubert & Griffiths, 2018). Due to online gambling and its situational and structural characteristics, this form of gambling may be more potentially addictive for vulnerable individuals (Griffiths & Barnes, 2008). The more gambling is available, the higher the chance for problem gambling (Abbott, 2020). This has also extended to specific gambling behaviours and disordered gambling, in which slot machines are seen as addictive since they have wins with a variable reinforcement ratio schedule (Shaffer & Martin, 2011). Nonetheless, although traditionally the higher the gambling opportunities, the higher chance of gambling disorders (Volberg, 2000), research has also shown that since individuals adapt quickly, the prevalence rates may increase initially, but then decrease after the novelty effect has worn off (LaPlante & Shaffer, 2007). Gambling which may become addictive is usually associated with products that provide high event frequency, where gamblers can play in a continuous manner if time and money is available. In fact, games that are discontinuous and have low event frequency, such as lotteries, are less likely to impose a risk on individuals (Griffiths & Auer, 2013; Parke & Griffiths, 2006).

Furthermore, online problem gambling is not directly associated to only one activity (Lloyd et al., 2010), but also due to higher frequency or when the individual is able to play for long durations (Hopley & Nicki, 2010). Online gambling may promote bets that are of higher value or bets that are riskier through free offers possible in an online environment when compared to an offline environment (McCormack & Griffiths, 2012). There is also an element of mastery online when compared to offline gambling because there is a lack of external stimuli which does not create distractions for the gamblers and the player can have more control on the pace and the timing of the play (MacKay & Hodgins, 2012). Another aspect that may impact behavioural issues and impose higher risk for problem gambling is near misses, when the desired outcome is almost achieved but falls just short of it from happening (Murch & Clark, 2016).

"Near-miss" events in gambling heighten the desire to play, but not enough is known about the neurocognitive mechanisms behind their influence. Using a simplified slot machine task, Clark et al. (2009) found that near-misses were seen as less pleasant but enhanced the desire to play, particularly when the gambler had personal control over the gamble. Near-misses employed striatal and insula circuitry that also reacted to monetary wins. These findings suggest that near-misses stimulate gambling through the use of reward circuitry, despite the lack of monetary reinforcement. Furthermore, near-misses in gambling enhance motivation to keep on gambling and recruit reward-related brain regions, including the striatum, more strongly in people with a gambling disorder than those without. Animal studies suggest that dopamine might play a role in responses to near-misses, but a dopamine D2 receptor antagonist did not affect brain responses in this study (Sescousse et al., 2016). This structural characteristic which is enabled through a controlled delivery in gambling products (Harrigan, 2008), encourages the gambler to play more persistently (Cote et al., 2003).

Near misses encourage the motivation to play and increase the chance for the gambler to overestimate the actual chances of winnings (Ramnero et al., 2019). Another characteristic that may impose risk on the development of disordered gambling is the psychological value of electronic money because it may be perceived as less real when compared to physical money (Griffiths & Parke, 2002). This type of transaction creates a suspension of judgment which as a structural characteristic can reduce the financial value system for the gambler and therefore promote more gambling (Griffiths, 1993). A further risk factor is losses disguised as wins, which is popular in multi-line slots because it creates the stimuli that there was a win, although the actual result is a loss (Graydon et al., 2019). This risk is present because losses disguised as wins create an overestimation of the chances of winning (Dixon et al., 2015; Templeton et al., 2015).

1.7 Demographic risk perspectives on gambling

There are many demographic risk factors for gambling disorder including being male, young, low socioeconomic status, and comorbidly consuming alcohol and other psychoactive substances (Buth et al., 2017). Younger individuals (especially adolescents) are more susceptible to gambling issues because they see gambling as an easy way to get money after watching other wins because they employ dysfunctional decision-making more often than the older-aged individuals(Cosenza et al., 2019). The reason for this is that the younger generation is more prone to cognitive distortions (Hing & Nisbet, 2010). In fact, when considering the gambling participation across age and gender, men are more likely than women to gamble on products (Wardle et al., 2012). Even through US national surveys, it was evidently higher in teens, and then decreased as the gamblers got older (Welte et al., 2011). Another risk which is prevalent among adolescents is alcohol consumption which shows associations not only with personality traits but also elevated in at-risk and problem gamblers (Slutske et al., 2005). Due

to these high-risk associations with age and gambling, it is of even more important to highlight the need for age restrictions and prevent minors gambling because the encouragement of the behaviour can contribute to an escalated involvement with them (Ciccarelli et al., 2019).

Furthermore, adolescence is a period that has inherent pre-disposing factors that identifies this period as transitional where risk-taking is higher during this period compared to that during adulthood (Sapthiang et al., 2020). During this period, adolescence is known to be characteristic of more short-sighted behaviour and therefore this group is more susceptible to cognitive distortions encouraged by gambling activities (Canale et al., 2015). Previous research has highlighted adolescents do not differentiate between luck and chance, and believe that they can manipulate chance or beat the gambling system (Griffiths, 2011; Moore & Ohtsuka, 1999). Issues occurring during adolescence also increase the chance for later onset of gambling disorders. This is evident in children with attention deficit hyperactivity disorder (Carlton & Manowicz, 1984). There is a relationship between being maltreated as a child and later development of gambling disorder (Felsher et al., 2009). Even experiencing threats or violent events during adolescence increases the chance of higher gambling frequency (Storr et al., 2013).

1.10 Conclusion

In this brief overview, different perspectives on explaining gambling disorder were presented and highlighted how each perspective contributes to the understanding to this phenomenon. Through an integrated approach and when learnings are applied from each school of thought, a more holistic approach can be achieved. In the next chapter, a literature-based review on corporate social responsibility will be presented taking into account various aspects of the issues of online gambling such as regulatory frameworks, responsible gambling tools, and consumer protection.

Chapter 2: Corporate Social Responsibility among Gambling Operators

2.1 Introduction

The engagement of corporate social responsibility (CSR) has always sparked great interest in companies of controversial industries by several stakeholders such as regulators, academics, and shareholders (Cai et al., 2012; Jo & Na, 2012). CSR initiatives include strategies and actions that these controversial industries take to tackle concerns that their stakeholders might hold (Leung & Snell, 2017). Engaging in CSR aids in positively contributing with the company's values, but the initiatives need to be enhancing the value of the company and not act only as window dressing (Cai et al., 2012). CSR initiatives take into account the positively contributing impacts that these companies take that are beyond the regulatory requirements demanded on them (Turker, 2009).

One popular CSR framework is the 'pyramidal framework' that expects organisations to not only be profitable and law abiding, but also to be ethical, avoid harm to their consumers, and contribute to the community through resources (Crane & Matton, 2004). Despite this approach being seen as ideal from a stakeholder perspective, these expectations are in tension with other expectations for the company such as profit making (Carroll, 1991). Stakeholders are individuals that have a stake in the companies and their success (Cai et al., 2012). The tension is created since these businesses want to be profitable and ethical, but to have both features simultaneously may result in conflicting motivations (Carroll, 2000). It is beneficial for companies to determine a CSR approach, but to do this there is a need to understand the stakeholder needs and these should be reflected in the strategy attained by the company (Jones et al., 2008). Although there may be initial tensions to do CSR, there are a lot of potential benefits such as improved profitability, longer sustainability, the staff are more committed, and the reputation and brand value is increased (Bevan et al., 2004). It is important for these

businesses to comprehend the role of the organisation in the wider context of society and how the ethical, responsible, and legal standards are more important and broader than just making money (Dawkins & Lewis, 2003).

Nonetheless, is it possible for these controversial businesses to be socially responsible where the products they produce are harmful on a personal, and societal level (Cai et al., 2012)? Although there is an intrinsic interest in having a good standing in CSR for companies, there are issues concerning businesses who sell services or goods that have potentially addictive properties. Moreover, blocking access to some customers would likely entail a dip in their financial gain (Hing et al., 2014). Employing CSR initiatives are carried out to ensure that the business is showing credibility and trust (Miller & Michelson, 2013). The gambling industry is an example of such a controversial business because its products lead to both negative and positive impacts on society (Leung & Snell, 2017). Whereas the gambling industry is promoted as an activity which is legitimately a leisure activity that is socially accepted, there is also a commitment to reduce potential gambling-related harm for underage population and individuals who are vulnerable to problematic gambling and gambling disorder (Jones et al., 2008). The gambling industry may provide benefits for the society such as an increase in job opportunities and tax revenue (Leung & Snell, 2017), but still impose risk on specific populations due to their product offering (Jones et al., 2008).

Although CSR may be beneficial for some businesses, these CSR initiatives should be of genuine interest for the organisations. The CSR initiatives may not be of a true intention, and these may backfire because stakeholders (including the general public) may see through this. Consequently, these businesses are eventually penalised due to the initiatives being part of a window-dressing exercise (Jo & Na, 2012). For example, management of such companies may be perceived as immoral managers using CSR for their own benefits (Cai et al., 2012). Bad

CSR practices may include such companies announcing positive CSR initiatives, but not addressing the negative side of CSR, and therefore the true intention of these initiatives is just to build a better reputation (Browne et al., 2019). If done well and if CSR addresses the real issues that the controversial industry is creating, then it can have substantial benefits for the organisation. CSR can build brand identification and brand loyalty, which can further translate into encouraging customers to stay loyal with the company (Cha et al., 2016; Park et al., 2017).

2.2 Gambling

Gambling is a social activity which is engaged in worldwide (Calado & Griffiths, 2016). Although for most gamblers, gambling is perceived as a social leisure activity, for a minority of consumers, gambling may be problem-inducing. Problematic gambling occurs when gambling becomes maladaptive (American Psychiatric Association, 2013). The damage resulting from gambling is multi-faceted because it can cause issues financially (Brandt & Fischer, 2017), psychologically (Guillou-Landreat et al., 2016), and socially by having a negative impact on affected others such as family members (Calado & Griffiths, 2016). Due to the harm that can result from gambling, the regulators and the industry have created responsible gambling (RG) requirements and codes of conduct to reduce the harmful aspects of gambling (Blaszczynski et al., 2008). The gambling industry, although being a mature market (Williams et al., 2012), still need to retain their market share even through the revenue may be threatened by problem gamblers refraining from further gambling (Saugeres et al., 2012).

Gambling is increasing as an individual activity, and some of this has resulted from the shift to online gambling (Griffiths & Wood, 2008). Gambling is a public health issue (David et al., 2020; John et al., 2020), and the shift to more individualised gambling should raise more flags for responsible gambling initiatives because these gamblers no longer have a safety net (of their friends being with them while gambling) and therefore may be gambling as a form of

escapism (Griffiths & Wood, 2008). Ideally, gambling organisations should be able to encourage and manage responsible gambling by working with regulators, governments, and researchers to ensure harm minimisation from their product, but past experience has shown that this is not always possible (Adams et al., 2009). Both regulators and gambling operators have a responsibility to inform their consumers about the harm that may result from their products and try to harm minimise and protect their consumers (Monaghan & Blaszczynski, 2010). Online gambling companies often promote the narrative that they are ethical providers because they engage in CSR activities which aim to prevent and minimise the harm resulting from gambling (Yani-de-Soriano et al., 2012). Nonetheless, most of the stakeholders do mention how the gambling industry contributes positively at a societal level through job opportunities, tax revenue, and tourism, but at the same time, CSR may be used just to gain support and acceptance from the public (Leung & Snell, 2017).

Having a good CSR approach is also beneficial for the organisation because it increases the retention of the employees, leads to greater employee trust, and consumers will express more interest in using the company again (Kim et al., 2017). Gambling operators with a good corporate image has been found to be critical to consumer satisfaction (Wu et al., 2014). The problem is that some stakeholders still may not trust CSR activities from gambling operators because these initiatives might appear to be a way of gaining competitive advantage among different operators, and not for genuine interest in minimising harm (Leung & Snell, 2017). A major issue is that there is an increase in gambling regulation and therefore more possibilities for advertising unless regulation dictates otherwise, which in turn may create a normalisation of the behaviour (Volberg & Wray, 2007). The increase in gambling regulation is the result of governments acting against economic downfalls and budget cuts (Wohl et al., 2014). Through this increase, gambling jurisdictions have turned to more RG initiatives to minimise the gambling-related harm (Wohl et al., 2013).

Due to this potential increase in gambling-related harm, CSR policies not only need to be fully implemented, but also need to be monitored and reported. One of the key issues for CSR and RG policies to be successful is that the focus is on consumer protection rather than revenue gain. If revenue gain is prioritised, consumer exploitation may take place (Yani-de-Soriano et al., 2012). Although CSR initiatives may increase the positive perception of consumers, it is difficult to conclude that these same procedures decrease the gambling-related harm by the gamblers using the online gambling operator (Wardle et al., 2011). Gambling companies that are committed to CSR and public health need to implement programs concerning RG that far exceed the compulsory ones imposed by the regulator (Fiedler et al., 2021).

2.3 Responsible gambling

To show commitment to responsible gambling (RG) and social responsibility, gambling operators need to form a culture that is based on RG policies and procedures (Griffiths & Wood, 2008). In order to do this, an informed adult choice approach should be implemented. According to Blaszczynski et al. (2005), different requirements are needed: (i) there is a level of responsibility by the gambler and their participation, (ii) the gambler needs to be informed properly so to make responsible decisions, and (iii) through academic research for objective and evidence-based conclusions . For example, the information given to the gambler should be clear so that the customer is encouraged to monitor their own behaviour and makes changes that support this (Wood & Wohl, 2015).

This harm minimisation approach operates in between a prohibitionist and libertarianism perspective (Collins et al., 2015). This approach argues that even though gambling should be allowed, there should be restrictions to help consumers be protected, and initiatives are placed for gambling to be safe (Harris & Griffiths, 2017). In order to have a sound RG approach, the consumers should have the choice to play games that are well designed but are also offered in

a safe, secure and supportive environment (Griffiths & Wood, 2008). The Reno Model was first proposed to identify which stakeholders are needed but also what their role should be (Blaszczynski et al., 2008). These started in 2004 in constructing RG approach through a series of position papers (Blaszczynski et al., 2004, 2008, 2011; Collins et al., 2015; Ladouceur et al., 2017). Through the Reno Model, RG is an encapsulation of policies that are designed with a harm reduction approach, through consumer and community awareness, education, and treatment. Consequently, although gambling operators and regulators need to work together, the individual consumer has the right to informed freedom of choice (Fiedler et al., 2021). Through the Reno Model, by empowering the consumer with relevant and reliable information, the consumer can make decisions which are based on relevant and reliable information and not mistaken beliefs. Through the concept of informed adult choice, the RG measures need to be designed to assist and target the protection of the whole population and not just the population of gamblers that are at-risk of developing a gambling problem or have a gambling problem (Blaszczynski et al., 2008). As an operator, to have good social responsibility practices, three areas need to be developed, which are design, behavioural transparency and providing support to customers (Griffiths & Wood, 2008).

A good RG approach is not only ethical or something that is required by a regulator, but also as a benefit for business (Griffiths & Wood, 2008). In previous years, major gambling operators in the UK reported their CSR initiatives to the public (Jones et al., 2007), but at the time, through the lack of regulation and the fact that these initiatives were self-led by the gambling industry, there was a major barrier to advance CSR in the online gambling industry (Monaghan, 2009). Despite this, and going back a number of years, it was recognised that having a good reputation, which can be achieved through sound CSR and RG practices, brings a competitive advantage to operators, where consumers choose these operators over others (Wood & Williams, 2009).

2.4 Gambling regulation

Globalisation and the lack of physical boundaries of online gambling, has had significant impact on the regulation of online gambling (Beem & Mikler, 2011). Individuals can gamble anywhere and at any point in time through internet-enabled devices, and this makes regulation of such a product different from the regular 'bricks and mortar' gambling (Auer & Griffiths, 2013a). Currently, online gambling is regulated at the country level and not through European wide regulation. Some countries have legalised online gambling, but others have not (Darkin, 2013). Although an increase in gambling accessibility has been claimed to be directly associated with an increase in problem gambling, if RG practices are applied (e.g., treatment facilities, education, and prevention programmes), then the rate of problem gambling can be stabilised or decreased (Griffiths & Wood, 2008).

This rapid increase in online gambling has resulted in gambling regulation lagging behind, and in fact, a high number of online gambling operators that are based in Malta follow Maltese regulation (Auer & Griffiths, 2013a). Through borderless gambling, and the increase in gambling participation rates, there is an increase in public awareness concerning the potential negative costs of problematic gambling (Gainsbury & Wood, 2011). When gambling is engaged in recreationally, there are benefits associated such as job opportunities and taxes (Fiedler, 2016). Nonetheless, RG efforts are needed to reduce the negative aspects of problem gambling and in turn benefit public health (Fiedler et al., 2021). As Fiedler (2016) illustrates, gambling can also create negative costs on a social level through treatment costs, follow-up on criminal issues due to gambling, and reduced life quality from problem gambling. Due to these aspects, there have been socio-political stakeholders that have tried to either reverse, restrict or moderate gambling regulation by imposing pressure to regulators (Blaszczynski et al., 2004). In fact, governments are recognising that gambling is a public health issue and the need to work

collaboratively is needed to manage through RG approaches (Hing & Nuske, 2011). Governments have the final say in maintaining a regulatory framework that reduces harm among vulnerable populations (Blaszczynski et al., 2004). On the other hand, their role is contradictory because they benefit from tax revenue derived from gambling.

Through the presence of online gambling operators being regulated in Malta, these operators need to adhere to the RG regulations of one regulator for a myriad of different countries. This has resulted in local governments regulating the online gambling market for their country, such as in Italy where governmental agency Amministrazione Autonoma dei Monopoli Stado (AAMS) issues gambling licenses and investigates all the legal aspects of gambling. Through this change, the only legal online gambling operators in Italy have to gain a license and be monitored by this body (Auer & Griffiths, 2013a). In 2007, the UK legalised online gambling which required the operators to implement CSR policies, but also ended up with an over bombardment of gambling marketing (Gordon & Moodie, 2009). Consequently, although the initiatives were good from a CSR point of view, the regulation allowed for gambling operators to develop and expand (Yani-de-Soriano et al., 2012). The need for more effective policies outside of the operator's self-regulatory initiatives should also be assessed to ensure that the revenue from these operators is not disproportionately relying on the revenue generated from problem gamblers (Hancock et al., 2008).

The consumers are the stakeholders who hold the primary responsibility and through public health initiatives, these individuals can make better rational and informed choices (Leichter, 2003). The main target for RG initiatives should be the gamblers that are at high risk of developing a gambling problem, and there is recognition that consumers that have a gambling disorder should get professional care (Blaszczynski et al., 2004). RG as a concept ranges from the behaviour of the individual to public health (Dickson-Gillespie et al., 2008). For a gambling

operator, the main objective of RG is to reduce any gambling-related harm and therefore it circles back to reducing the occurrence of new cases of problematic gambling (Blaszczynski et al., 2004). Regulatory requirements are centered around RG features such as limits for time, deposit, and loss, and self-exclusion options (Dragicevic et al., 2015; Harris & Griffiths, 2017). These RG measures are implemented by the gambling operators to reduce gambling-related harms and these include RG tools such as behavioural tracking tools which can provide personalised feedback to the consumer (Forsstrom et al., 2020). Although most of these tools are offered by the gambling operators, there has been a relative lack of empirical research on the effectiveness of these measures (McMahon et al., 2019).

For the gambling operator, the main objective of RG is to reduce harm on a long-term perspective (Blaszczynski et al., 2004). The main objective is to ensure maximise opportunity for gambling but also to minimise harm for those who need it (Griffiths & Wood, 2008). RG measures should be different depending on which group of consumers they are considering whether it is for the social gambler or for the gambler that is showing signs of problematic gambling (Blaszczynski et al., 2004). The RG measures are not only about what is provided to the consumer, but it is also important to provide training and suppost of the employees to be able to spot and assist individuals who may be experiencing gambling-related harm (Ariyabuddhiphongs, 2013). To ensure that RG practices are carried out properly and implemented well, the need for the employees to proactively support these initiatives is needed (Breen et al., 2006). There is the need for collaboration with the gambling operators because through these partnerships with governments and researchers, a variety of responsibly led measures can be achieved (Griffiths, 2009a). Despite this, there have been views that the only way that these measures will be successful is if they are compulsory and audited (Tse et al., 2005). Without having an imposition or regulation, there is a chance that the RG measures are

just window dressing to view RG as a good to have while still exploiting and going on through a normal business approach to gain most revenue (Livingstone & Woolley, 2007).

2.5 The rise of online gambling

The shift of more online activity into people's daily lives has provided new opportunities for gambling which may initially provide less protection for the consumer (Griffiths & Wood, 2008). The internet is present in many people's daily lives, and it is a way of connecting with other individuals around the world (Young & De Abreu, 2011). The fact that legalised online gambling has expanded, has also meant it has become a public health issue (Shaffer & Korn, 2002; Williams et al., 2012). The presence of online gambling has also been on the increase because operators are taking advantage of the increase in online presence and this has increased the possibility of using more innovative marketing campaigns to attract new consumers (Lamont et al., 2011). From early years, researchers have warned that online gambling was not just a fad that will fade away (Griffiths, 1996) and it is something that should be taken seriously through the implementation of harm-minimisation initiatives (Monaghan, 2009).

Despite the risk of online gambling potentially causing higher levels of problematic gambling, online gambling has also offered new possibilities to analyse data and help in minimising harm (Dragicevic et al., 2011). Behavioural tracking, which will be discussed in-depth later in this chapter, offers an extensive and large amount of data for the operators (Deng et al., 2019). These data can be used to provide consumers with detailed information about their gambling, assisting them in making better informed choices about their gambling (Wood & Wohl, 2015).

Despite all these initiatives, online gamblers are seen more at risk of developing a problem when compared to offline gamblers (Papineau & Leblond, 2011) although most online gamblers also gamble offline (Wardle et al., 2011). Furthermore, online gamblers have been reported to

respond to marketing and increase their gambling more than offline gamblers (Hing et al., 2014). This may be due to online and digital marketing being broader than traditional marketing and more intrusive through social media portals (Guillou-Landreat et al., 2021). The majority of online gamblers spend moderate financial amounts of money gambling online (Gainsbury et al., 2012; Wood & Williams, 2011). Although time and monetary limits can be presented online, exceeding these limits presents an impairment in self-regulation (Blaszczynski et al., 2014). The problem arises because the main responsibility is often portrayed to be the gamblers themselves and therefore it relies heavily on the capacity of the individual to control and prevent gambling-related harm (Alexius, 2017).

Compared to other online behaviours, there is an element to online behaviour which is inherently at higher risk of developing a problem because the user is sitting comfortably behind a keyboard with the possibility to transition from one website to another at ease of a click (Burke, 2002; Burke, 2004). Despite these claims, there is a limitation because most of these conclusions are not assessed on actual gambling data (Dragicevic et al., 2011). The online gambling field offers a new approach to research by providing attributes which are ideal for research. Primarily, data from large scale samples can be analysed quickly (Griffiths, 2014). Furthermore, there is a reduction in social desirability effect because it is transactional data and not self-reporting (Joinson et al., 2008). These data provide the possibility for accessing uncommon and extreme behaviours on a cross-cultural level which is possible to use for comparative analysis (Buchanan, 2000). There are a number of advantages which aid in favouring behavioural tracking over methodologies using surveys as outlined by several researchers (Auer & Griffiths, 2013b; Griffiths & Auer, 2011; Griffiths & Whitty, 2010). These include the objectivity of the data, the possibility of revisiting events after they have finished, and the large data samples when compared to self-report methodologies. However, there are limitations because the behavioural tracking data are only collected from one gambling

operator, there is no information on why the gambler was gambling, and there is no possibility of using current problem gambling diagnostic criteria (Griffiths & Auer, 2011).

2.6 Age restrictions

The younger generation has grown up in an era where the use of online technology has been embedded in their daily lives (Statistics Finland, 2017). For example, social media is needed and critical for this young population to create and maintain friendships (Raisamo et al., 2020). Online video-gaming is commonplace where friends meet up and is crucial for adolescents (Lenhart et al., 2015). Therefore, this group has a stronger tendency to use the online medium for leisure activities (Raisamo et al., 2020). Because of online technology, online gambling is more accessible to the younger generation and therefore has a potentially high risk for the younger generation to develop problematic gambling at a later stage in their life (Dragicevic et al., 2011). For the younger generation, online gambling is not only more accessible but can be a form of escapism, more susceptible to peer pressure and makes gambling more socially acceptable (King et al., 2010).

This raises the need for protection of minor and underage gamblers, where operators should display prominently the age of entry and/or make it difficult for those underaged to access gambling websites. There should also be sanctions imposed on the operator if a minor is able to access and gamble on their product (Griffiths & Wood, 2008). This familiarity of online practices increases the chances of minors gambling online (Guillou-Landreat et al., 2021). For example, more than 70% of Australian adolescents use the internet more than once a day (Raco, 2014). Almost half of the young population have been exposed to gambling marketing online (Pitt et al., 2016b). Furthermore, gambling online is not only possible from anywhere through the access of a device connected to the internet, but it presents itself with a range of promotions (Guillou-Landreat et al., 2021).

Adolescents feel that they are encouraged to gamble even more on their mobile devices (Pitt et al., 2016b). This makes it a higher risk because adolescence is a period which is characterised by risk-taking and delinquency (Raisamo et al., 2020). Adolescents are at a higher vulnerability when compared to adults not only for the negative consequences of gambling, but also more prone to becoming problematic gamblers (Hardoon & Derevensky, 2002). Therefore, there is an even greater need for adolescents to be protected against gambling-related harm (Raisamo et al., 2020). This group should be protected because excessive gambling has social implications such as conflicts within the family, financial harm, educational problems, and potentially criminal activity (Calado et al., 2017; Splevins et al., 2010).

Underage gambling is very much present, and the monitoring of preventing underage gambling is the responsibility of the online operator (Raisamo et al., 2020). Between 4%-8% of gamblers who are adolescents have experienced significant issues due to their gambling (Delfabbro et al., 2016). Despite gambling only being allowed over the age of 18 years in most jurisdictions (Latvala et al., 2021), gambling is still common among adolescents (Blinn-Pike et al., 2010; Calado et al, 2027). For example, in Finland, the legal age to gamble is 18 years old, but underage gambling is prominent with slot machines that are present in places such as supermarkets and cafes (Raisamo et al., 2020). According to Raisamo et al. (2015b), 13% of 12-16-year-olds have managed to gamble on slot machines in Finland. Therefore, the need for more stringent gambling regulation in preventing minors from gambling is of the utmost importance.

2.7 Gambling advertising

Advertising has been a hot topic within gambling literature because it is often viewed as a motivational factor for gamblers to start gambling (Binde, 2014; Blaszczynski et al., 2014). This has been referred to a mediated communication form which its intent is to persuade the

consumer to perform an action (Richards & Curran, 2002). It is also essential for the provider because it is part and parcel of the competitive process where the gambling industry spends large amounts of money on to persuade consumers to choose their brand over others. Gambling advertising is perceived as a public health issue because it can directly impact an increase in gambling participation and therefore can have a direct impact in the number of individuals who are at risk of developing a gambling problem (Griffiths, 2005b).

In advertising, gambling is portrayed as a positive and fun activity (Guillou-Landreat et al., 2021). For example, gambling may be viewed as glamorous with an emphasis on winning (Deans et al., 2016b; Gainsbury et al., 2016). The advertising message is usually pushing on the narrative that this behaviour provides easy money and can help achieve a rich and effortless lifestyle (Derevensky et al., 2007). It is understandable that as a business, gambling operators need to promote their business, but there is a need to conform to the regulatory framework presented by the country's gambling regulator (Griffiths & Wood, 2008). In countries such as Sweden, advertising and sponsorships of gambling companies is present everywhere, from the television to online presence (Binde & Romild, 2019). Since gambling advertising is not only increasing in frequency but also in sophistication, the need for empirical understanding on this topic is essential (Torrance et al., 2021).

Whereas gambling advertising was initially more a one-way stream where the individual is presented with an exposure to the gambling brand, there has been a shift where through online interactive features, there is a more collaborative exchange between the consumer and the online gambling provider (Bradley & James, 2019; Houghton et al., 2019; Rawat et al., 2020). These include online links, polls related to gambling, and hashtags used by the consumers (Torrance et al., 2021). Gambling advertising is pushing more emotionally charged occurrences such as team loyalty and group bonding (Deans et al., 2016b; Lopez-Gonzalez et al., 2018).

This positively framed approach may under-represent the potential risk of gambling (Torrance et al., 2021). In fact, a number of academics concur that gambling advertising may be misleading because it embeds promotion but not potential risk (McGee, 2020; Roderique-Davies et al., 2020; Torrance et al., 2020). There is a strong association between gambling and sport due to the marketing penetration present through the internet (Gordon & Chapman, 2014; Lindsay et al., 2013). It pushes the narrative that gambling, and sports are deeply rooted (Lopez-Gonzalez et al., 2018).

Despite the increase in regulation when it comes to marketing, the regulation of marketing in the digital world comes with limitations (Torrance et al., 2021). There are issues where the gambling marketing portrays the younger generation which may impose greater risk on this group. For example, 28% of marketing images from poker websites portrayed individuals who were younger than 25 years of age (McMullan & Kervin, 2012). Moreover, 40% of the younger generation had the intention to try and gamble after seeing a gambling advert (Derevensky et al., 2010). Three-quarters of a sample of underage individuals noted that they could recall at least one sports gambling operator brand (Thomas et al., 2016) and this can be worrisome because 60%-80% of underage individuals engage in gambling before they should have been legally allowed (Delfabbro et al., 2014; Guillou-Landreat et al., 2020; Volberg et al., 2010).

Even though there have been studies examining the association between the availability of gambling and excessive gambling (Blaszczynski & Nower, 2002; Cousins & Witcher, 2007; Wood et al., 2005), studying the impact of gambling advertising on problem gambling needs to take on several aspects into account such as the cultural constructs (Lopez-Gonzalez & Griffiths, 2019) and the various sub-types of online gambling advertising (Syvertsen et al., 2022). In 2014, Binde provided a critical review of gambling advertising highlighting that advertising had an impact on gambling behaviour (Binde, 2014). Moreover, correlational

studies have shown that problem gamblers disclose a higher level of exposure to gambling advertising (Hing et al., 2014) and gambling operators tend to minimise the effects of advertising (Lopez-Gonzalez et al., 2017). When online gambling is legalised, gambling advertising tends to increase greatly (Van Rompuy & Asser Institute, 2015). For example, in the UK, there was an increase of 46% growth from 2012 to 2015 in gambling advertising (Davies, 2016).

Studies have shown that the majority of the participants claim that gambling advertising had no impact on their gambling participation (Binde & Romild, 2019). In a study conducted in Denmark, almost 80% of the participants reported that advertising had no impact on the gambling consumption, whereas only 2% reported that advertising imposed a significant importance to them (Bjerg Kommunikation, 2014). Similar conclusions were made in the studies conducted by Fridberg and Fels Birkelund (2016), and Pallesen et al. (2016). Despite these results showing seemingly favourable attitudes towards gambling advertising, the majority of the participants showed that they do not think positively about gambling due to the presence of gambling marketing (Binde & Romild, 2019). There are challenges in researching this topic due to 'the third person effect' because individuals tend to underrate the influence on themselves and overrate the impact on others (Johnstone & Bourgeois, 2015). There may be another bias such as recall bias where the participant does not recall the experience in a reliable manner (Binde & Romild, 2019). Advertising has a larger impact on problem gamblers when compared to social gamblers (Gainsbury et al., 2014). Nonetheless, gambling advertising may impact more significantly among former problem gamblers because advertising may attract individuals who have been abstinent to gambling into gambling again, although more research is needed on this topic (Hing et al., 2014).

Gambling advertising has raised significant concerns among parents because these advertisements are exposed to children (Pitt et al., 2016b). This has been highlighted further given that one study found young children easily recalled gambling companies because they were associated with their favourite sports teams (Bestman et al., 2015). Further concern is the normalisation that occurs due to advertising especially when celebrities are used (Lamont et al., 2016). When younger gamblers have been interviewed, they have highlighted how gambling among friends was perceived as a risk-free behaviour and that it is socially accepted (Deans et al., 2017). There has been focus on policy to evaluate the normalisation of gambling among the younger generations (Nyemcsok et al., 2018).

Nonetheless, there is the need for further research on the impact of advertising on the younger generation and consequently their attitudes and gambling behaviour (Nyemcsok et al., 2018). In the study by Nyemcsok et al. (2018), 111 Australian participants aged between 11 to 16 years were interviewed, and was evident that the current advertising regulation was ineffective in protecting younger generations because young individuals still recalled and were aware of gambling advertising. Moreover, gambling advertising has become embedded with sporting events (Griffiths et al., 2014). This has been referred to as the 'gamblification' of sport (McMullan, 2011). Through online advertising, gambling is seen as a sport and attributing the healthy side of sports to gambling (Lopez-Gonzalez et al., 2018). This can further encourage cognitive distortions which suggest that by training and skill, gambling can be more profitable (Romo et al., 2016). When comparing different gambling promotions, sports betting advertising is one of the most unescapable and prevalent form of advertising used by gambling operators (Sproston et al., 2015). This type of gambling advertising is embedded through the sporting event such as through commentary, banners around the pitch, and team partnerships resulting in gambling operators branded on the team shirt (Lopez-Gonzalez et al., 2017). In some instances, the type of gambling which is advertised is viewed as a higher risk form of gambling

such as in-play betting (Lopez-Gonzalez et al., 2017), and some adverts include free bets or a guarantee of bettors getting their money back (Deans et al., 2017). The volume of gambling advertising in sports has a direct association with normalising gambling (Deans et al., 2016b; Lamont et al., 2011).

2.8 Responsible gambling tools

When gambling takes over an individual's life and the problems related to gambling become evident, the gambling operator may react to this, but it might already be too late because considerable harm has already been done (Haefeli et al., 2011). Since gamblers who have lost control over their gambling may not use RG tools (Blaszczynski & Nower, 2008) or might change the gambling operator to avoid limiting their gambling (Meyer & Hayer, 2010), the RG measures should be implemented at an earlier stage (Wood, 2010). Therefore, through earlier detection of potential gambling problems, the interventions and RG tools may be better received (Haefeli et al., 2011). Several gambling operators offer RG tools to help their consumers through pre-commitment such as time and monetary limits (Auer et al., 2020). Despite the presence of RG tools, there is still a concern on how to promote these tools to ensure harm minimisation before it occurs (Harris & Griffiths, 2017). Although voluntary measures may be perceived as positive for the gambler (Griffiths et al., 2009), these may still be criticised because mandatory regulations may be better suited to reduce potential harm (Leung & Snell, 2017).

A common RG tool is limit setting (Wood & Griffiths, 2010). Through these tools, gamblers may limit their time, deposit, loss, and bet amounts (Auer et al., 2020). Through such tools, the consumer and the operator are enrolling in a voluntary agreement where the consumer is choosing how much they would like to limit themselves beforehand resulting in a protective measure through informed choice (Haefeli et al., 2011). This type of RG tool prevents the excessive time and/or money expenditure that the consumer may later experience if self-control

is impaired (Ladouceur et al., 2012). Limit setting has become an RG tool which is increasingly more common on online gambling websites (Auer et al., 2021). In a study where social responsibility practices were reviewed among 50 most advertised online gambling operators, 90% of the online gambling operators offered an option to voluntarily set a monetary limit (Bonello & Griffiths, 2017; see Chapter 3). In another study in France, all online operators examined offered this option (Marionneau & Jarvinen-Tassopoulos, 2017). In an Italian study where a similar review was made, all online gambling websites offered a mandatory requirement for the consumers to set a deposit limit prior to starting gambling (Calvosa, 2017). Limit setting is also perceived as a useful RG tool by the gamblers themselves (Griffiths et al., 2009). Limit setting may be voluntary or mandatory (where the gambler has to set a limit in order to play) (Wood & Griffiths, 2010). The jurisdiction where a mandatory global loss limit is imposed on all gamblers is in Norway where *Norsk Tipping* imposes a limit to all its consumers (McCormack et al., 2013). In other jurisdictions, like Austria, a mandatory limit has been imposed to protect the consumers that are most vulnerable (Auer & Griffiths, 2013a). Despite this, there is always the option that gamblers may choose to go and play on other gambling websites where limits are not imposed or when their limit on one site has been reached (Auer et al., 2020).

Studies on limit setting have been possible to evaluate through the use of behavioural tracking data. Broda et al. (2008) examined the effects of gamblers who set deposit limits over a two-year period and looked at the behaviour of gamblers who tried to exceed the deposit limits compared to those who did not. Although the results of this study showed that only a small percentage of the total gamblers tried to go over their deposit limit (0.3%), it should be noted that the limits were high (i.e., €1000 daily and €5000 monthly) (Wood & Griffiths, 2010). In another study, an analysis of 100,000 gamblers concluded that deposit limits decrease future spend among lottery and casino gamblers, and time limits had the same impact on poker players

(Auer & Griffiths, 2013b). This further showed that voluntary limit setting had a desirable effect on the most intense players. In another study, it was concluded that gamblers who newly register to an online gambling operator were more likely to set up voluntary limits if they are encouraged by the operator to do so (Ivanova et al., 2019). In the first study to empirically examine the impact of voluntary limit-setting and its influence on gamblers' loyalty, the main finding illustrated that gamblers who set up voluntary limits were more loyal to the gambling operator in the long-run (Auer et al., 2021).

Another important RG tool offered by gambling operators is voluntary self-exclusion (VSE). VSE is a means of preventing the gambler from having access to gambling, and this can help gamblers that are at-risk or gamblers that need to refrain from gambling due to gambling problems (Hayer & Meyer, 2011). When online gambling was still at its infancy, very few online gambling operators offered self-exclusion as an RG tool. For instance, a study of 30 major operators showed that only one operator offered VSE (Smeaton & Griffiths, 2004). A later similar study examined 50 leading online gambling operators and reported that 43 out of 50 leading gambling operators offered VSE (Bonello & Griffiths, 2017; see Chapter 3).

In the land-based setting, gamblers with a problem may self-exclude either voluntarily or can be forcibly excluded as a protective measure (Ladouceur et al., 2007). This is also an effective measure in online gambling especially in conjunction with other RG tools (Haefeli et al., 2011). In online gambling, VSE is used more frequently than in land-based settings (Meyer & Hayer, 2010). This may be due to less barriers present in the online world compared to land-based gambling, but also due to the possibility that online gamblers may use self-exclusion as a method to close their account for non-RG reasons. In fact, a high percentage of gamblers use self-exclusion within the same day of creating the online gambling account (Dragicevic et al., 2015). Moreover, specific online self-excluders may use VSE spontaneously or due to

annoyance with the gambling operator (Hayer & Meyer, 2011). Another potential reason may be that the gambler may want to remove access from the gambling operator and not receive promotional communication and therefore choose VSE (Catania & Griffiths, 2021b; see Chapter 6).

2.9 Online behavioural tracking

Historically, most gambling research has been conducted either through surveys or laboratory experiments. With online gambling, studies utilising behavioural tracking data were made possible, where real life data of online gamblers may be analysed (Auer et al., 2021). This is one of the few ways where behaviour can be objectively tracked and reduces the reliance on self-report data (Auer & Griffiths, 2017). This has developed over time and online gambling companies may use such data as a method for exploitation, especially through direct marketing and loyalty schemes which may result in the consumer feeling empowered or experiencing a level of recognition (Griffiths, 2014). Furthermore, examining such large data can be used for machine learning to be applied, and therefore individuals who are at risk of problem gambling may be identified through their online activity (Deng et al., 2019).

Initially, there were a number of papers published by using behavioural tracking data through a dataset provided by *bwin* (Deng et al., 2019). These studies used datasets to potentially look at markers of harm that when combined with other data points may predict the problem gambling trajectory. In another study, the data of heavily involved gamblers were analysed to identify the potential markers of harm including other social factors such as supported sporting teams and disposable income. It was reported that in most cases when gamblers win, they continue gambling, whereas when they lose, they refrain from gambling (therefore large wagering should only be used as a diagnostic criterion for disordered gambling if it is followed by further losses) (LaBrie et al., 2007). Using the same dataset, the first 90 days

of the gamblers' activity was analysed and it showed an episodic increase almost every seven days (LaPlante et al., 2008). This may be jave been due to the gamblers' understanding and experimenting on the online gambling website or due to acquisition bonuses. The increase every seven days may have been due to an increase in availability of weekend sporting events. Another study reported how gamblers who had a higher intensity, higher frequency, and higher variability in bet sizes during the first month of activity were at a higher risk of potentially having gambling problems when closing their accounts (Braverman & Shaffer, 2010).

Another study examined customer communication which led to gamblers using VSE as a potential identifier of gambling harm (Heafeli et al., 2011). Here, the markers of harm identified were the frequency of contacting customer service and the tonality of the communication (mainly impatience and abusive communication). Another example of research using behavioural tracking data was done by analysing player data from *GTECH G2*. Here, the study identified that gamblers who had used VSE experienced larger losses and played a higher variety of games compared to a control group (Dragicevic et al., 2015).

Using this type of research has helped identify behavioural markers of harm it was noted that online gambling companies may develop ways to behaviourally track gamblers to develop tools that may be used for RG purposes (Auer & Griffiths, 2014). Such systems are good at determining markers of harm and therefore gamblers can be helped prior to substantial gambling-related harm is done. There is a limitation in behavioural tracking data because information from only one specific gambling website is seen (Harris & Griffiths, 2017). This is an important limitation to note because most problem gamblers play on multiple gambling providers (McCormack et al., 2013). It would be ideal if information from different online gambling providers may be matched and central RG tools may be applied, but this has limitations given that there are different competing gambling operators and working together

may not always be possible (Harris & Griffiths, 2017). Systems to identify markers of harm such as *PlayScan*, *Bet Buddy* and *mentor* have developed through this, and it is evident that behavioural feedback through motivational interviewing can assist players to change their behaviour when compared to other gamblers who have not received this type of feedback (Auer & Griffiths, 2014). If done properly, these behavioural tracking tools can assist and support gamblers in informed player choice, which can be used to not only optimise the gambler's life journey but also keeping gambling as safe and supportive (Auer & Griffiths, 2013a). Nonetheless, this shift in using the data for protecting gamblers rather than exploiting them can help in developing better RG tools (Wood & Griffiths, 2007). It is not enough to track behaviour and identify markers of harm. It is also important to identify which is the best approach to provide the information to manage the customer to change their behaviour to a safer one (Auer & Griffiths, 2013a).

2.10 Messaging

Prevention would incur less costs than intervention (Lupu & Lupu, 2013). Due to the technological advancements in the gambling industry, not only are innovative RG tools possible, but these advancements also help in innovations for warning messages to help consumers reduce or prevent gambling-related harm (Auer & Griffiths, 2013a; Wohl et al., 2010; Wohl et al., 2014; Wood & Griffiths, 2014). RG messaging is a tool which can enable informed choice but also encourage players to adopt better gambling behaviour, and therefore reduce the chance of gambling-related harm from happening (Gainsbury et al., 2018). By providing personalised feedback, it helps gamblers understand their behaviour and change their behaviour through transparent, personalised and motivational messages (Auer & Griffiths, 2013a). Personalised feedback helps gamblers to understand their gambling behaviour better (Auer & Griffiths, 2013a).

When utilising personalised normative feedback, the gambler's perception can influence the gambler to change their behaviour (Harris & Griffiths, 2017). When extending personalised normative feedback to gambling it was concluded that when using this type of feedback it encouraged more gamblers to stop gambling when compared to a simple message (Auer & Griffiths, 2015). Research around messaging and gambling has been researched in previous years. Static messages are not as effective as interactive messages in changing gambling behaviour (Monaghan et al., 2009). Messages that are dynamic in nature were recalled significantly more when compared to static ones (Monaghan & Blaszczynski, 2007). Griffiths et al. (2009) surveyed gamblers to assess the usefulness of feedback tools, and 26% of the gamblers had activated this tool and 36% of them felt that receiving such information helped them. Warning messages that allow gamblers to reflect and evaluate their gambling, were more effective than messages that displayed risks about gambling (Monaghan & Blaszczynski, 2010). Even receiving a reminder about limit settings through pop-up communication resulted in more participants adhering to limits when compared to those who did not receive the information (Stewart and Wohl, 2013).

Ideally, to examine the impact and effects of pop-up messaging, it is better to analyse data coming from real gambling environment. This was first done by Auer et al. (2014) where they investigated the behaviours before and after a pop-up message was introduced. The pop-up message informed the gamblers that they had played 1,000 games consecutively and whether they would like to continue gambling or not. When comparing gamblers who had viewed the pop-up message compared to those who had not, it was visible that nine times more gamblers ceased from gambling when they had viewed the pop-up message compared to those who had not. In fact, this continuously emphasises that through personalised feedback and display of information there is a higher chance of increased informed choice but also more adherence to limits (Auer & Griffiths, 2014). Another study that looked at the pop-up message impact in the

real gambling environment was by Auer and Griffiths (2015). In this study, the behavioural tracking data was observed for 800,000 gambling sessions with simple pop-up message compared to an enhanced pop-up message. The latter included additional normative and self-appraisal information in the message. Through this enhanced pop-up message, double the amount of gamblers refrained from further gambling when compared to the gamblers that viewed a simple pop-up message. However, these two studies showed that pop-up messaging was only helpful for a small number of gamblers (less than 1.5% of all sessions ceased after long playing sessions).

In providing personalised feedback, the best methodology is to provide feedback which is personalised (Auer & Griffiths, 2013a). This information can assist gamblers by providing them with effective information which can help them understand the true qualities of gambling such as probability and randomness which would result in less loss of control for the users (Wohl & Enzle, 2003). Through these personalised approaches, the gambler's behaviour can be altered through this behavioural feedback (Auer & Griffiths, 2014). Nonetheless, there is criticism that personal feedback may be a good RG tool but detecting signs of problematic gambling is not accurate enough (Wood & Wohl, 2015).

2.11 Conclusion

In summary, RG is a multi-faceted concept with multiple stakeholders that if a collaboration is present between researchers, gambling operators, gambling regulators, and treatment providers, only then can harm minimisation occur, and players can be protected from developing a gambling disorder. Although online gambling has been perceived as having high risk attributes that may cause higher risk for online gamblers, online gambling has also created limitless opportunities for consumer protection through behavioural tracking tools and personalised feedback. In the following chapters, five research studies will be presented on the

topic. Chapters 3 and 4 present two studies on consumer protection and the availability of RG tools and policies across 50 online gambling operators (the second one being a three-year replication and follow-up of the first study). Chapter 5 presents a study on the voluntary use of RG tools and how these are influenced by age and gender. Chapter 6 presents a study on voluntary self-exclusion and the reliability of using this as a proxy measure of problem gambling. Chapter 7 presents a study applying behavioural tracking data to the DSM-5 criteria for gambling disorder to operationalise the criteria to online markers of harm. The research in Chapters 5 to 7 were all carried out using behavioural tracking data from real gambling environments.

Chapter 3 - Analyzing Consumer Protection for Gamblers Across Different Online Gambling Operators: A Descriptive Study

3.1 Introduction

Online gambling has been steadily increasing over the last 15 years (Canale et al., 2016b). In 2001, a national prevalence survey in the UK reported only 1% of over 2,000 participants had ever gambled on the Internet (Wardle et al., 2011). In the most recent British Gambling Prevalence Survey, it was reported that 14% of the nationally representative adult population had gambled online (Griffiths, 2001). Concern has been raised about online gambling especially with regards to specific issues that are associated with this activity including availability, accessibility, anonymity, dissociation, and disinhibition (Corney & Davis, 2010; Griffiths, 2013; McCormack & Griffiths, 2013; Smith & Rupp, 2005; Suler, 2004). Online gambling has also been perceived as a safer and more acceptable type of gambling by specific groups of people such as female gamblers as the online environment is gender-neutral (Corney & Davis 2010; Wardle et al., 2011). Other positive aspects include the fact that the virtual environment can provide short-term comfort, fun and/or excitement, and a haven for distraction (Kuss & Griffiths, 2012; Reith, 2007). Online gambling has also opened new concerns such as the possibility to gamble at work due to easy Internet accessibility, which is not easily detected in the workplace (Griffiths, 2009b). In fact, individuals can now gamble anywhere, including at home and on the move, due to access via mobile smartphones, tablets, and laptops (Kuss & Griffiths, 2012).

Due to the aforementioned factors, research has shown that problem gamblers are more likely to gamble online (Griffiths & Barnes, 2008; McBride & Derevensky, 2009). Online gambling can be riskier for problem gamblers because online gambling offers a function for mood-modifying experiences, including escapism, immersion, and dissociation, which may be more prominent in the online gambling world. This excessive involvement can—in some

cases—lead to more problematic gambling behavior (Griffiths, 2013). However, because of the way that online companies can collect behavioral tracking data on their clientele, Internet gambling may in turn offer possibilities for utilizing responsible gambling (RG) tools (e.g., temporary self-exclusions, personalized behavioral feedback, limit setting tools, popup reminders, etc.) that might be difficult in a landbased setting unless player cards are used to track the totality of a gambler's behavior (Wood & Griffiths, 2010).

Online gambling involves several stakeholders including gambling operators, community groups, researchers, treatment providers, and the government (Blaszczynski et al., 2011). Governments play an important role in gambling activity but may have a conflicting position as they often promote it, but at the same time need to be aware of the societal problems it may cause their citizens (Orford, 2009). Consequently, governments have been slow at recognizing corporate social responsibility and the need for RG due to this conflict of interest (Hancock et al., 2008). In some cases, this conflict of interest is also amplified because the government may be the direct promoter through national lotteries (Orford, 2009), and therefore needs to take note of advertising responsibly and giving information about the risks that come with online gambling in order to counterbalance this conflict of interest (Wood & Williams, 2007).

The regulation of gambling has always been concerned with its social risks with a primary role of consumer protection (Villeneuve, 2010). Consumer protection is also something that concerns online gambling operators in a commercial manner to protect the company's brand (Carran, 2013). This has resulted in a topic of great interest in how to engage corporate social responsibility in controversial activities such as online gambling (Cai et al., 2012). Therefore, the aforementioned different stakeholders need to acknowledge that there are existing conflicts of interest (Wood & Griffiths, 2010). To overcome such conflicts of interest, public policies should be based on empirical data and not personal beliefs, and research should be encouraged in cooperation with the gambling operators, despite the possible hindrance the operator may

elicit due to the chance of revealing and/or exposing too much about their day-to-day business and practices (Blaszczynski et al., 2004).

In order to provide safe environments for gamblers (both online and offline), policies should be based on a tripartite model that includes the government, the gambling operators, and those advocating individual harm minimization (Wood & Griffiths, 2010). Considering the potential risks of online gambling, the conflicts of interest, and consumer protection, RG should be the highest priority among any gambling operator (Blaszczynski et al., 2004). Responsible gambling refers to a duty of care including consumer education, playing within limits, information to allow informed choice that includes resources for help, information about games, and information to combat misconceptions and gambling fallacies (Blaszczynski et al., 2011).

In order to understand the level of these safeguards provided by the gambling industry, Smeaton and Griffiths (2004) examined the RG practices of 30 UK-owned online gambling websites. The results (based on data collected in 2003) showed that there was a lack of RG initiatives at the time. Arguably, online gambling needs more consideration, because in this field of study, geographical boundaries become nonexistent and technology may facilitate competition between the gambling providers and regulators (Villeneuve, 2010), although this might put off some gamblers because the gambling provider is not locally licensed. This lack of geographical boundary and the lack of a strong regulation of online gambling has led to thirdparty organizations attempting to identify what consumer protection practices are available and what RG practices should be ensured (Cai et al., 2012). It has also been argued that there should be an independent authority that can provide enough information to inform legislation and dictate public health initiatives (Wood & Griffiths, 2010). Given this background, the aim of the present exploratory study is to evaluate how online gambling operators protect and minimize harm for their consumers (i.e., their gambling clientele). Details of the specific RG practices investigated are found in the ‘‘Method’’ section below.

3.2 Method

The present study examined 50 online gambling websites. The selection for the gambling operators chosen was carried out via different online search engines (i.e., Google, Bing, and Yahoo!). The 50 most advertised online gambling operators with a ‘‘dotcom’’ suffix were chosen (a full list of the websites examined with their online website address can be found in Appendix A). Due to its ‘‘no-boundaries’’ nature, online gambling may be provided in countries where gambling has not been regulated and via operating licenses that are not necessarily operating in that country. In fact, a large number of gambling operators are based in Malta and Gibraltar (Auer & Griffiths, 2013a). Each online gambling operator's website was examined in further detail by checking for the following RG practices:

- A dedicated RG page including the following criteria:
    - A statement on the operator's commitment to RG
    - A warning that gambling can be harmful
    - Reference to a problem gambling help organization and/or self-help groups
    - A self-assessment test for problem gambling
    - Information about the RG tools offered by the operator
    - No promotional gambling material
    - Links to gambling filtering software such as *GamBlock* and/or *Betfilter*
- Initial age checks during the account registration phase
- A link to the RG page or information about RG practices in the communication sent by the operator to those registering to gamble on the website
- The presence and easy accessibility of gambling account history
- The availability of RG tools including:
    - Limit setting facilities
    - Cooling off periods

- Self-exclusion periods
- Other RG tools

- A link to limit-setting option on the deposit page
- RG-oriented customer service communication

With regards to the final RG practice in the list, the evaluation was carried out via the customer service communication channel. To assess how RG-oriented the service was, contact was made with customer service representatives using the following two questions and single statement:

1. I would like to control my gambling. Do you have any information on how I can do that?
2. What happens if I increase or remove any of the limits I set?
3. I feel a bit addicted sometimes and cannot control my gambling.

These three issues were explored via live chat, and in the cases where this option was not available, e-mail correspondence with the gambling operator was used. Because of the method employed, full transcripts of all the online conversations were obtained.

3.3 Results

The findings were not consistent when looking at the different operators. Some operators demonstrated a high commitment to RG through the information and options available, but other operators lacked these RG initiatives. Evaluation of each of the RG practices listed in the previous section is described below.

3.3.1 Responsible gambling page

Of the 50 online gambling operators, all had a statement on their commitment to RG and all had a warning that gambling could be harmful. Most operators (n = 42) referenced an organization where players could get help for a gambling problem (84%), and approximately two-thirds of the gambling operators (n = 32) displayed a self-assessment test for problem

gambling (64%). Many of the operators (n = 42) displayed information about the RG tools that they offered on their website (84%). A large majority of the operators (n = 44) displayed commercial promotion on the RG page (88%). One of the gambling operators displayed commercial promotional material on the RG page via a pop-up window that could not be closed. Approximately two-thirds of the gambling operators (n = 30) mentioned or provided links to gambling filtering software to block access from online gambling websites (60%).

3.3.2 Age verification check at the account registration stage

When gamblers registered for an account with an online gambling operator, approximately two-thirds of them (n = 34) saw a prominent display that the gambling service provided is for individuals who are 18 years of age or above (68%). In no instance were registrants required to provide any identity documents that they were 18 years of age or over (i.e., no age verification checks were carried out by any of the 50 gambling operators).

3.3.3 Responsible gambling information sent to players via e-mail

Almost every operator (n = 47) sent an initial e-mail after registration to the players, whether it was a welcome e-mail or an e-mail to encourage depositing funds (94%). Of the 47 gambling operators that sent an e-mail after registration, 22 of them (47%) mentioned RG and/or had a link to the RG page in the e-mail sent. However, in a small number of cases (n = 5; 11%), when the RG link which was communicated in the promotional e-mail was clicked, the link led to other areas of the gambling operator website, and not the RG page. As noted in more detail below, the first author explicitly informed the gambling operator about the possibility of having a gambling addiction. Responsible gambling operators would be expected to remove those claiming to have a gambling problem from promotional mailing lists, and threequarters of the operators did so (n = 37; 74%). However, the remainder continued to send commercial e-mails (between 1 to 12 e-mails) in the 14 days after the gambling operator had been informed that the first author might have a gambling addiction.

3.3.4 Access to gambling account history

Most operators (n = 47) provided an option for gamblers to have access to their historical gambling data (n = 94%).

3.3.5 Responsible gambling tools

Most operators had RG tools such as limit-setting (n = 45; 90%), cooling-off period (n = 36; 72%), and voluntary self-exclusion (n = 43; 86%). The limitsetting options were split in the following manner:

- Operators having a deposit limit option only (n = 24; 48%)
- Operators having a spending/loss/wager limit only (n = 4; 8%)
- Operators having both a deposit limit and the spending limit (n = 13; 26%)
- Operators having both a deposit limit and spending limit per product (n = 3; 6%)
- Operators having a spending limit per product only (n = 1; 2%)
- Operators having an additional session/time limits (n = 21; 42%)

Cooling-off periods refer to any break available that was less than sixmonths (n = 36; 72%), and the voluntary self-exclusion referred to any possible break of six months (n = 43; 86%). There were some operators who offered RG tools other than the ones mentioned above. One operator offered gaming insurance that said they provided professional support for customers with a gambling addiction. Three operators also offered the option to block access to certain products, whereas four operators offered the possibility for gamblers to input details to control their gambling through a form of diary or budget calculator.

Although the option to use RG tools was mentioned on the gambling operators' websites (n = 42; 84%), this was not always truthful. In one case, it was noted in the small print that a self-exclusion request might take up to 48 hours to be processed. Twelve operators mentioned that in order to self-exclude, the gambler had to contact customer service and/or fill in a formto send via e-mail. In one instance, all the information concerning possible RG tools was only

accessible via customer service, and in another case, gamblers did not have access to the RG tools unless real money was deposited in their account. In some cases, the information about the RG tools was not encouraging RG practice. For example, in one instance, the following sentence was present when accessing the self-exclusion option: ‘‘Customers who block their account will no longer be able to deposit funds into their account or take advantage of our offers.’’

3.3.6 Interactions with customer service

In order to determine first-hand the RG practice involved with each gambling operator, two questions and one statement were presented to the customer service team (see ‘‘Method’’ section). The preferred method to present these concerns by the first author was via a live online chat facility, and when this was not readily available, the questions were asked via e-mailing customer service. Almost three-quarters of the operators (n = 35) offered the option of live chat (70%), with the remaining operators (n = 15) being contacted via e-mail (30%).

The first representation of the results is presented based on the live chat transcripts. With regards to the first question asked (*I would like to control my gambling. Do you have any information on how I can do that?*), 30 out of 35 operators (86%) suggested or provided links to the functionality of limit setting. One interaction involved probing for more detail, another interaction ignored the question asked, and three of the interactions suggested voluntary self-exclusion. In answer to the second question (*What happens if I increase or remove any of the limits I would set?*), eight customer service interactions mentioned a 24-hour waiting period whereas 14 mentioned a seven-day waiting period. Five customer service interactions ignored the question and did not answer it, whereas six showed a lack of knowledge and/or misunderstanding. In one instance, the first author was told that there needed to be a discussion with the gambling operator’s account manager.

With regards to the last statement presented to the customer service agent (*I feel a bit addicted sometimes and cannot control my gambling*), the answers varied from being given access to a self-exclusion form to miscommunication. The responses were categorized into three different headings; i) suggestions concerning RG (n = 17; 49%), ii) performing an action (n = 8; 23%), and iii) bad practice (n = 10; 29%). Of 35 operators responding via an online live chat facility, 17 operators (49%) suggested an RG measure including checking information on RG, voluntary self-exclusion, and doing a problem gambling self-assessment test. Eight gambling operators performed a specific action (e.g., closing of the account) without the agreement of the first author (23%). Ten operators engaged in bad practice (29%). In three cases, the information given was irrelevant for someone who was going through a problem, such as information about the designated account manager, queries about Malta, and the fact that the customer service agent did not like gambling because gambling was equated with addiction. In six cases, the remarks were completely ignored and the online interaction was ceased by the gambling operator. In one case, a bonus was offered to the first author to continue gambling. After the live online chat interaction, seven operators contacted the first author with more information about RG tools via e-mail, while six of the operators closed the account without any choice for the gambler.

For the other 15 operators where e-mails were sent, six of them closed the account without providing any other choice, five gave generic information about RG tools, and four operators did not provide a reply—just an acknowledgement of the e-mail sent. In most cases, the reply to the e-mail was done either on that day or the next day, but in one case, the e-mail was answered after 13 days.

Finally, the number of gambling operators that allowed access to the account after the information about having a gambling addiction was given to the customer service representative was examined. Over half of the operators (n = 28) still allowed account access (56%) whereas

the remainder did not (n = 22; 44%). One month after the communication with customer service, 26 operators allowed account access whereas 24 operators did not.

3.4 Discussion

The aim of the present study was to evaluate different online gambling operators and their responsible gambling (RG) practices in protecting their customers. The main findings showed that RG information is consistent across most of the online gambling operators examined, and more than half of them (68%) displayed information about the 18+ years age restriction at the account registration phase. All gambling operators sent players commercial communication via e-mail upon registration, but only 47% of the e-mails actually contained any information about RG. There were quite a few inconsistencies in the RG tools offered, and this inconsistency was also evident in the communication between the customer service department of each operator and the first author. Inconsistencies were also observed in the follow-up after the first author informed the gambling operator that she had a gambling problem during the communication with the operator's customer service agents.

An area that appeared to be consistent with most of the gambling operators was the information available on the designated RG page. This page contained information about the operator's commitment to RG, a warning that gambling can be harmful, and a reference to a problem gambling help organization. The self-assessment test for problem gambling was present on nearly two-thirds of the operators' RG pages (64%). A paradoxical issue was observed in most of the operators' RG pages. In 88% of the gambling operators examined, there was some type of commercial advertisement (typically promoting some type of bonus). The operator should always inform the consumer concerning the potential risks and hazards associated with excessive gambling in order to help enable behavioral change (Monaghan & Blaszczynski, 2009). An RG page on a gambling operator's website should be the first place

where consumers find advice about RG. If these RG-designated pages also contain promotional information, the purpose of the page is somewhat defeated.

Another area that evidently needed more improvement is age verification of the registered players. The only evidence that the gambling operators took age restriction seriously was in providing a message upon registration that players needed to be aged 18+ years to gamble. It was difficult to determine whether an age verification check had been carried out by the operator because age verification can take a variety of forms without the knowledge of the consumer, such as cross-referencing customer details with official data sources (Griffiths & Parke, 2010). Age verification has been an issue that governments have faced when wishing to liberalize gambling because solutions are needed to protect underage players (Carran, 2013). It is easy to shift the blame and all responsibility onto the gambling operator, but there are clearly limitations on how much the operator can or may do. It is not the intention of the gambling operator to have underage customers as this might cause reputational and integrity issues for the operator in the long term. When an operator accepts financial transactions from an underage gambler, there are financial consequences for the operator as well, as the operator is obliged to give the money back to the legal guardian of the underage customer (eCOGRA, 2016). When it comes to Maltese gambling regulations, any deposited funds by underage consumers need to be forfeited to the gambling authority (Remote Gaming Regulations, 2004).

Upon registration it was common for all operators to send e-mail communication with specific offers and information about bonuses. It was noted that out of all the communication sent by the operators, only 47% had an RG message in their e-mail communication. Still, the main area of concern was what happened after the first author admitted to having a gambling problem with each online gambling operator. Despite having disclosed this information, 26% of the gambling operators still sent promotional and marketing communication. Although the percentage was modest, the impact of sending marketing communication to a consumer who

specifically tells the gambling operator that they have a gambling problem may have a negative impact on the individual. In a qualitative research study by Binde (2009), the impact of gambling advertisements on problem gamblers was explored. Several of the participants in this study described how gambling advertisements made it harder to resist the impulse to relapse. Receiving such advertisements directly into the player's personal e-mail inbox is therefore an issue about which some operators appear to need educating.

Another area examined was the facility of using various RG tools across the 50 operators. According to Auer and Griffiths (2013), voluntary time and money limits are becoming widespread among online gambling operators, but what was evident in the present study's evaluation was that although these tools are available, they might not always be available in the most convenient and user-friendly manner. The online gambler can do several things on their account, such as easily deposit money, play a variety of games, and withdraw money back to their payment method. Despite the technological advancements that have made this possible, 12 gambling operators only offered RG tools via an e-mail request (that may result in delayed request processing or a request not being processed at all).

Online gambling operators have the capability to provide a variety of limit types such as deposit, play, loss, and bet, and these may differ from being fixed (which are easier to administer but place everyone's disposable income on one scale) or voluntary (which supports informed adult choice) (Griffiths & Barnes, 2008). There is a lack of evaluative empirical research on RG tools (Auer & Griffiths, 2013a), and this might be the reason for certain inconsistencies between different gambling regulations. Looking into the discrepancy between the operators in the present study, there might be a question with regards to how empirically based these legal requirements are. Arguably, Wood and colleagues (2014) carried out an example of good research examining RG practices. In their study, RG experts, treatment providers, and recovered problem gamblers were asked about the perceived effectiveness of 45

different RG tools. The highly recommended RG features for online gambling included cash payment outside of the online gambling session, player-initiated temporary or permanent self-exclusion, spending limits, and a 24-hour ‘‘panic’’ button (which by pressing, instantly closes down the gambling session). Such research should be encouraged in order to provide online RG tools that are empirically proven to help gamblers and not based on a hunch and/or what is based on perceived good practice.

One RG tool that appears to be popular amongst gamblers is the temporary self-exclusion option, where consumers can choose to temporarily remove access to their online gambling account. In research by Griffiths and colleagues (2009), 46% of their participants (over 2,500 online gamblers) reported that the seven day self-exclusion was a useful RG tool. This was followed by the one-month self-exclusion, and the daily self-exclusion option. Among the 50 online operators evaluated in the present study, 72% of the operators had an option for a self-exclusion that was less than six months, and 86% offered six-month self-exclusion. Online self-exclusion has its advantages when compared to land-based self-exclusion as it only requires a few clicks with low access barriers (Hayer & Meyer, 2011). In fact, not offering temporary self-exclusion could be argued to be the same thing as encouraging further play (Smeaton & Griffiths, 2004). More encouragement should be given in order to make sure that all online operators provide such an important and popular RG tool.

A potential cause for concern was the interaction with customer service and the promotion of RG through this medium. For all 50 gambling operators, there was a possibility of contacting customer service for help. This may be a common occurrence for customers to contact customer service when assistance is needed, even with RG cases (Haefeli et al., 2011). The biggest issue is the lack of consistency concerning the information provided to the gambler. Moreover, some of the information given was arguably unethical and/or might cause further issues with gambling for that individual. As mentioned above, when one gambling operator was

specifically informed that the consumer was experiencing problem gambling issues, a bonus was offered to continue gambling.

This type of experience is evidence of bad practice but it may be that there is a lack of training on these RG practices at an operator level. Training employees concerning RG will help employees in their daily jobs and provide them with better information in referring a distressed gambler (Giroux et al., 2008). Although research concerning employees in the gambling industry and RG training may be scarce, it has been shown that RG training is associated with an increased knowledge on the topic (LaPlante et al., 2012). Management involved in the organization of training for gambling operator employees also need to consider the frequency needed for the training, as certain gains achieved from training may not be maintained after six months (Giroux et al., 2008).

Although the present study was beneficial in examining which RG initiatives are being offered across different online operators, this study had a number of limitations. The main shortcomings were that only a limited number of online gambling websites were examined (n = 50) and that RG-oriented communication was based on only one customer service interaction. However, it is worth noting that the sample chosen included some of the biggest and best-known online gambling operators in the world. Suggestions for future study include replication of the present study with a larger selection of gambling websites to be carried out over a longer period in order to determine whether RG initiatives change and develop across different online gambling operators. Another suggestion would be to replicate the study to compare RG initiatives with locally licensed online gambling websites, or a study including interviews with the operators' representatives themselves.

Although the number of operators sampled was small, several recommendations can be made. All operators, irrespective of size or market share should provide i) age verification checks to prevent minors from gambling, ii) signposting towards a referral service to help those

who think they may have a gambling problem, iii) blocking software for those gamblers that request it, iv) information about how to access all responsible gambling tools, v) high ethical standards (for instance, companies should not be sending marketing and promotional materials to those customers that have admitted they have a gambling problem, or including promotional material on responsible gambling webpages), vi) an easy to use voluntary self-exclusion system that does not involve contacting customer service or filling out a long form, and vii) training to customer service agents so that they can deal with issues and queries from problem gamblers in a knowledgeable, helpful, and informative manner.

3.5 Conclusion

While some online gambling operators appear to be socially responsible, there are a number of areas where further improvement is needed (e.g., age verification, customer service feedback, direct marketing to players). Overall, it is likely that online gambling is (and will continue to be) an activity that will increase in participation. Therefore, RG practices are critical in order to ensure consumer protection. Therefore, a strategic framework is needed to establish responsible gambling-oriented policies based on empirical studies that in turn will reduce any possible socio-political influences (Blaszczynski et al., 2004). This is also in the interest of the gaming operators as a lack of trust and credibility will in turn create a commercial disadvantage (Gainsbury et al., 2013; Wood & Griffiths, 2008).

Chapter 4 - Analyzing Consumer Protection for Gamblers Across Different Online Gambling Operators: A Replication Study

4.1 Introduction

Online gambling is a rapidly growing e-commerce sector whereby individuals can gamble via their mobile phones, computers, and wireless devices (Gainsbury et al., 2012). Consumers are now able to gamble almost anywhere due to technological advancements via smartphones and the internet (Auer & Griffiths, 2013b). Online gambling has many different stakeholders including gamblers, health services, gambling industry, regulators, and the government (Blaszczynski et al., 2004). More recently, the gambling industry has introduced responsible gambling (RG) initiatives to help minimize the harm that gambling may be causing.

Responsible gambling and the message to "gamble responsibly" have been commonly used by the industry in their communication channels and in the promotional material on the gambling services that they offer (Hing et al., 2018). RG refers to practices that are employed in order to reduce and potentially prevent harms associated with gambling (Blaszczynski et al., 2004). Gambling operators echo this in their practice but also mention that RG is a shared responsibility, and in some instances, it is highlighted that the main responsibility lies with the consumer (Forsstrom & Ornberg, 2019).

Some claim that RG policies should be enforced through a tripartite model which is not limited to the gambling operators and the individual but also the government (Blaszczynski et al., 2011). Gambling regulation is usually centered around the possible risks associated with gambling and with the main role being consumer protection (Villeneuve & Meyer, 2010). Despite this, in some jurisdictions such as Malta, online gambling may be more viewed as an economic issue rather than around its potentiality of being a health problem (Marinaci et al., 2020). Online gambling has gone through an overhaul in terms of consumer protection in the past 5 years due to an increasing amount of countries regulating online gambling and in turn

enforcing consumer protection measures. It is one thing to have such regulations in place, but it is another to have them in practice. In fact, such discrepancies have resulted in penalties and in a few instances gambling licenses being revoked. For instance, in 2018, the UK Gambling Commission threatened to revoke five online gambling operator licenses due to failures in consumer protection in the prevention of anti-money laundering and consumer interactions (Kott, 2020a).

Penalty examples include a gambling operator being fined £2.3 million for accepting transactions from consumers who gambled large amounts of money, which were only possible by stealing (Gambling Commission, 2017). Another gambling operator was fined £13 million due to money laundering offenses as well as social responsibility failures, which resulted in senior managers from the online gambling company losing their personal gambling license (Gambling Commission, 2020a). These penalties were not only restricted to financial fines but also (in some cases) having the operator's license suspended (Gambling Commission, 2020b).

This increased focus on RG has also been seen in other gambling jurisdictions, such as Belgium, where a draft law was submitted at the beginning of 2020 to increase proactivity in the prevention of problem gambling. Here, operators are obliged to not only inform consumers about gambling risks but also take a proactive role in helping individuals to moderate their gambling consumption (Kashina, 2020a). Denmark updated their secondary gambling legislation so to increase consumer protection to continue enforcing RG practices (Kott, 2020b). On the first day of 2019, a new licensing regime was introduced for Swedish operators that included RG measures such as RG-related messaging when the consumer accesses their gambling account, along with information about RG tools, and their accrued total financial losses for the previous year (Kott, 2020c). Spelinspektionen (the Swedish gambling regulator) followed on the footsteps of the UK Gambling Commission and introduced financial penalties for operators failing RG measures, as well as having the power to revoke gambling licenses

(Altaner, 2020). This increased RG focus has also had its effect on the Maltese regulator where new regulations were proposed in 2018 which included an increase in RG messaging to its consumers (Kashina, 2020b).

In order to better understand gambling operators' practices, researchers have attempted to explore this practice through descriptive studies. Smeaton and Griffiths (2004) were the first to do this by examining the RG practices of 30 online gambling websites based in the UK. It was evident that more attention was needed in this area as there was a lack of RG initiatives at the time (Blaszczynski et al., 2004). Smeaton and Griffiths reported that 23 out of the 30 examined operators had no reference to responsible gambling, and 26 out of the 30 operators did not have a reference or referral to a gambling help organization. This lack of RG commitment was further reflected by the fact that only one of the operators examined had an option to self-exclude. Marionneau and Jarvinen-Tassopoulos (2017) carried out a similar study of French online gambling operators where it was noted that RG tools were not always easy to use, and information about RG was not on the same platform that was used to gamble on. However, it was noted that every licensed website examined conformed to all the RG obligations placed by the law, including having a warning banner, an option to self-exclude, an option to set up limits, and information based on the consumer's account history.

Bonello and Griffiths (2017) evaluated the 50 most advertised gambling operators in Malta to understand the different consumer protection practices available to gambling consumers. Their study showed that the majority of operators had an RG page, but most of these pages contained commercial information on this page. Most operators offered the possibility to set limits and to self-exclude. Cooney et al. (2021) evaluated online gambling operators based in Ireland (replicating the study by Bonello and Griffiths [2017]) and concluded that RG tools were inconsistent. The majority of the operators had an RG page and included links to gambling help organizations. Limits were available across most of the operators, almost

half offered session-time reminders, and almost all offered self-exclusion options, through customer service or online application. Consistency across different operators would help as most gamblers use more than one online gambling account (Auer et al., 2012), and therefore having consistent RG tools being used by different gambling operators would help in minimizing harm. Moreover, RG tools not only increase customer trust, but also result in less disputes due to gambling issues (Gainsbury et al., 2013).

4.2 The Efficacy of Responsible Gambling Tools

There have been a number of reviews concerning the efficacy of responsible gambling tools over the past few years including both general reviews of all RG tools (e.g., Drawson et al., 2017; Harris & Griffiths, 2017; Ladouceur et al., 2017; McMahon et al., 2019; Tanner et al., 2017) and reviews of very specific RG tools such as pop-up messaging (Bjørseth et al., 2021) and limit-setting (Delfabbro & King, 2021).

Ladouceur et al. (2017) systematically reviewed all studies that had examined the efficacy of RG tools that had been examined in a real-world gambling environment. The review included 29 studies and primarily covered self-exclusion programs and limit-setting tools with only six studies providing the "scientific rigor necessary to offer interpretative confidence," and the evidence concerning efficacy of RG tools and programs was "very limited" (p.233). Harris and Griffiths (2017) examined the efficacy of RG tools that were used by the gambling industry to reduce gambling-related harm (i.e., mandatory play breaks, limit-setting, pop-up messaging, and behavioral tracking tools). They evaluated 20 studies and noted many of the methodological weaknesses of the studies examined. While there appeared to be some efficacy in relation to limit-setting, the efficacy of other RG tools was somewhat limited.

Drawson et al. (2017) examined the efficacy of what they described as "protective behavioral strategies in gambling" (e.g., monetary limit-setting, time limit-setting, self-exclusion). They reviewed 33 studies and concluded that evidence was best for self exclusion

programs but that the findings across all studies was inconsistent and that there were many methodological limitations that affected the generalizability of the results. The same team carried out a systematic review of gambling industry-implemented harm-minimization strategies (Tanner et al., 2017). They reviewed 27 studies and concluded that there was some preliminary efficacy among RG tools such as self-appraisal pop-up messages, removal of large-note acceptors on slot machines, and $1 maximum bets. However, the quality of the studies was limited, and there was a reliance on retrospective self-report alongside the lack of adequate control groups.

McMahon et al. (2019) carried out a review of systematic reviews and examined 55 studies within 10 systematic reviews examining RG tools such as self-exclusion, personalized messaging, pre-commitment, and limit setting. They concluded that the efficacy of such tools was limited by the extent to which gamblers adhere to voluntary (rather than mandatory) systems. They also claimed that the studies evaluated were "generally poor" and "dominated by evaluations of individual-level harm reduction interventions, with a paucity of research on supply reduction interventions" (p.380).

Bjørseth et al. (2021) carried out a meta-analysis examining the efficacy of pop-up messaging in 18 published studies although only three of these were real-world studies with most carried out in laboratory settings. They concluded that pop-up messaging had moderate effects in curtailing gamblers' behavior and that pop-ups are an important part of gambling operators' RG tool portfolio. Delfabbro and King (2021) carried out a systematic review of mandatory and voluntary pre-commitment and limit-setting RG tools. The review examined 25 studies and expressed caution about the potential benefits of limit-setting systems, but some mandatory limit-setting tools appeared to have at least some efficacy.

4.3 The Present Study

Given the relative lack of research and that the RG demands by regulators are increasing, the aim of this present study was to replicate the study of Bonello and Griffiths (2017) and to examine whether there were any notable changes as a result of the increased regulatory pressures. An assumption was that operators would have increased their RG efforts, especially since most online operators are operating in a multi-license environment. Details of the specific RG practices that were investigated are found in the following section. The study examined best international practices regarding RG. Given that many operators provide gambling services to multiple countries, and different countries have different gambling regulations, the authors took the approach of examining what RG tools were utilized by operators rather than trying to determine whether the operator adhered to specific country regulations regarding harm minimization.

4.4 Method

The present study replicated Bonello and Griffiths' (2017) study where the 50 most popular online gambling websites were examined. The original aim of the study was to evaluate exactly the same gambling operators that were examined as those in the study of Bonello and Griffiths (2017) because this was a replication study. However, 18 of these gambling operators were no longer in operation, and one operator was not evaluated because one of the authors is employed by the parent company of one of the gambling operators included in the previous study. Therefore, 19 new gambling operators were included in the present study. The selection of the newly added operators was based on online search engines where the most advertised online gambling websites with a .com suffix were chosen. All the online gambling websites used in the study were licensed. Each online gambling operator was examined in detail by inspecting the following RG practices, which are an exact replication of the Bonello and Griffiths study conducted in 2017:

- A dedicated responsible gambling page containing the following:
    - An account of the operator's commitment to responsible gambling
    - A warning that gambling may be harmful
    - Point of reference to organizations that can provide problem gambling assistance and help
    - Self-assessment test to help awareness of an individual's potential problem gambling
    - Information on the responsible gambling tools that the operator has in place
    - No promotional or enticing gambling material
    - Links to gambling filtering software including examples such as *Gamban* and/or *Betfilter*
- Age checks and warnings about underage play at account registration
- Responsible gambling information in the email communication sent to the online consumer
- The presence and accessibility of the gambler's account history
- The availability of responsible gambling tools, such as:
    - Means for setting limits
    - Cooling-off periods or more popularly known as "take a break"
    - Self-exclusion possibilities
    - Other responsible gambling tools
- Customer service communication showing a commitment to responsible gambling

With regard to evaluating the customer service communication, contact was made with the customer service representatives. The questions and statement used to assess this were identical to the previous study by Bonello and Griffiths (2017):

1. "*I would like to control my gambling. Do you have any information on how I can do that?*"
2. "*What happens if I increase or remove any of the limits I set?*"
3. "*I feel addicted sometimes and cannot control my gambling.*"

As in the previous study, this aforementioned communication was explored via live chat, and where this possibility was not present, e-mail was used. Due to the method employed, full transcripts of the online conversations were obtained.

Data Analysis

Data analysis comprised two different elements. For analysis of the RG page content and what RG tools were offered by the gambling operator, a basic content analysis was performed to see what information was provided on these pages and which RG tools the operators utilized on their website. In order to collect the data, the first author created an online gambling account with all 50 online gambling website. A pseudonym was created for the account, as well as a fictional date of birth and address. A dedicated email was created for this study, and a real phone number was used in case customer services wanted to contact the first author. With regard to the customer service interaction, the replies were grouped in the following manner. For the first question, if the response by customer services consisted of promoting RG practice or tools, this was rated as positive. For the second question, the response expected by customer services was that there should be an increase or removal of such limits and resulting in a "cooling off" period. If this happened, it was assessed positively. For the final statement, the responses by customer services were categorized as (i) good practice, (ii) terminated account, and (iii) bad practice. Good practice comprised providing assistance, RG information, and information on how to seek help for a gambling problem. Terminated account referred to when the operator did not initiate communication about RG and help-seeking but simply terminated the relationship with the customer without the customer being told anything by the operator.

Bad practice comprised any operator that did not provide help and information or terminate the account.

4.5 Results

In some instances, it was found that a number of online gambling operators had a strong commitment to responsible gambling, but other online gambling operators showed much less when comparing these online gambling websites with each other, even from a compliance perspective. An evaluation of each of the responsible gambling practices mentioned in the previous section is described below.

4.5.1 Responsible Gambling Page

Not all online gambling operators had an RG page, and therefore the results below are based on 48 (rather than 50) operators. Out of the operators that had an RG page, all had a statement about their commitment towards RG and a warning that gambling may cause problems or negative consequences. Most operators (n = 46; 92%) referenced a help group where the consumer may seek help with problem gambling, and 42 had a self-assessment test available (84%). Eight operators used the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) as a self-assessment tool, and one operator had adapted the DSM-5 criteria for gambling disorder (American Psychiatric Association, 2013). Four operators offered a link to the Brief Biosocial Gambling Screen (BBGS; Gebauer et al., 2010). Four operators used the GA-20 Test (Gamblers Anonymous, not dated). Eight operators provided a link to external websites where gamblers could take a self-test. More specifically, four operators provided a link to the UK charity *GamCare* where the customer was then redirected to a link for the self-assessment test developed by *Sustainable Interaction*. Three operators provided a direct link to the self-assessment test developed by *Sustainable Interaction*, and one operator provided a link to *Gamblers Anonymous* website. Ten operators provided a range of different problem

gambling self-assessment tests which did not appear to be based on psychometrically valid problem gambling assessment screens.

Information about RG tools was available on the RG page for 46 operators (92%) although some of the information was misleading, or too technical and provided legal information. An example of where an operator gave misleading information was where there was a mention that the consumer could self-exclude online by clicking on the link provided, but the link redirected the consumer to a contact page. Another example included an operator's RG page which was full of information about different RG tools, but the only RG tool available was session limits to be set by the consumer. Most operators (n = 46) did not display any commercial information on the RG page (92%), but the few that did were "aggressive" in doing this via several pop-ups. However, this was only visible once the consumer was logged in. More than half of the operators (n = 27) displayed information or a link to gambling filtering software (54%).

4.5.2 Age Verification

When the first author registered the gambling account, the majority of the online operators (n = 44; 88%) made it clear to customers that the gambling service was available only to individuals over the age of 18 years. However, in no instance was the first author asked to provide evidence of any form of identification document.

4.5.3 Responsible Gambling Information Sent via E-mail

Three-quarters of the operators (n = 37; 74%) sent an e-mail to the consumer as soon as the registration was completed. These emails were mainly of a commercial nature to encourage the consumer to gamble, to benefit from a bonus, or "free" money to gamble. Only 21 of the 37 operators had any RG information or a link to the RG page. Four operators provided a link to an RG page where the link was, and in one instance, it directed the consumer to the "gambling bonus" page instead, which may have been on purpose or may have been a technical fault. As

noted in more detail below, the first author communicated with the customer service agent and explicitly mentioned that they had a possible gambling addiction. A number of gambling regulators specifically state that any commercial communication must not be directed to known vulnerable individuals such as those who have self-excluded or have let the gambling operator know they have a gambling problem (e.g., Malta Gaming Authority, 2018). This means that the online operator should refrain from sending promotional communication to such consumers, and most of the operators did this (n = 43; 86%). However, seven operators continually sent promotional communication following self-exclusion. The highest occurrence of promotional communication was five emails in 14 days, and out of these seven operators, three of them also sent promotional bonus material to the first author's smartphone in the form of a text message.

4.5.4 Access to Gambling Account History

Almost all the operators (n = 48; 96%) provided an easy and clearly accessible option for the consumer to gain access to their gambling transactions.

4.5.5 Responsible Gambling Tools

All but one of the operators (n = 49; 98%) provided the consumer the possibility to set up a limit, and 48 of the operators (96%) offered the options to take a break or to self-exclude. The RG tools were not consistent among the operators evaluated, and the availability of tools is outlined in Table 4.1.

Table 4.1. Types of RG tools offered by online gambling operators

RG tool	RG tool definition	Occurrence
Deposit limit	Option to limit how much money can be deposited daily, weekly, and/or monthly	n = 39; 78%
Loss limit	Option to limit monetary losses per day, week and/or month	n = 19; 38%

Time limit	Option to limit how much time is spent on the website either per session or over a specific time period such as daily, weekly, and/or monthly	*n* = 16; 32%
Reality check	Option to set a reminder every x minutes which would then prompt whether or not to continue gambling	*n* = 15; 30%
Wager limit	Option to set a limit on the amount of money wagered on a single instance	*n* = 13; 26%
Spending limit	Option to set a limit on how much money is spent daily, weekly, and/or monthly	*n* = 2; 4%
Activity statement	Option to have a statement showing financial transactions for a chosen period	*n* = 2; 4%
Product block	Option to block access from a specific type of gambling for a designated period of time	*n* = 2; 4%
Turnover limit	Option to set a limit on financial turnover	*n* = 1; 2%
Budget calculator	Option to input salary figures to suggest the amount of money that can be afforded to spend gambling	*n* = 1; 2%

Cooling-off periods (sometimes referred to as the "take a break" option) are the options that allow customers to pause their gambling for a period of less than 6 months. This facility was available among most operators (*n* = 48; 96%). Voluntary self-exclusion option, which refers to taking a break from gambling for 6 months or more, was a facility also offered by most operators (*n* = 48; 96%). Although these options were said to be available, the information provided to the consumer was not always truthful in a minority of instances. There were two operators where these tools could not be accessed. In one instance, the consumer had to deposit

money into the account, and for another operator, the consumer had to accept and claim a bonus. In another instance, the RG information or link to the RG page was not available on the main page where all other features, including depositing money and playing a multitude of games, were available. One operator claimed that they had many RG tools available, but only a reality check option was available. One operator required the completion of a self-assessment test prior to accessing the RG tools, which although might have good intentions might discourage the gambler because it may be viewed as an extra unnecessary hurdle.

4.5.6 Interactions with Customer Service

To better understand properly RG practice available to the consumer, two questions and one statement were presented to the customer service team (see the "Methods" section). The best method to speak to the customer service representative is by communicating with the operator via a live chat facility, and if this is unavailable, via email. Most operators had a live chat facility (n = 42; 84%); therefore, only eight operators needed to be contacted via email.

The results are presented for answers given either by live chat or email. Seven operators out of fifty declined to answer any of the first author's questions. After repeated attempts, no answers were provided. With regard to the first question asked ("*I would like to control my gambling. Do you have any information on how I can do that?*"), all the remaining operators replied in a good RG-oriented manner, mentioning and advocating the use of limit-setting. The extent of the reply varied from just mentioning the deposit limit to other operators going as far as also sending information about treatment centers. The second question provided many different answers ("*What happens if I increase or remove any of the limits I would set?*"). The majority of the operators (n = 39; 78%) replied in a positive and helpful way by indicating that an increase of the limits would essentially mean that the consumer would need to wait for 24 hours (and one operator mentioned 7 days). Three of the operators did not really answer the

question, and this appeared to be because there was a lack of knowledge from the customer service representative.

The last statement presented to the customer service agent was "I feel addicted sometimes and cannot control my gambling." In order to evaluate the answers for this statement, the responses were categorized in three ways: (i) suggestions that would qualify as good practice (*n* = 19; 38%), (ii) action taken on the account without informing the consumer (*n* = 12; 24%), and (iii) bad practice (*n* = 11; 22%). The operators that fall under the first category of good practice gave the first author suggestions on how to handle potential gambling problems and also sent information about where to seek help. It was notable that the suggestions were done in a friendly and non-judgmental manner with local information that would help a Maltese consumer. Almost a quarter of the operators fell in the second category where the action was done without the consumer's choice. For these operators (*n* = 12; 24%), four of these did not answer the statement, and the conversation was cut short. However, the first author received an email stating that a self-exclusion was placed on the account from all four operators. For the remaining eight operators, the customer service representative did not really answer the question and gave very vague answers such as affirming the statement or confirming that the situation must be difficult. Despite the answers not being ideal, for all these operators, the first author received an email stating that the account would be closed and that a self-exclusion was applied on the account. Bad practice was present for 11 operators (22%). For an operator to fall in this category, the response received to the statement would not be reflective of a responsible gambling operator and meant they did not provide support to an individual who admitted they had a gambling problem. These varied quite a bit. Examples include one operator highlighting that the choice is dependent on the consumer so there is nothing the operator can do. Another operator mentioned that the first author could have a bonus because current times are tough on everyone (supposedly referring to COVID-19 situation), and another customer service

representative highlighted that it is only a gambling problem if an individual experienced it all the time and not periodically.

Given that the majority of the operators' sample was seen as either showing good practice or self-excluding the first author without being given the choice, it was expected that most operators would not let the first author access their account again. Despite this, over one-fifth of the operators still allowed access to the account (n = 11; 22%), whereas 39 of the operators (78%) did not allow the first author to access the gambling account.

4.6 Discussion

The aim of this study was to evaluate different online gambling operators and how they present their RG practices and tools in order to provide consumer protection. This study also replicated the study by Bonello and Griffiths (2017) to see if there were any changes in RG practices and use of RG tools given the current regulatory environment. This is important given the increasing use of RG tools to minimize harm to gamblers and the number of recent systematic reviews that have examined the efficacy of these tools (e.g., Bjørseth et al., 2021; Delfabbro & King, 2021; Drawson et al., 2017; Harris & Griffiths, 2017; Ladouceur et al., 2017; McMahon et al., 2019; Tanner et al., 2017).

Overall, there were differences noted from the previous 2017 study to the present study. These differences are presented in Table 2. The presence of an RG page was found for all, but two of the operators examined, and in one case, the RG page was not visible on the main page of the operator, where it is most needed. A notable change from the previous study was the reduction of promotional communication on the RG page. In the 2017 study, only six of the operators (12%) had no promotional communication on their RG page, whereas in this current study, 43 operators had no promotional material on the RG page (86%). Operators have a responsibility to their consumers to prevent gambling-related harm as much as possible (Monaghan, 2009), and providing a non-commercially inclined RG page is the least the operator

may do. This also emphasizes that there is an element of responsible and fair practice by the operator, which is not only in accordance to the regulation and codes of conduct but increases customer retention which in turn aids to a profitable business model (Gainsbury et al., 2013).

Other than that, a high number of operators had sufficient information on their RG page to help the gambler make informed choice about the RG tools that they offer. Despite this, one of the suggestions would be to use easy to understand information about the RG tools and their offerings on the RG page. Some of the operators placed very technical, legal information on this page which was not always user-friendly. Having a more comprehensible representation of these RG tools would not only help the consumer refer to the page, but when displaying a positive attitude towards RG, and the tools, will help in normalizing these which will further help more in consumers using them (Procter et al., 2019). Gambling filtering software helps consumers that might be gambling too much to limit their gambling by reducing accessibility, even on websites that are not locally regulated; therefore, promoting such a tool would also help (Gamban, 2021).

Table 4.2. Comparison of the results from 2017 study and the present study

Criteria	2017	2021
RG dedicated page	*n* = 50; 100%	*n* = 48; 96%
- Statement of commitment to RG	*n* = 50; 100%	*n* = 48; 96%
- Information about gambling harm	*n* = 50; 100%	*n* = 48; 96%
- Mention of gambling help organisation(s)	*n* = 42; 84%	*n* = 46; 92%
- Self-assessment	*n* = 32; 64%	*n* = 42; 84%
- Information about RG tools	*n* = 42; 84%	*n* = 46; 92%
- No promotional material	*n* = 6; 12%	*n* = 46; 92%
- Gambling blocking software links	*n* = 30; 60%	*n* = 27; 54%

Age checks	*n* = 34; 68%	*n* = 44; 88%
Link to RG in first email communication	*n* = 22; 44%	*n* = 21; 42%
Account history	*n* = 47; 94%	*n* = 48; 96%
Availability to limit setting	*n* = 45; 90%	*n* = 49; 98%
Cooling off functionality	*n* = 36; 72%	*n* = 48; 96%
Self-exclusion option	*n* = 43; 86%	*n* = 48; 96%
Customer services communication regarding limits	*n* = 30; 60%	*n* = 43; 86%
Customer services communication regarding RG breaks	*n* = 22; 44%	*n* = 39; 78%
Customer services communication for problem gamblers	*n* = 25; 50%	*n* = 31; 62%

Displaying information that the gambling product should be accessible for individuals above the legal age of 18 years increased in occurrence when compared to the 2017 study, from 68 (*n* = 34) to 88% (*n* = 44). Despite this, no operator realized that the account that the first author created did not contain real information; therefore, it might be easy for someone under the legal age to register and play. This can result in a major issue highlighted by Calado et al. (2017) because minors should not be allowed to gamble because gambling during adolescence may not only lead to problem gambling, but also addiction to other things (e.g., psychoactive substances). Similar to the 2017 study, almost all operators sent an email containing commercial information. This is understandable from a business perspective because it might encourage the consumer to play more, but less than half of the operators (42%; *n* = 21) only sent an email that contained some RG information or at least a link to the RG page. The most worrying aspect was that one operator's link leading to the RG page was to commercial information, which could be either be a mistake or a non responsible way of getting gamblers to play more.

Deposit limits are a good way of ensuring that consumers play within their limits, and voluntary deposit limits may encourage less churn and more sustainable revenue with the consumer through loyalty (Auer et al., 2019). These are also RG tools that appear to have some proven efficacy based on systematic literature reviews (e.g., Delfabbro & King, 2021; Harris & Griffiths, 2017). Although these tools may not be used frequently, their efficacy is still high, and consumers that set these limits gamble at sustainable levels (Gainsbury et al., 2020). The popularity of these tools may also be due to how the operator promotes such tools. The present study showed that less than half of the operators (40%; $n = 20$) offered the option to set a limit on the deposit money page, which might also influence how many gamblers use this limit more effectively.

Almost all the operators (98%, $n = 49$) offered RG tools such as limit-setting tools and short periods of taking a break from gambling. Most operators (96%, $n = 48$) offered the option for the consumer to have a break from gambling by using the self-exclusion tool. RG tools such as limit-setting and self-exclusion appear to be beneficial for the consumer and for the operator and are deemed useful by players (Griffiths et al., 2009) although proven efficacy of self-exclusion schemes is somewhat limited (Drawson et al., 2017; Tanner et al., 2017). A previous study found that online poker players mentioned that RG tools increase trust in the operator because it shows that the company has integrity (Wood & Griffiths, 2008). Regular consumers may set voluntary limits to prevent themselves from gambling too much (Hing et al., 2015). This is beneficial for the operator because it might increase the chance for the consumer never to go overboard and result in a sudden break from gambling. One factor which should be rectified is the offering of RG tools onsite. Five operators did not offer the consumer the option to self-exclude online, and this might not be the best RG approach because it might hinder consumers from taking a much-needed break from gambling.

The present study, as with the one in 2017, provides great insight because it involved active communication with the customer service representative. By using this methodology, the researchers were able to get a glimpse of the help a consumer would get first-hand from the operator. Although communication appears to have been better than the previous study, improvement is still needed. Online gambling is a very competitive business, and by focusing on consumer loyalty and investment, this would render the business successful (Gainsbury et al., 2013). Customer service interaction was the factor that differentiated the operators among them and showed which companies were really committed to RG. There may be a number of reasons why specific customer service interactions were not ideal. It could be that the operator is not taking RG that seriously, and therefore consumers highlighting that they might have an issue with gambling is not deemed as important enough to render an intervention. Another possible explanation could be that the customer service representatives were not sufficiently trained in RG, and therefore could not handle the customer contact properly.

4.7 Limitations and Future Research

There are a number of limitations to the present study. Compared to the number of gambling websites worldwide, the number of websites examined was relatively small (although the present study did include the world's most popular online gambling websites). In terms of replication of Bonello and Griffiths' (2017) previous study of the world's top 50 gambling websites, only 32 of these were still in operation at the time of the present study. Therefore, while the methodology was identical, the population sample was somewhat different in the present sample and may have influenced the findings. In relation to evaluating customer service interactions, only one interaction took place and may not necessarily have been representative of all customer services. Future studies should include more than a single interaction. Given that there is still improvement needed by gambling operators in the area of RG, future replication studies are needed along with a larger number of operators. Future research could

also investigate whether there are differences in RG tool provision among gambling operators on different regulating jurisdictions. Other studies could also specifically examine how compliant the gambling operators are in relation to the jurisdictional gambling regulations.

4.8 Conclusion

Online gambling is not a consumer behavior that will become obsolete, so prevention of harm and RG should be on the top of the agenda for any online gambling operator. Moreover, operators need to commit to RG, not only due to possible repercussions with the regulator, but also because it might cause customer disputes which would take up a lot of resources to resolve as well as increasing the potential for negative publicity (Gainsbury et al., 2013). The RG practices in the present study appear to have increased compared to Bonello and Griffiths' previous study (2017), but there are still some areas that need to be improved. More specifically, these include better age checks at registration to prevent falsified identities and/or underage gambling, no promotional communication on the RG dedicated page, and more RG-oriented assistance when in communication with the online gambling operator representative.

Chapter 5 - The voluntary use of responsible gambling tools and the influence of age and gender: An empirical study using behavioral tracking data

5.1 Introduction

During recent years, internet use has been on the increase, and many offline activities have become online ones, including online gambling (Pallesen et al., 2021). Research suggests when comparing online gambling to offline gambling, online gambling may be more harmful than other products for vulnerable and susceptible individuals (Ino et al., 2020). Reasons for the attractiveness of online activities include higher accessibility, anonymity, affordability, and increased convenience (McCormack & Griffiths, 2012). The transition to online gambling has completely changed the gambling landscape but also created innovative measures for consumer protection (Forsstrom & Cisneros Ornberg, 2019). Furthermore, some claim there is a significant association is present between online gambling participation and gambling-related harm (Diaz & Perez, 2021). Moreover, the expansion of online gambling has occurred so swiftly that gambling regulation in relation to consumer protection has tended to lag behind (Catania & Griffiths, 2021a), and regulation has been difficult particularly where gambling monopolies are present (Forsstrom & Cisneros Ornberg, 2019).

Different gambling stakeholders, including clinicians, the gambling industry, and gambling researchers use the term 'responsible gambling' (RG) with its focus on consumer protection and an emphasis on informed decision-making. The RG model is an approach that focuses on the 'at-risk' consumers that encourages sustainable and healthy gambling behavior (Wood et al., 2014). Despite online gambling being a potentially riskier form of gambling when compared to offline gambling for vulnerable individuals, online gambling operators may offer better and more accessible RG tools (Philander & MacKay, 2014; Wood & Griffiths, 2015), with an increased efficacy due to the technological structure (Auer et al., 2020). With social responsibility being a major topic for the online gambling industry (Harris & Griffiths, 2017),

reliable RG policy is a must for a regulated gambling industry (Wood et al., 2014). The aim of such a policy is to keep consumers gambling at a non-problematic level, where gambling is another form of entertainment (Wood & Griffiths, 2015). However, this has been criticized as RG transferring the responsibility onto the consumer who needs to use the RG tools offered by the operator (Shaffer et al., 2016). Moreover, there is a conflict of interest for the gambling operator to focus on consumer protection because this may impact the commercial gain for the operator (Jones et al., 2009). Therefore, these issues need to overcome by applying policies which are based on objective and empirical data, and not on subjective personal views (Blaszczynski et al., 2004).

RG tools are intended to help gambling stay in control (Ladouceur et al., 2016). These tools include the possibility to set limits, take breaks through self-exclusion, help customers that are experiencing gambling-related harm (Griffiths et al., 2009b), and encourage consumers to play in a responsible manner (Auer & Griffiths, 2018). Moreover, these RG tools are available and accessible on most online gambling operators' websites (Gainsbury et al., 2020; Griffiths et al., 2009b), and this is mainly due to regulators requiring the gambling operators to provide such RG tools (Dragicevic et al., 2015). Nonetheless, according to Gainsbury et al. (2014), RG tools are still underused by the consumers. This shows that more research should be undertaken to understand how the RG tool uptake may be increased by identifying the potential barriers (Procter et al., 2019).

Given that RG tools help gamblers in maintaining responsible gambling (Harris & Griffiths, 2017), one of the more popular RG tools is limit-setting (Wood & Griffiths, 2010). Limit-setting creates the possibility for gamblers to predetermine how much money or time they would like to commit to gambling (Harris & Griffiths, 2017). This RG tool may vary by being able to limit playing time, deposit amount, and loss amount, and these limits may be fixed or voluntarily activated by the gambler (Griffiths & Barnes, 2008; Wood & Griffiths, 2010).

Most socially responsible operators offer the possibility for their customers to set limits on their account (Auer et al., 2020), which is advantageous because pre-committing to a limit can prevent excessive gambling (Ladouceur et al., 2012).

Both voluntary and mandatory limits are commonly offered by online gambling operators, and there has been an increase in availability when compared to previous years (Bonello & Griffiths, 2017). A study by Kazhaal et al. (2013) found that less than half of 74 online poker websites offered limit-setting. In a later study carried out in looking at 50 of the world's most popular online operators, 90% of all the online operators examined offered the possibility of limit-setting (Bonello & Griffiths, 2017). In a replication study carried out three years later, the possibility of limit-setting was found in 49 out of 50 operators (Catania & Griffiths, 2021a). The limit-setting option may vary depending on the jurisdiction where the operator is licensed. In a study looking at all French licensed operators, all of them offered betting and deposit limits (Marionneau & Jarvinen-Tassopolous, 2017). Similarly, when looking at online gambling websites licensed in Italy, all of them required the gambler to set a deposit limit prior to gambling (Calvosa, 2017). Studies on the effects of deposit limits have reported mixed findings. Whereas some studies have shown that deposit limits reduce gamblers' spending (Auer and Griffiths, 2013), other studies have reported variable success in gamblers sticking to their own limits (Hing et al., 2015). Research shows that limits that are initiated by the gamblers themselves rather than operator-initiated limits because the former enhances rational decision-making, which is more effective in minimizing harm (Auer and Griffiths, 2013b; Wood et al., 2014). In fact, operator-initiated limits reduce the facilitation for the gambler to take responsibility for managing their own money when gambling (Wood and Griffiths, 2010).

Gamblers that just register a gambling account and are prompted by the gambling operator to set a limit are more likely to do so (Ivanova et al., 2019), although in some cases, gamblers

may set large limits which provide the reason as to why such limits are not exceeded (Wood and Griffiths, 2010). A limitation to studying the effect of gambling limits is that it is not known whether the gambler has reduced their gambling on one website and simply moved to gambling on another (Heirene & Gainsbury, 2021). Overall, limits appear to be beneficial for gamblers. In a study of 10,865 online gamblers (from many different countries), 70% of the participants viewed voluntary limits as a useful RG tool (International Gaming Research Unit, 2007). Similarly, a study by Bernhard et al. (2006) reported that voluntary player set limits were perceived as useful, especially when compared to mandatory limits among Canadian gamblers. A survey study by Griffiths et al. (2009) reported that limit-setting was seen as the most useful RG tool among Swedish online gamblers.

Limit-setting is perceived positively by gamblers because it gives them the opportunity to reflect on their own gambling (Lucar et al., 2012). Limit-setting can help gamblers reduce their gambling activity. For example, Nelson et al. (2008) found that online gamblers who used limit-setting tools were initially gambling more heavily but reduced their gambling significantly after setting a limit. Some studies have indicated that voluntary limit-setting has the most profound effect on those that most need it (i.e., the most gambling-intense players) (Auer & Griffiths, 2013b). Gamblers who set limits not only reduce their playing frequency but also reduce the total amount gambled (Nelson et al., 2008). When it comes to the groups of gamblers utilizing limits prior to gambling, non-gamblers and low-risk gamblers have been found to be the most likely to set specific financial limits, whereas problem gamblers were the least likely to endorse any precommitment limits (Nower & Blaszczynski, 2010).

Although this might not be ideal, a potential explanation may be that individuals that are gambling for entertainment have less erroneous thoughts about winnings, whereas individuals that are not gambling for entertainment do so for winning and therefore continue to gamble despite the potential negative harm resulting in gambling too much (Nower & Blaszczynski,

2010). A study by Auer et al. (2020) evaluated the long-term effects of voluntary limit-setting. Results showed that there were no differences when looking at age and gender, but when exploring most gambling-intense gamblers, those who had set a voluntary limit gambled significantly less a year on compared to those who had not set a voluntary limit (Auer et al., 2020). Despite an increasing amount of research into limit-setting, more studies are needed to evaluate the efficacy of limit-setting.

Another RG tool which is offered to individuals to prevent gambling-related harm is self-exclusion (Caillon et al., 2019; Luquiens et al., 2018). Self-exclusion is an RG tool where gamblers pre-commit not to access gambling for a pre-determined period of time (Dragicevic et al., 2015; Gainsbury, 2013; Tremblay et al., 2008). Self-exclusion has become increasingly more common due to regulatory requirements in many jurisdictions (Dragicevic et al., 2015). In one of the first studies to examine the use of RG tools by online gambling operators, a study by Smeaton and Griffiths (2004) reported that out of 30 British online gambling operators, only one provided the option to self-exclude. In a later study by Bonello and Griffiths (2017), self-exclusion was offered by 86% of the 50 online gambling operators examined. Voluntary self-exclusion (VSE) is one of the RG tools most highly recommended for online gambling operators to use and provide (Wood et al., 2014). The population of online gamblers that use VSE is of particular interest to different stakeholders such as researchers, policymakers, and treatment providers (Dragicevic et al., 2015). VSE is beneficial for the online gambler because this period of abstinence may provide control over an individual's gambling and enhance their ability to stop, which may in turn prevent the transition from being an at-risk gambler to a problem gambler (Caillon et al., 2019).

Self-exclusion can also be a temporary measure to have a time-out from gambling for a short period, such as a day or a week (Gainsbury et al., 2020). In one study, seven-day temporary self-exclusion periods were seen as the most useful by online gamblers, followed by

one-month self-exclusion and 24-hour self-exclusions (Griffiths et al., 2009). However, self-exclusion is still viewed as an RG tool that is under-used (Luquiens et al., 2018). When looking at demographic data concerning self-excluders, one study reported that there were no statistically significant differences between males and females (Dragicevic et al., 2015). Another study by Hayer and Meyer (2011) reported that the majority of gamblers that used self-exclusion were males aged in their twenties and thirties. An earlier study by the same authors reported that gamblers that used self-exclusion were younger and experienced some gambling-related problems (Meyer and Hayer, 2010). This was also confirmed in a study by Wardle (2012). However, these demographic characteristics may be due to a general over-representation of these groups in the online gambling world (Wood and Williams, 2009).

Similar to research examining limit-setting, despite self-exclusion being a widely offered RG tool by operators, there is a lack of studies examining the efficacy (Caillon et al., 2019). Although the majority of studies show that most gamblers benefit from self-exclusion (Kotter et al., 2019; McCormick et al., 2018), the majority of long-term self-excluders return to gambling after the exclusion has ended (Drawson et al., 2017), where the return to gambling may be even more intense (Luquiens et al., 2018). In addition, unless the gambler utilizes a cross-operator self-exclusion scheme, the gambler may self-exclude from one online gambling operator and simply gamble with another operator during the self-exclusion period.

Another issue is that non-problem gamblers or gamblers with no gambling-related harm, may use VSE as a way of closing their online gambling account due to non-RG reasons, such as annoyance with the operator (Hayer & Meyer, 2011). This was evident in studies that evaluated gamblers who used VSE. For instance, one study reported that 25% of gamblers using VSE activated it on the same day of registering their online gambling account (Dragicevic et al., 2015). This was also confirmed in a study by Hayer and Meyer (2011) who also noted that online VSE was far easier to do online than in offline land-based venues. This was also evident

in a study by Catania and Griffiths (2021b) who reported that one-fifth of the population who used VSE had less than 24 hours of account activity (i.e., they excluded themselves within a day of creating a new account), and half of the gamblers excluded themselves within seven days of opening a new account, showing the lack of homogeneity among gamblers that utilize VSE. This heterogeneity in the VSE group further highlights the lack and importance of research examining the effect of self-exclusion in online gambling (Luquiens et al., 2019).

Given the lack of research on RG tools and socio-demographic factors, the aim of the present study was to examine if there are any preferences to voluntary use of RG tools when looking at different age groups and gender by using account-based tracking data from an online gambling operator. Using the same dataset, the study also examined the preferred time that gamblers initiated the use of voluntary RG tools by examining how long after the online gambling account had been created that an RG tool had been used by the customer. Given that the study was exploratory, there were no specific hypotheses.

5.2 Methods

5.2.1 Participants

The participants in the present study were all the customers who registered on *Unibet.com* from the January 1, 2020 up to March 31, 2020 and who had voluntarily used an RG tool in the first 12 months after they had opened an account (N=18,365). When considering all the registrations between January 1, 2020 up to March 31, 2020, these customers that used a voluntary RG tool in the first 12 months comprised 16.55% of the gambling operator's population. The anonymized sample given to the researchers only contained the customers who had used a voluntarily RG tool. The anonymized information included the gambler's gender, age, the first RG tool that the customer used voluntarily, and the number of days between the account activation and the voluntary use of the RG tool.

5.2.2 Procedure

The authors were given access to a large anonymized data sample of customers at *Unibet.com* in order to carry a secondary analysis on the voluntary usage of RG tools. This online gambling company offers its customers many online gambling products, including poker, sports betting, and casino games. As part of the commitment by *Unibet.com* to player protection, a number of RG tools are offered. These tools include limit-setting tools, self-exclusion tools, and product blocking tools. More specifically, the RG tools that could be voluntarily used comprised:

- *Deposit limit:* This tool allows gamblers to set a limit on the amount they would like to deposit daily, weekly, and/or monthly.
- *Product loss limit:* This tool allows gamblers to predetermine a set limit on the amount of money they would like to lose daily, weekly, and/or monthly on a specific product group (casino and games, sports and racing, bingo, and poker).
- *Product block:* This tool allows gamblers to block access for a specified period of time (one day, one week, one month, three months and/or six months) for a specific product group (casino and games, sports and racing, bingo, and/or poker).
- *All products block:* This tool allows gamblers to block access to all gambling products for a predetermined specified period (one day, one week, one month, three months or six months).
- *Short-term self-exclusion:* This tool allows gamblers to remove access to their online gambling account for one day, one week, one month or three months.
- *Long-term self-exclusion:* This tool allows gamblers to remove access to their online gambling account for six months.

The data collected for these customers were gender, age, the number of days until the first voluntary use of an RG tool during the first year of their account activity with *Unibet.com.*

Analysis of all the data was carried out using *SPSS Version 27.* The collected data were all anonymized and therefore no customer profiles were identifiable to the researchers. The study was approved by the research team's university ethics committee.

5.2.3 Data Analysis

Descriptive statistics were performed, followed by chi-square tests to examine the differences between the voluntary RG tool chosen with respect to gender, age, and days passed from registration of the online account to first voluntary activation of the RG tool. The *z*-scores were calculated for each group, and if the *z*-score was above 1.96, this was considered as statistically significant (McLeod, 2019).

5.3 Results

As aforementioned, all the customers who registered on *Unibet.com* in the first three months of 2020 and voluntarily used an RG tool in the first 12 months since their account activation were identified for further analysis (N=18,365). As far as the present authors are aware, analysis and reporting on gamblers using voluntary RG tools has not been examined in previous recent research using actual account-based data.

5.3.1 Gender

This group of gamblers comprised 83.1% males (n=15,255) and 16.9% females (n=3110). Table 5.1 shows the gender data with the number of gamblers in each group and their preferred first voluntary use of an RG tool. This is then presented as a percentage within the gender group. Table 5.2 shows the number of gamblers and their preferred first voluntary use of an RG tool but also including the percentage split within the voluntary RG tool used. The most popular first voluntary use of an RG tool for both females and males was the deposit limit: 88.3% in the female group (n=2746), and 89.1% in the male group (n=13,598). The second most popular voluntary first use of a voluntary RG tool was the also the same for both females and males (i.e., long term self-exclusion, 4.0%). This was followed by short-term self-exclusion (3.5%),

product block (2.5%), product loss limit (0.7%), and blocking all products (0.4%). There was no statistically significant difference between gender and preference for first voluntary use of an RG tool ($\chi^2(5)=3.119$, $p=.682$).

Table 5.1. Voluntary first use of an RG tool and distribution by gender group (N=18,365)

		Deposit limit	Product loss limit	Product block	All products block	Short self-exclusion	Long self-exclusion
Females	Number	2746	21	85	11	109	138
	%	88.3%	0.7%	2.7%	0.4%	3.5%	4.4%
	z-score	-1.4	-0.2	1.0	-0.1	0.1	1.4
Males	Number	13,598	107	372	56	529	593
	%	89.1%	0.7%	2.4%	0.4%	3.5%	3.9%
	z-score	1.4	0.2	-1.0	0.1	-0.1	-1.4

5.3.2 Age

The majority of the gamblers were in the 18-25 years age band (n=7432; 40.5%). This was followed by those aged 26-35 years (n=5205; 28.3%), 36-45 years (n=2932; 16.0%), and 46-55 years (n=1850; 10.1%). The age band with least number of customers was those aged 66+ years (n=253; 1.4%) followed by those aged 56-65 years (n=693; 3.8%). Table 5.1 presents the number of gamblers against their choice of their preferred voluntary RG tools and the distribution within the age group. Table 5.2 also presents the number of gamblers and the RG tool that they voluntarily chose, as well as the distribution within the RG tool chosen.

The deposit limit was always the most preferred voluntary RG tool and most age groups had the same preference following the deposit limit. The one group that varies compared to the others was the youngest age band group (18-25 years) in which their second preferred choice was short-term self-exclusion, followed by long-term self-exclusion and a product block being

equally their third preferred choice for a voluntary RG tool. The deposit limit was a more prominent choice among older age bands: 46-55 years (n=1721; 93%) and 56-65 years (n=648; 93.5%). For the age group bands 26-35 years and 36-45 years, long-term self-exclusion was more prominent compared to the other age groups. There was a statistically significant association between age group and preference for voluntary RG tool ($\chi^2(25)=167.198$, $p<.001$). Gamblers aged 18-25 years were more likely to use product block and short self-exclusion but were less likely to use long self-exclusions compared to other age groups. Gamblers aged 26-35 years were less likely to activate a deposit limit but more likely to use long self-exclusion compared to other age groups. When looking at gamblers aged 36-45 years, they were less likely to use short-term self-exclusion but more likely to use long-term self-exclusion compared to the other age groups. For both groups of gamblers aged 46-55 years and 56-65 years, they were more likely to activate a deposit limit, but less likely to use product block, short-term self-exclusion and long-term self-exclusion compared to the other age groups.

Table 5.2. Age group split for voluntary first use of an RG tool and distribution per age group (N=18,365)

		Deposit limit	Product loss limit	Product block	All products block	Short self-exclusion	Long self-exclusion
18-25	Number	6604	58	213	24	320	213
years	% 18-25	88.90%	0.80%	2.90%	0.30%	4.30%	2.90%
	z-score	-0.5	1.1	**2.7**	-0.8	**5.1**	**-6.4**
26-35	Number	4520	38	129	23	198	297
years	% 26-35	86.80%	0.70%	2.50%	0.40%	3.80%	5.70%
	z-score	**-5.9**	0.3	-0.1	1.1	1.5	**7.5**
36-45	Number	2620	16	75	12	58	151

years	% 36-45	89.40%	0.50%	2.60%	0.40%	2.00%	5.20%
	z-score	0.7	-1.1	0.3	0.4	**-4.8**	**3.5**
46-55	Number	1721	10	27	6	41	45
years	% 46-55	93.00%	0.50%	1.50%	0.30%	2.20%	2.40%
	z-score	**5.8**	-0.9	**-3.0**	-0.3	**-3.1**	**-3.6**
56-65	Number	648	5	8	2	14	16
years	% 56-65	93.50%	0.70%	1.20%	0.30%	2.00%	2.30%
	z-score	**3.9**	0.1	**-2.3**	-0.3	**-2.1**	**-2.3**
66+	Number	231	1	5	0	7	9
years	%66+	91.30%	0.40%	2.00%	0.00%	2.80%	3.60%
	z-score	1.2	-0.6	-0.5	-1.0	-0.6	-0.3

Note: Significant z-scores in **bold**

Table 5.3. Age group split for voluntary first use of an RG tool and distribution by RG tool usage (N=18,365)

		Deposit limit	Product loss limit	Product block	All products block	Short self-exclusion	Long self-exclusion
18-25	Number	6604	58	213	24	320	213
years	% RG tool	40.40%	45.30%	46.60%	35.80%	50.20%	29.10%
26-35	Number	4520	38	129	23	198	297
years	% RG tool	27.70%	29.70%	28.20%	34.30%	31.00%	40.60%
36-45	Number	2620	16	75	12	58	151
years	% RG tool	16.00%	12.50%	16.40%	17.90%	9.10%	20.70%
46-55	Number	1721	10	27	6	41	45

years	% RG tool	10.50%	7.80%	5.90%	9.00%	6.40%	6.20%
56-65	Number	648	5	8	2	14	16
years	% RG tool	4.00%	3.90%	1.80%	3.00%	2.20%	2.20%
66+	Number	231	1	5	0	7	9
years	% RG tool	1.40%	0.80%	1.10%	0.00%	1.10%	1.20%

5.3.3 Days from registration to activation of voluntary RG tool

The date of when the online gambling account was registered and the date of when the first use of a voluntary RG tool was activated were recorded. These data were then split into different groups depending on the time difference between the registration of the account and the activation of the voluntary RG tool. The number of activated RG tools with this time difference is recorded in Table 5.4. Days from registration to activation of voluntary RG tool are also presented by gender and age group splits.

Table 5.4. Distribution of voluntary RG tool activation depending on period from online account registration (N=18,365)

Duration	Number of gamblers	Percentage of gamblers
Same day	14,215	77.4%
1-7 days	971	5.3%
8-30 days	749	4.1%
31-90 days	813	4.4%
91-120 days	230	1.3%
121-180 days	350	1.9%
181+ days	1037	5.6%

As can be seen, the majority of the first use of voluntary RG tool activations occurred on the same day as registration (n=14,215; 77.4%), and the majority of these gamblers chose to activate the deposit limit (n=13,973; 76.1%). Deposit limit activation decreased in popularity as the duration from the registration of the account increased but it remained the most popular voluntary RG tool. Long-term self-exclusion was also quite popular at the beginning of the account activity, although this appeared to decrease for the gamblers in the 90-180-day period, and then increased again. Product blocking and short-term self-exclusion increased in popularity as the duration between account registration and the activation of the voluntary RG tool increased. There was a statistically significant association between days from registration to activation of an RG tool and preference for voluntary RG tool ($\chi^2(30)=5828.724$, $p<.001$). Several significant associations were found in this group. The strongest association was evident for the customers setting up a voluntary deposit limit on the same day as account creation. For all products block, a significant association was visible for all time periods except for same day and 91-120 days. This was similar for product loss limit which had a significant association for all time periods except same day and 91-120 days. For both short-term and long-term self-exclusions, significant associations were present for all the time periods except for the same day group.

When considering the gender split of the gamblers and the days from registration to activation of the voluntary RG tool, it was visible that for both genders the preference was to activate the RG tool on the same day as registration. As evident in Table 5.5, for the male group, the difference amongst the groups was greater in difference, with the second most favored group being 181+ days (n=796, 5.23%), and the least favored group being 91-120 days (n=182, 1.20%). The female group showed closer distribution amongst the groups, but same as the male group, the most preferred period from registration to activation of voluntary RG tool was on the same day (n=2350, 75.56%). The second most favored period for females was 1-7 days

(n=175, 5.63%), with the least favored period being 91-120 days (n=48, 1.54%). There was a statistically significant association between days from registration to activation of an RG tool and gender ($\chi^2(6)=24.20$, $p<.001$). For the female group, the significant associations were for the 8-30 days group (n=146; 0.79%), 31-90 days group (n=156; 0.85%), and for the 121-180 days group (n=81; 0.44%). For the male group, significant associations were present for same day activation of voluntary RG tool (n=11,865; 64.61%) and for 181+ days group (n=269; 1.46%). Female gamblers were less likely to activate a voluntary RG tool on the same day as registering an online gambling account, but more likely to activate a voluntary RG tool within 121-180 days after registering an online gambling account when compared to male gamblers. Male gamblers were more likely to activate a voluntary RG tool on the same day as registering an online gambling account, but less likely to activate a voluntary RG tool within 121-180 days after registering an online gambling account when compared to female gamblers.

Table 5.5. Gender split for voluntary first use of an RG tool and distribution by days from registration to activation of voluntary RG tool (N=18,365)

		Same day	1-7 days	8-30 days	31-90 days	91-120 days	121-180 days	181+ days
Females	Number	2350	175	146	156	48	81	154
	%	75.56%	5.63%	4.69%	5.02%	1.54%	2.60%	4.95%
	z-scores	**-2.7**	0.9	1.9	1.8	1.6	**3.1**	-1.8
Males	Number	11,865	796	603	657	182	269	883
	%	77.93%	5..23%	3.96%	4.32%	1.20%	1.77%	5.80%
	z-scores	**2.7**	-0.9	-1.9	-1.8	-1.6	**-3.1**	1.8

Note: Significant z-scores in **bold**

When taking into the account the age split of the gamblers and the days from registration to activation of the voluntary RG tool, it was again visible that the preference for setting a voluntary RG tool was the same as the registration day for all groups.

Table 5.6. Age split for voluntary first use of an RG tool and distribution by days from registration to activation of voluntary RG tool (N=18,365)

		Same day	1-7 days	8-30 days	31-90 days	91-120 days	121-180 days	181+ days
18-25	Number	5667	308	274	346	120	174	543
years	%	76.25%	4.14%	3.69%	4.66%	1.61%	2.34%	7.31%
	z-scores	**-3.1**	**-5.7**	**-2.2**	1.2	**3.6**	**3.6**	**8.0**
26-35	Number	3884	347	261	282	58	89	284
years	%	74.62%	6.67%	5.01%	5.42%	1.11%	1.71%	5.46%
	z-scores	**-5.7**	**5.3**	**4.0**	**4.1**	-1.1	-1.2	-0.7
36-45	Number	2294	198	132	100	32	50	126
Years	%	78.24%	6.75%	4.50%	3.41%	1.09%	1.71%	4.30%
	z-scores	1.2	**3.9**	1.3	**-2.9**	-0.9	-0.9	**-3.5**
46-55	Number	1560	78	55	54	17	26	60
years	%	84.32%	4.22%	2.97%	2.92%	0.92%	1.41%	3.24%
	z-scores	**7.5**	**-2.2**	**-2.5**	**-3.3**	-1.4	-1.7	**-4.7**
56-65	Number	595	32	20	18	3	7	18
years	%	85.86%	4.62%	2.89%	2.60%	0.43%	1.01%	2.60%
	z-scores	**5.4**	-0.8	-1.6	**-2.4**	**-2.0**	-1.8	**-3.5**
66+	Number	215	8	7	13	0	4	6
years	%	85.00%	3.16%	2.77%	5.14%	0.00%	1.58%	2.37%
	z-scores	**2.9**	-1.5	-1.1	0.6	-1.8	-0.4	**-2.3**

Note: Significant z-scores in **bold**

As visible in the other distributions, the most preferred day of voluntary RG tool activation was on the same day as registration for all the age groups. The second preference for the duration between registration date and activation of the voluntary RG tool was 1-7 days for almost all the age groups, except for the 18-25 years group and the 66+years group. For the former, the second preferred group was 181+ days (n=543, 7.31%), and for the latter it was the 31-90 days (n=13, 5.14%). There was a statistically significant association between days from registration to activation of an RG tool and age group ($\chi^2(30)=254.28$, $p<.001$).

More specifically, the age groups 18-25 years and 26-35 years were less likely to activate a voluntary RG tool within the same day as registering an online gambling account when compared to other age groups. Gamblers aged 46 years and older were all more likely to activate a voluntary RG tool within the same day as registering an online gambling account when compared to other age groups. Gamblers aged between 26-45 years were more likely to activate a voluntary RG tool within 1-7 days after registering an online gambling account, but those aged 18-25 years and 46-55 years were less likely to activate a voluntary RG tool within 1-7 days after registering an online gambling account when compared to other age groups. Gamblers aged between 18-25 years and 46-55 years were less likely to activate a voluntary RG tool within 8-30 days after registering an online gambling account, whereas those aged 26-35 years were more likely to activate a voluntary RG tool within 8-30 days after registering an online gambling account when compared to the other age groups. Gamblers aged 36-65 years were less likely to activate a voluntary RG tool within the first 31-90 days, whereas those aged 26-35 years were more likely to activate a voluntary RG tool within this time period. Gamblers aged 56-65 years were less likely to activate a voluntary RG tool within 91-120 days, while those aged 18-25 years were more likely to activate a voluntary RG tool within this period. The only age group that was more likely to activate a voluntary RG tool within 121-180 days and

181+ days after account registration compared to other age groups was those aged 18-25 years. On the contrary, all gamblers aged over 35 years were less likely to activate a voluntary RG tool after 181 days of account registration when compared to other age groups.

5.4 Discussion

The aim of the present study was to examine and identify if there are any preferences to voluntarily using RG tools in relation to gender and age, and at which point after the online account registration do gamblers first voluntarily use an RG tool. The use of the deposit limit was always the predominantly preferred RG tool, but there were differences in the order of preference of voluntarily using RG tools within the different age groups. The youngest group (18-25 years) showed a preference for short-term self-exclusion followed by an equal preference to long-term self-exclusion and product block. There were notable differences for other age groups such as the deposit limit being a preferred choice in the 46-55 years and 56-65 years age groups, whereas long-term self-exclusion was more prominent in the 26-35 years and 36-45 years age groups. There was a significant association for the 18-25 age group with short self-exclusion and product block. Another significant association was present for the customers aged 26-35 years and 36-45 years with long-term self-exclusion. The majority of voluntary RG tool setting occurred on the same day as registration (77.4%), and almost all of these gamblers chose to activate the deposit limit (76.1%). Using the deposit limit remained the most preferred voluntary RG tool but not as strongly as on the same day account registration. Long term self-exclusion had a low uptake on the same day as registration (4.0%), but then increased in popularity the longer the gambler stayed active on the platform.

Product blocking and short-term self-exclusion increased in popularity the longer the gambler had an account with the operator. There were several significant associations when looking at age of the customers and the days from registering the online gambling account to setting up the voluntary RG tool. There was a significant association for setting up a deposit

limit on the same day as account creation. When considering the group that blocked all their products and product loss limit, a significant association was present for all the time periods except for two groups; same day and 91-120 days. For all self-exclusion options (short-term and long-term), significant associations were present for all the time periods except the same day group.

There were no significant differences when looking at the male and female groups. This may be because the male population was over-represented in the present study's gambling population, and is similar to the finding by Dragicevic et al. (2015), who also reported no statistically significant difference between males and females in use of RG tools such as self-exclusion. The most consistently preferred RG tool voluntarily used in the study was the deposit limit. It is an RG tool which is widely available across different online gambling operators, and it has increased in availability across the years, as can be seen in Kazhaal et al.'s (2013) study where less than half of the evaluated online operators' websites had a deposit limit, whereas in the study by Catania and Griffiths (2021a), all but one of the online gambling operators' websites offered the option of limit-setting. Another reason for the deposit limit being such a popular voluntary RG tool on the same day as registration of the online gambling account, may be due to the fact that low-risk gamblers are most likely to set limits prior to gambling (Nower & Blaszczynski, 2010).

Both long-term and short-term self-exclusion were the next most popular choices, with 4.0% and 3.5% respectively choosing this among the gamblers in the dataset especially among the youngest age group band, which concurs with the studies by Hayer and Meyer (2010; 2011) where the majority gamblers who self-excluded were in their twenties and thirties. The finding was also in accordance with Wardle's (2012) research where long-term self-excluded gamblers tended to be younger. This may be because of the availability of the tool across different online gambling operators has also increased in availability compared to previous years (Catania &

Griffiths, 2021a). When considering the gender split of the gamblers and the days from registration to activation of the voluntary RG tool, there were still a number of similarities. Both genders had a preference of setting up the RG tool during the same day of account registration. This was also evident with the different age groups as the most preferred day of voluntary RG tool activation was the same day as registration. This shows evidence to a level of pre-commitment from the gamblers who voluntarily used a responsible gambling tool. There were differences, such as for the male group, the second most favored time period to activate a voluntary RG tool was 181+ days (n=796, 5.23%), whereas for female gamblers, this is 1-7 days (n=175, 5.63%). A significant association was present for the female gamblers and the activation of the RG tool during the 121-180 days period. For male gamblers, the significant associations were present for male customers setting up the voluntary RG tool on the same day as account creation and for the 181+ days group.

Although the present study provides an insight into the preferences of voluntarily using RG tools which is much needed for policymaking and for consumer protection. To the best of the authors' knowledge, there have been no similar studies examining these types of data, and therefore the present study can provide a benchmark for future studies. However, the study does have a number of limitations. Primarily, the data only come from one operator and therefore there is a limited view of the individual's totality of gambling activity. Secondly, there were no data provided by the operator concerning individuals' gambling expenditure, and no insight concerning the problem gambling severity of the gamblers. Therefore, future research could compare the choice of voluntary RG tools with the gamblers' Problem Gambling Severity Index (PGSI) scores (Ferris & Wynne, 2001). Examining the data regarding the preferred voluntary RG tools utilizing account-based behavioral tracking data provides additional insight into the best potential tools for consumer protection which are utilized and preferred by the gambler. It is also useful to identify preferences by examining different demographic criteria such as age

and gender because this allows more personalization and tailored messaging to gamblers to encourage responsible play and consumer protection.

Chapter 6 - Understanding Online Voluntary Self-Exclusion in Gambling: An Empirical Study Using Account-Based Behavioral Tracking Data

6.1 Introduction

Through the internet, and especially via smartphones, gambling has changed into an activity that can be done anywhere at any time (Auer & Griffiths, 2013a). In fact, in the 2010 British Gambling Prevalence Survey, it was reported that up to 14% of the total adult population had gambled online (Wardle et al., 2011) and had increased to 21% in the latest British study (Gambling Commission, 2020c). This form of gambling has increased in popularity but can bring about risks for problem gamblers, due to the possibility of offering mood-altering experiences such as immersion and escapism, which can in turn lead to disproportionate involvement (McCormack & Griffiths, 2013). Online gambling has expanded quickly but gambling regulation to protect players and minimize harm has tended to lag behind. Due to the global nature of online gambling, it has become accessible across national borders. While gambling regulations were traditionally for territory-based gambling, many countries have not got to grips with online regulation of the activity (Lovejoy, 2013). Subsequently, there is a high number of gambling operators based in Malta, in which the local authority imposes license requirements for consumers in other countries, making borderless gambling possible (Devaney, 2009).

It is understandable that the more popular online gambling becomes, the more concerning it may be because it might lead to an increase in gambling-related harm (Gray et al., 2012). Internet gambling is often seen negatively due to its high accessibility and convenience (Gainsbury et al., 2015; Griffiths, 2003b), and it may increase the occurrence of problem gambling due to higher gambling exposure (Griffiths et al., 2009; LaBrie et al., 2007). However, due to factors concerning innovative new technology, better consumer protection may be achieved (Adami et al., 2013; Harris & Griffiths, 2017). Moreover, online gambling operators

may provide better and more accessible responsible gambling tools than those provided offline (Heafeli et al., 2011; Philander & MacKay, 2014; Wood & Griffiths, 2015).

Responsible gambling and consumer protection have been discussed and defined for several years (Blaszczynski et al., 2004). Criticism lies in the terminology of the words 'responsible gambling' because the shift of responsibility is placed onto the consumer, where the consumer needs to utilize the responsible gambling tools offered by the operator (Shaffer et al., 2016). Further arguments have also been raised because there may be a conflict of interest for the operator to invest in consumer protection since this might have an impact on the commercial interest and financial gain of the operator (Jones et al., 2009). Despite this, it can be evident that current legislation may impose a financial strain on the operator if responsible gambling interventions are not carried out properly and may result in large fines for the operators by regulatory bodies (Altaner, 2018). Gambling may result in harm that is experienced by different social groups such as families and communities. Consequently, harm is not only experienced by individuals suffering from a gambling disorder (Langham et al., 2015). Harms that are common among individuals with gambling disorder include escalating levels of gambling that go beyond disposable income, relationship problems with family and loved ones, health problems, and compromising occupation and/or education (Griffiths, 2004; Raisamo et al., 2015a).

Online gambling has provided new opportunities for data to be analyzed for consumer protection purposes (Dragicevic et al., 2011; Griffiths & Whitty, 2010). This is possible due to the fact that all gambling transactions records are saved and stored for each consumer (Haefeli et al., 2015). Through its online nature, online gambling operators may offer different tools such as deposit limits, play limits and/or loss limits, which can either be imposed or suggested to the consumers (Griffiths & Barnes, 2008). Research conducted by Wood, Shorter and Griffiths (2014) concluded that voluntary self-exclusion (VSE) was one of the highly

recommended tools that gambling operators should utilize. VSE is a responsible gambling tool that removes an individual's access to gambling with gaming operators (Dragicevic et al., 2015; Tremblay et al., 2008). In an early study by Smeaton and Griffiths (2004), 30 major gambling operators were evaluated, and it was reported that only one operator at that time had this option available. Due to increased regulatory pressures and an increase in importance for consumer protection measure, this has changed markedly. For instance, in a study conducted by Bonello and Griffiths (2017), 50 major gambling operators were evaluated, and VSE was offered by 86% of these operators, a large increase on the study by Smeaton and Griffiths (2004) in terms of VSE availability. The online gambling industry now has the possibility of monitoring and saving customers' activity data at minimal costs for the operator (Altaner, 2018; Deng et al., 2019; Griffiths, 2009c). Using these tracking data, responsible gambling tools may support operators in giving personalized tips and communication to consumers to regulate their gambling (Auer & Griffiths, 2013b). Data from online behavioral tracking can be used to assess gambling intensity by players. An initial simulation study by Auer et al. (2012) of 300,000 gamblers developed 'theoretical loss', a metric that can be used to calculate gambling intensity and comprises of the amount of money wagered, multiplied by the probability of winning on the particular type of gambling activity. This metric was then tested on a real customer sample of 100,000 online gamblers using their tracking data. The findings indicated that the theoretical loss metric was robust (Auer & Griffiths, 2014) and has since been used to evaluate responsible gambling tools' efficiency such as limit-setting (Auer & Griffiths, 2013a).

In another study, customer communication was analyzed to determine whether specific indicators can be used to predict problem gambling (Haefeli et al., 2011). Here, 1008 emails were analyzed from a group of customers who used VSE and a control group. It was evident from the findings that the frequency of customer service communication, and the tonality of the written correspondence may be used as a predictor of VSE. An analysis of anonymous player

data provided by *GTECH G2* (an internet gambling software provider) found that customers using VSE had greater losses when compared to the control group which did not (Dragicevic et al., 2015). This study has its benefits because it showed gambling customer activity across different operators, but in turn this may also be a limitation because most operators will have more than one gambling software provider. *GTECH G2* offers gambling software for gambling operators, and therefore this study has its benefits because it showed gambling customer activity across different operators. Nonetheless, one gambling operator may have multiple gambling software providers, and therefore customer activity can still be limited.

Studies examining behavioral tracking were carried out extensively for a few years due to a collaboration with *Bwin Interactive*. An anonymized data sample of heavily involved gamblers was analyzed by (LaBrie et al., 2007). Although this study possibly shed some insight into problem gambling by examining heavily involved gamblers, this approach may be limited because not all heavily involved gamblers will be problem gamblers. Problem gambling is also dependent on other social and economic factors. Another study from the same dataset examined the anonymized tracking data of the first 90 days of a customer's journey with the operator (LaPlante et al., 2008). The results showed that the highest betting activity was at the beginning of the player's journey and that there was an episodic increase in betting activity every seven days. Gamblers may have an initial betting activity which is high because they may be testing the website and trying new products and features available. Another reason may be that there was an acquisition bonus that may have had to be used within a specific time period after registration. It is likely that the episodic increase in betting activity every seven days is due to the availability of sports events because most of them are played at the weekend and therefore betting tends to be episodic based on the availability of sporting events that can be bet upon.

In another study, 2696 gamblers were evaluated by exploring their payment transactions prior to self-excluding (Haeusler, 2016). Haeusler proposed that a potential indicator for

problem gambling was an inconsistency of the amount withdrawn, which fluctuated from very high to very low amounts. Although using payment data to build indicators for online problem gambling may appear to be a good option, using VSE as a proxy measure for problem gambling might not be. This is due to the fact that not all customers choose to use VSE because of a problem with their gambling (Dragicevic et al., 2015; Griffiths & Auer, 2016). For example, in the aforementioned study conducted by Haeusler, it was reported that 23.3% of customers that used VSE in January 2015 had no deposit payments at all in the year before. This lack of gambling activity may be the result of the gambler being annoyed with the gambling operator and consequently wanting to close their account as a sign of their unhappiness.

In a study by Gray et al. (2012), responsible gambling interventions were examined to identify possible problem gambling indicators. These interventions included instances where players requested to change their money limits, cancelling their withdrawals, and fair play complaints, amongst others. This study showed that the players that initiated such interventions had significantly more gambling activity across different products (Gray et al., 2012). A limitation in this sample was that it only included players who contacted customer services. Only including players that have initiated these types of interventions excludes players that might have had a responsible gambling issue, but were too ashamed, or did not want to contact customer services. A better approach was utilized by Xuan and Shaffer (2009) where they analyzed an anonymized sample from *Bwin Interactive* of players that closed their gambling account online (LaBrie & Shaffer, 2011). Consistent with LaBrie and Shaffer (2011), the study concluded that prior to closing their account, players had increased losses and heightened risk-taking.

VSE has been used as a proxy measure for problem gambling in a number of studies (Braverman & Shaffer, 2012; Haefeli et al., 2011; LaBrie & Shaffer, 2011; Percy et al., 2016). Although it is very convenient and used in several studies, using VSE as a proxy measure for

problem gambling may not always be the best approach, especially when accounting for online VSE (Griffiths & Auer, 2016). Although there are several studies that have used VSE as a proxy measure of online problem gambling, little published empirical research has been carried out on its effectiveness. In a study by Dragicevic et al. (2015), it was reported that a quarter of all the players that had self-excluded had done this on the same day that they opened the online gambling account. It is also unlikely that online VSE has the same stigma that may be present when self-excluding in a land-based venue, and that gamblers may have ulterior motives for choosing VSE.

Through online behavioral tracking, operators can tailor harm-minimization interventions (Haeusler, 2016), which is possible through the objective analysis of large sample sizes (Auer & Griffiths, 2014). As aforementioned, VSE has been used as a proxy measure for online problem gambling in several studies. Nonetheless, gamblers who use VSE typically comprise gamblers on one part of the gambling spectrum (Haeusler, 2016). Moreover, VSE may be used by a gambler as a responsible gambling measure, rather than a measure indicating problem gambling (Griffiths et al., 2009). A study by Hayer and Meyer (2011) found that 26.3% of the gamblers that used VSE had chosen to self-exclude because they were annoyed with the gambling operator.

Providing tailored help and attempting early detection of problem gambling will help players to regulate their gambling. This will lead to more sustainable long-term revenue for the gambling operator (Braverman & Shaffer, 2012). By adopting early detection of problem gambling, several benefits may be achieved for the gambler and the gambling operator, such as minimizing (i) financial harm for the gambler, (ii) potential negative impact on the gamblers' families, and (iii) negative psychosocial impact in the communities where problem gamblers live.

The argument that VSE is not an ideal proxy measure for problem gambling is not to be interpreted that VSE should not be offered, but this is an opportunity to better understand the potential misuse of VSE. The aim of the present paper is to evaluate whether VSE is a good proxy measure of problem gambling by examining an anonymized sample of customers that used VSE. The rationale for using gambling expenditure in this study was due to the fact that financial harm is a major issue when it comes to reporting gambling harm. Since this is an initial study looking into this area, the authors have chosen to specifically analyze this variable in relation to VSE.

6.2 Materials and Methods

6.2.1 Participants and Procedure

The participants in the present study were all UK customers who chose to use voluntary self-exclusion or close their account for self-reported gambling addiction with *Unibet*. These participants were costumers that chose to use the six-month VSE option (n = 7732), and those that chose to close their *Unibet* account due to a self-reported gambling addiction (n = 141). All data were from January 2017 to May 2018. This group of customers comprised 80.9% males (n = 6369) and 19.1% females (n = 1504). The majority of the sample was aged between 31–40 years (n = 2367; 30.1%) followed by the age group of 26–30 years (n = 1903; 24.2%). The age group with the least number of customers was 50+ years (n = 538; 6.8%), followed by the 18–20 age group (n = 564; 7.2%).

6.2.2 Gambling Website Description and Procedure

The authors were given access to a large anonymized dataset of customers at *Unibet* in order to carry out secondary analysis. This online gambling company offers a range of online products, including casino games, poker, sports betting, and in-play sports betting. The company also offers a range of responsible gambling tools as part of their commitment to player protection. One of these responsible gambling tools is VSE. The VSE option is something that

the customers can do on their own and once this is done, the customer enters into an agreement that the account is suspended for the period that the customer has chosen. The VSE option is always available for the customer to use in their 'Accounts' section and information and a link to the tool is available on the operator's dedicated RG page. In the case where a customer discloses that they have a self-reported gambling addiction, customer service agents at *Unibet* raise this issue with the responsible gambling department and the account is suspended immediately and permanently. The data collected for these customers were the gambling expenditure by the customer during their time with *Unibet*. The number of days leading to the VSE and closure due to self-reported gambling addiction was also obtained. Analysis of all data was carried out using *SPSS Version 27.* The data were all anonymized so that no customer profiles were identifiable to the researchers.

6.2.3 Data Analysis

Descriptive statistics were used to calculate means and percentages. In order to analyze the differences amongst the groups of customers, *t*-tests, one-way analysis of variance (ANOVA), and effect sizes were calculated using SPSS 27.0. This statistical analysis was carried out to examine the gambling behavior prior to VSE, and to compare gambling expenditure between those who utilized VSE and gambling expenditure among those with self-reported gambling addiction. The significance level for statistical analyses was $p < 0.01$.

6.3 Results

The initial descriptive analysis suggested that most customers that used VSE did not have significant gambling activity prior to self-excluding with *Unibet*. These customers might have had activity with other operators, but with this operator, these customers did not have significant gambling activity prior to self-excluding. When looking at customers who used VSE during this period, the majority of these customers (50.38%) actually selfexcluded in the first seven

days of activity. A further breakdown of the gambling activity by the time period prior to VSE can be seen in Table 6.1.

Table 6.1. Number of days of gambling activity by gamblers prior to voluntary self-exclusion (n = 7732)

Time Period of Activity Prior to VSE	Percentage of Customers
0 days	19.15%
1–7 days	31.23%
8–30 days	17.85%
31–90 days	10.79%
91+ days	20.98%

6.3.1 Differences in Gambling Expenditure by Days Leading to VSE Compared to the Addiction Group

The VSE groups that were split by the number of days of activity leading to the VSE in the five time periods (i.e., first day, first week, first month, first three months, and over a three-month period) were compared to the customers that closed their account due to self-reported addiction (Tables 6.2 and 6.3; Figure 6.1). The total mean gambling expenditures were highest for the group that had self-reported gambling addiction, and the lowest was for the customers who used VSE in the first day. A one-way analysis of variance (ANOVA) was used to examine the effects of days leading to VSE and closure to self-reported addiction on gambling expenditure. There was a statistically significant difference between groups as determined by one-way ANOVA ($F[5,7867] = 12.144$, $p < 0.0001$). A Tukey post hoc test showed that gambling expenditure was significantly different with VSE in the first day (200.5 ± 546.3, $p < 0.0001$), VSE in the first week (305.6 ± 1041.3, $p < 0.0001$), VSE in the first month (362.2 ± 8062.8, $p < 0.0001$), VSE in the first three months (845.7 ± 3308.8, $p < 0.0001$), and VSE after

three months (593.3 ± 2049.4, $p < 0.0001$), when compared to the customers that closed their account due to self-reported addiction (2584.4 ± 9223.4) with self-reported individuals with problem gambling spending more money gambling than those who did not report gambling addiction across all time groups.

Table 6.2. Total mean gambling expenditure in British pound of the VSE groups and self-reported addiction account closure group

Group	N	Mean	Standard Deviation
VSE first day	1481	£200.5	£546.15
VSE first week	2271	£305.6	£1041.12
VSE first month	1499	£362.2	£8060.10
VSE first three months	1274	£845.7	£3307.52
VSE after the first three months	1207	£593.3	£2048.55
Self-reported gambling addiction	141	£2584.4	£9303.20

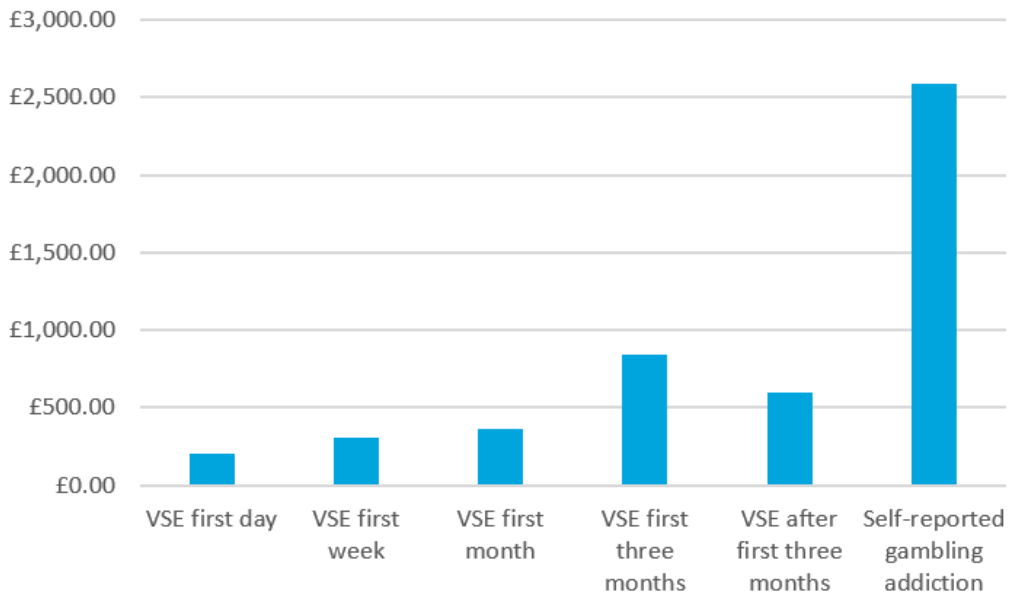

Figure 6.1. Total mean gambling expenditure in British pound by the VSE group and self-reported closure group

Table 6.3. The differences in total mean gambling expenditure in British pound of the VSE group and self-reported addiction closure group

Group 1	Group 2	Mean difference	*p*-Value	Effect size
VSE first day	VSE first week	−£105.09	0.973	
	VSE first month	−£161.73	0.890	
	VSE first three months	−£645.20	<0.001 *	0.27
	VSE after the first three months	−£392.78	0.131	
	Self-reported gambling addiction	−£2383.93	<0.001 *	0.36
VSE first week	VSE first day	£105.09	0.973	
	VSE first month	−£56.64	0.998	
	VSE first three months	−£540.11	<0.002 *	0.01
	VSE after the first three months	−£287.69	0.357	
	Self-reported gambling addiction	−£2278.84	<0.001 *	0.34
VSE first month	VSE first day	£161.73	0.890	
	VSE first week	£56.64	0.998	

	VSE first three months	£483.47	0.024	
	VSE after the first three months	−£231.05	0.689	
	Self-reported gambling addiction	−£2222.20	<0.001 *	0.26
VSE first three months	VSE first day	£645.20	<0.001 *	0.27
	VSE first week	£540.11	<0.002 *	0.22
	VSE first month	£483.47	0.024	
	VSE after the first three months	£252.43	0.640	
	Self-reported gambling addiction	−£1783.72	<0.001 *	0.25
VSE after first three months	VSE first day	£392.78	0.131	
	VSE first week	£287.69	0.357	
	VSE first month	£231.05	0.689	
	VSE first three months	−£252.43	0.640	
	Self-reported gambling	−£1991.15	<0.001 *	0.30

	addiction			
Self-reported gambling addiction	VSE first day	£2383.93	<0.001 *	0.36
	VSE first week	£2278.84	<0.001 *	0.34
	VSE first month	£2222.20	<0.001 *	0.26
	VSE first three months	£1738.72	<0.001 *	0.25
	VSE after the first three months	£1991.15	<0.001 *	0.30

*significant at the $p < 0.01$ level.

6.4 Discussion

The aim of the present study was to understand better whether VSE may be used as a reliable proxy measure for problem gambling. The main findings showed that the group of customers that use VSE is inherently different and not at all homogenous; therefore, it is rather limiting to consider it as one group. This varies greatly in terms of the days prior to using VSE, highlighting that it might be naïve to place all these gamblers under one umbrella. In fact, when looking at the time period of gambling activity prior to VSE, almost one-fifth of the sample had no gambling activity prior to self-excluding. Although these customers might have gambled elsewhere, on their *Unibet* account, they registered an account and self-excluded. A majority of the sample resorted to VSE within the first week of gambling activity (50.38%), which is similar to that reported in other studies (Haeusler, 2016; Hayer & Meyer, 2011). What is quite evident is that although in previous studies customers who use VSE are regarded as one group (Deng et al., 2019; Haefeli et al., 2011; Haeusler, 2016; Ladouceur et al., 2000), it is evident that the time period of gambling activity leading up to VSE varies significantly. Therefore, gambling

operators who use customers who have voluntarily self-excluded as a proxy measure of problem gambling need to be cautious in using VSE as a potential marker of gambling harm. Customers that use VSE within a few days of registering the online gambling account should not necessarily be viewed as problem gamblers, and operators should monitor the more gambling-intense customers that have gambled on the website for at least a month. The key novelty of the present study is that it is the first (i) where the VSE group was split based on the amount of gambling activity prior to self-exclusion, and (ii) that customers using VSE were compared to customers that had used VSE but were also confirmed individuals with problem gambling based on a self-report to customer services.

The VSE group split in accordance to different time periods (first day, first week, first month, etc.) was compared to the group of players with self-reported gambling addiction. The differences in the gambling expenditure of each group was significantly different, with the self-reported individuals with problem gambling having the largest mean expenditure compared to the other groups analyzed. Statistically significant differences were found between the customers using VSE in the first day, first week, and first month compared to the customers using VSE in the first three months. It was also found that the group of customers who used VSE in the first three months had a higher mean gambling expenditure when compared to the group of customers who used VSE after the first three months. This was mainly due to a small number of very heavy spending gamblers, which increased the overall mean gambling expenditure. When looking at the mean differences between groups, it is worth noting that the largest mean differences were present when the groups were compared to the self-reported gambling addiction group. It is also worth noting that the mean gambling expenditure in the first group was lower than all the other means. It might also be concluded that the customers that chose to self-exclude with lesser gambling activity prior to using VSE may not have enough gambling activity to be considered in the same way as the customers that had a significant

amount of gambling activity. Customers that experienced self-reported gambling addiction communicated with the gambling operator that they were experiencing gambling problems and/or gambling addiction. These accounts are closed as part of the company's commitment to responsible gambling and harm minimization. It was expected that if VSE is a good proxy measure for problem gambling, then there would be similarities in the gambling expenditure with the group of customers that closed their account because of self-reported gambling addiction. However, no such similarities were found.

The findings of the research here are beneficial for operators, researchers, and policymakers because it provides insight into gambling behavior by analyzing real player behavior using tracking technologies, which is objective and unbiased (Dragicevic et al., 2011). Better understanding of the activity of online gamblers using transaction data arguably provides better data on which responsible gambling tools might be best used and offered to online gamblers. Given that online gambling websites offer the potential for innovation in responsible gambling tools (Wood & Griffiths, 2015), such studies are needed in order to actually understand the online gambling population.

When examining the findings as a whole, it appears that a large number of gamblers in the sample may have used VSE as a means to close their account for non-responsible gambling reasons, especially because these customers had little to no gambling activity prior to closing their account. Half of the customer population (50.38%) used VSE in the first seven days of opening their account. Based on this finding, it is arguably unreliable to use self-exclusion as a possible indicator or proxy measure for problem gambling. Online gambling operators and regulators are constantly looking into providing the best possible support for gamblers (Braverman & Shaffer, 2012), but some online responsible gambling interventions appear to be replicas of what is offered in the land-based sector without proper evaluation of how or whether such measures would work online. The present study compared the group of customers that

used VSE with a group of customers that confirmed self-reported gambling addiction to customer services. If VSE is a good proxy measure of problem gambling then there should have been a close similarity concerning gambling expenditure with the group that confirmed gambling addiction, since this is based on self-reported problem gambling. However, this was not the case.

This lack of activity prior to VSE activation has also been reported in previous studies. For example, Dragicevic et al. (2015) reported a high percentage of customers self-excluded within the first 15 days of gambling, including 25% of VSEs within the same day of account registration. The possible explanation given was that VSE might have been an impetuous decision. VSE online is arguably less shameful, stigmatic, and/or embarrassing than VSE in the land-based sector, and it can be done more easily and impulsively for non responsible gambling reasons. In the study conducted by Hayer and Meyer (2011), it was noted that most self-excluders considered the reason for VSE quite spontaneous and that a large proportion of the self-excluders did so for non-responsible gambling reasons (e.g., due to annoyance with the operator, as a preventive measure or at the request of third parties). Another possible reason might be due to the fact that the customer was approached via promotional email communication, and just wanted to remove access to the account that in turn might stop such promotions from being sent. Although there are probably customers who self-excluded for responsible gambling reasons, it might be that this proportion of the customer base self-excluded more as a rash decision or due to issues with the gaming operator. The reason for this is that when comparing the two VSE groups with each other, there are clear differences showing that those utilizing VSE are too heterogeneous to be treated as a single group. Moreover, when examining the main VSE significant which further support the notion that VSE may not be the best proxy measure of problem gambling. However, the behavioral tracking data in the present

study do not provide verification for these speculations. Therefore, further research directly asking about reasons for VSE is required.

Further research should examine the group of customers that initiate VSE without much gambling activity especially since it is such a significant proportion of the total of those who self-exclude within the first week of opening an account. Better understanding of the customer base, including self-excluders, would actually help the gambling industry in achieving profit without any exploitation of its customers. Research is also needed on self-excluders who have little gambling activity prior to self-excluding because these customers may be identified and advised in better ways to regulate their gambling, possibly by using other RG tools such as limit-setting. In this manner, the operator would be able to help the customer retain a sustainable relationship with the operator and not being potentially exploited by another operator. Future studies may also include other variables to be investigated such as the socioeconomic status of the customers, including the gambling status and more in-depth analysis on different aspects of the gambling behavior. Further studies may also examine the different types of gambling activity influence prior to VSE, the influence of time, and the impact of direct communication from the operator. Other future research could also include comparative analysis between customers using VSE and customers that do not. Moreover, the VSE group was split into unequal time intervals (i.e., one day, one week, one month, three months) in the dataset provided by the gambling operator. These are also typically the time intervals used by gambling operators for shorter-term VSE options (e.g., many operators provide gamblers with short 'cooling off' periods of one day, one week, or one month). These periods have nothing to do with problem gambling but are tools to help players gamble more responsibly. Future studies may also consider splitting the VSE group into time intervals that are more equally spread (e.g., every week or every month).

The present study is not without limitations. The data collected only comprised one online gambling operator and therefore it is unrepresentative as has been noted by others (e.g., Auer & Griffiths, 2017). Furthermore, due to the anonymity of internet gambling, the online gambling account can be shared with others and the customer may have more than one account (Gainsbury, 2011) although the authors believe the number of gamblers that would be doing that in the present study would be very low. The participants in the present study might have had several online gambling accounts and therefore the activity evaluated may not have shown an accurate picture of the total gambling activity by the participant. A further limitation is that there was only one group comprising self-reported individuals with problem gambling, whereas the VSE group was split into groups who had gambled for different durations. The reason for this was that the group comprising self-reported individuals with problem gambling was too small to subdivide any further. Future research would benefit from larger samples of individuals with problem gambling so that they could be examined in terms of different lengths of gambling duration like those in the different VSE groups. Despite its limitations, the present study sheds further light on how customers' behavior prior to VSE or prior to closing an account due to self-reported gambling addiction occurs. Through the better understanding of customer behavior, the gaming operator can engage in using different methods of communication, to the possible extent of helping customers refrain from losing too much of their disposable income, which may correspond to possible harm. Therefore, through this understanding and evaluation of such studies such as the present one, operators can proactively contribute to harm minimization. Harm minimization would have a direct impact on not only individuals suffering from gambling disorder, but also on their family and the communities.

Chapter 7 - Applying the DSM-5 Criteria for Gambling Disorder to Online Gambling Account-Based Tracking Data: An Empirical Study Utilizing Cluster Analysis

7.1 Introduction

The emergence of online gambling has not only resulted in higher availability (Canale et al., 2016b) but also concerns about potential gambling-related harm (Dragicevic et al., 2015). Various measures have been implemented in order to minimise harm, such as responsible gambling (RG) tools, policies, and protocols (Wood & Griffiths, 2010). RG tools can help gamblers reduce or control their gambling (Wood et al., 2014). These tools have become more available in recent years, as evidenced in a study by Smeaton and Griffiths (2004) which found that out of a sample of 30 operators, only one operator offered self-exclusion, whereas in a study 13 years later where 50 operators were examined, 43 operators offered self-exclusion (Bonello & Griffiths, 2017).

Online behavioural tracking can help in minimising harm by identifying and/or predicting potential problem gambling (Haeusler, 2016). Moreover, through the examination of behavioural tracking data, researchers and gambling operators may understand better how online gamblers behave and act over an extensive time period (Griffiths, 2014). Online gambling operators can use this information to identify and help online problem gamblers, either through an already established behavioural tracking tool such as *PlayScan* (Griffiths, 2009c), or develop their own, such as *Kindred's* Player Safety—Early Detection System (Kindred, 2019).

By using such tracking technology, limitations in diagnostic criteria may be overcome. These include overcoming weaknesses associated with self-reporting such as providing false information or answering questions in a socially desirable manner (Griffiths, 2009c). In order to be able to examine and potentially predict online problem gambling, most research has focused upon on using voluntary self-exclusion as a proxy measure for problem gambling (e.g.,

Braverman & Shaffer, 2012; Haefeli, et al., 2011; Percy et al., 2016). However, this approach may not be ideal because gamblers may be using self-exclusion for various reasons other than problem gambling, such as frustration and annoyance with the gaming operator (Griffiths & Auer, 2016).

Gambling disorder is a psychiatric disorder which results in maladaptive patterns of gambling behaviour (Grant et al., 2017). In the most recent (fifth) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), gambling disorder was identified as a behavioural addiction (American Psychiatric Association, 2013). In order to be classed as experiencing gambling disorder individuals have to endorse four of more of nine criteria which can be classed at a number of severity levels: four to five criteria result as mild, six to seven as moderate, and eight or nine as severe (American Psychiatric Association, 2013; Grant et al., 2017).

To the best of the authors' knowledge, the application of the extent to which the DSM criteria for gambling disorder can be identified using online gambling tracking data has only ever been examined theoretically and the analysis was based on the DSM-IV criteria (i.e., Griffiths, 2012; Griffiths & Whitty, 2010). More specifically, the authors examined the extent to which the behaviours listed in the DSM-IV criteria for pathological gambling could be identified using actual online gambling behaviour (as opposed to the consequences of it). To date, the application of the DSM-5 criteria to actual online gambling has not been examined. Although it was previously argued that most of the DSM criteria cannot be applied to gambling tracking data (Griffiths, 2012; Griffiths & Whitty, 2010), the present study explores new online gambling indicators that may be applicable to the DSM-5 criteria for gambling disorder that were not considered in the previous theoretical analyses.

7.2 DSM-5 Criteria for Gambling Disorder

In this section, each of the nine DSM-5 criteria is explored alongside an assessment of the extent to which such behaviour can be visible online using account-based tracking data. The examples of operationalizing each criterion into behavioural measures were developed by the authors including the first author who works in the online gambling industry, and through conversations with experts from the online gambling industry, regulatory bodies, reformed problem gamblers and other gambling researchers, as well as examples from the extant gambling literature.

(1) *"Is often preoccupied with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money with which to gamble)" (i.e., preoccupation):*

This criterion refers to when the individual experiences persistent thoughts of past gambling experiences and devises ways on how to get money which can be used for gambling. Most importantly, preoccupation can be operationalized as the amount of time and money that an individual spends gambling (Griffiths, 2012). This can be easily monitored by a gambling operator simply by examining the number of hours that the gambler spends daily on their website, the number of days that have gambling activity over a specific time period, and the amount of money that is deposited daily into their account. As highlighted by Griffiths (2012), individuals that gamble for long periods of time continuously may be experiencing problematic gambling in an attempt to escape from other things in their lives. McCormack et al. (2013) also reported that problematic gambling was more likely among those who were gambling online for more than four hours in single sessions. According to Gainsbury et al. (2019), higher overall engagement with gambling is a key predictor of harms related to gambling. This is also evident in a study by Dragicevic et al. (2015) where those who eventually voluntarily excluded themselves from gambling at the website examined lost significantly more money gambling compared to the control group who did not exclude themselves. The amount of money deposited

daily by gamblers has also been associated with problem gambling-related self-exclusion (Ukhov et al., 2021). When gamblers are preoccupied with gambling, they may also contact the gambling operator at a higher frequency because they are consistently thinking about their gambling account. Through efficient record keeping, this criterion can easily be recorded and monitored by the gambling operator. This higher frequency of communication is in accordance to the study conducted by Haefeli et al. (2011) who found that although gamblers might not directly communicate financial problems that they are experiencing, these issues become burdensome and would entail the gambler contacting the operator even more, and with more urgency.

(2) *"Needs to gamble with increasing amounts of money in order to achieve the desired excitement" (i.e., tolerance):*

This criterion refers to the individual needing to gamble with increasing amounts of money to achieve the desired mood state (such as arousal or escape). According to Griffiths (2012), this can be seen when online problem gamblers change their behaviour by increasing the amount of time or money spent gambling over time. It is evident that this behaviour can be easily tracked online especially if an operator examines the number of days when the gambler is playing, for example a gambler goes from playing once weekly to three times weekly to most days weekly over a number of months. A gambling operator could also monitor the amount of money deposited daily or the amount of money lost daily. If this is increasing, it may be a sign of tolerance among gamblers.

(3) *"Is restless or irritable when attempting to cut down or stop gambling" (i.e., withdrawal):*

This criterion refers to when the individual becomes highly restless, moody and/or irritable when there is an attempt to cut down or refrain from gambling. Griffiths (2012) highlights that this might be difficult to spot online, apart from looking at aggressive communication the gambler might engage in within online gambling chatrooms. This is also

evident in a study by Haefeli et al. (2011) who reported that gamblers who eventually self-excluded, showed abusive communication with the gambling operator's staff members. Therefore, some indicators of withdrawal symptoms may be observed indirectly by the gambling operator.

(4) *"Has made repeated unsuccessful efforts to control, cut back, or stop gambling" (i.e., loss of control):*

This criterion refers to when the individual has made a number of efforts which were unsuccessful to control, limit, or stop the gambling. Gamblers may try to protect themselves by withdrawing their winnings or the balance on the gambling account, in order not to spend all their money. Although this appears to be an attempt to control their gambling, if the withdrawal is cancelled in order to re-invest the money in gambling, such behaviour may be a potential indicator of loss of control. Another possible indicator of loss of control may be gamblers who suddenly stop using responsible gambling tools such as limit-setting. Gamblers have the possibility of setting up RG tools such as limits to help them control and limit their gambling. Most operators have the possibility for the gamblers to set up daily, weekly and/or monthly limits (Bonello & Griffiths, 2017). In the same manner that a gambler may set up RG limits, they may in most cases, easily remove it online, albeit having a cooling-off period for the cancellation to be active. This may be a possible indicator of loss of control since gamblers have tried to control and limit their gambling but may be removing such options in order to have no restrictions to their gambling.

(5) *"Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed) (i.e., escapism):*

This criterion refers to when individuals use gambling as a way of relieving themselves from a psychological mood state which can range from depression to everyday stress. This is very difficult to spot online unless gamblers make such admissions to customer services staff

or in online gambling chatrooms that are built into some online games such as online bingo and online poker.

(6) *"After losing money gambling, often returns another day to get even ("chasing" one's losses) (i.e., chasing):*

This criterion refers to when individuals gamble with increasing amounts of money to get even and to regain they money they have lost. This is a key indicator of potential problem gambling which can be easily spotted online, through an increase in gambling activity and monetary depositing. This can be done repeatedly and due to the transactional nature of the online data available, it is relatively easy to spot. In most cases, such activity can be examined on a daily basis or during in-session gambling.

(7) *"Lies to conceal the extent of involvement with gambling" (i.e., lying):*

This criterion refers to when individuals lie to hide the real involvement they have with gambling. This is difficult to spot online as it would be reliant on the communication with the gambler. The only possibility to identify if gamblers are lying is if they provide information that does not match their activity on the gambling account. Such an example would be if gamblers communicate with customer services that they did not deposit any money in their gambling account the day before, whereas the transactional data show they clearly did. Another example is where gamblers lie about their account being hacked and that the money lost on the account was not theirs.

(8) *"Has jeopardised or lost a significant relationship, job, or educational or career opportunity because of gambling" (i.e., risking significant relationships and occupational/educational opportunities):*

This criterion refers to where individuals compromise their relationships as a result of their gambling and/or their gambling compromises occupational and/or educational opportunities. This is very difficult for an online gambling operator to spot online. The only

way an operator may be able to confirm such behaviour would be through a 'third party request'. This is when a third party contacts the gambling operator to get information about and/or exclude a customer they have a relationship with. In most jurisdictions, the gambling operator cannot confirm any information to the third party due to data protection issues, but this incident would be still be recorded by the gambling operator. In some jurisdictions (e.g., Singapore), it is possible for a gambler to be excluded through the third party's request, but in most jurisdictions, this is not possible.

(9) "*Relies on others to provide money to relieve desperate financial situations caused by gambling" (i.e., bailout):*

This criterion refers to when the individual relies on others to relieve them from desperate financial situations. In these cases, it is difficult to know if a gambler received money from someone else unless there is a direct third-party deposit on the gambler's account. Bailout may also be visible through a higher number of credit cards on the account. Through credit cards, gamblers can borrow funds which can be used to gamble thinking that if they win, they may be able to relieve themselves from the difficult financial situation they might have placed themselves in. In other instances, gamblers may have run out of money and in order to try and win the money back to relieve their financial situation, they ask for a bonus. A bonus refers to money or credit given by the gambling operator for gamblers to use on their account. This is known within the industry as 'bonus begging'. When a gambler requests a bonus, it does not necessarily mean that the operator granted the bonus but 'bonus begging' may be viewed conceptually as a bail-out given the definition provided in the DSM-5 for gambling disorder.

7.3 The Present Study

The aim of the present study was to examine the aforementioned proposed behavioural measure indicators and identify their occurrence across an anonymised sample from an online gambling

operator.

7.4 Methods

7.4.1 Participants and Procedure

The participants in the present study were all the UK customers (N = 982) who registered with *Unibet* between September 1, 2017, until December 31, 2017. For each of these accounts, the account history of the first three months from their registration date was obtained. In order to focus on more regularly active accounts, the only inclusion criterion was that the gamblers had to have played for at least three weeks in the first three months on their gambling account. The data comprised gambling activity from September 2017 to March 2018. This group of customers comprised 86.8% males (n = 852) and 13.2% females (n = 130). The majority of the gamblers were aged 26–35 years (n = 396; 40.33%), followed by those aged 18–25 years (n = 259, 26.38%), and those aged 36–45 years (n = 242; 24.64%). The age group with least number of gamblers was of those aged 66 years or older (n = 24; 2.44%) followed by those aged 56–65 years (n = 61, 6.21%).

7.4.2 Gambling Website Description and Procedure

The present authors were given access to an anonymised dataset of customers at *Unibet* in order to carry out secondary analysis. This online gambling company offers a variety of online products including poker, casino games, and sports betting. The data collected for these gamblers consisted of their first three months' gambling activity. The data points included customer service contacts, number of hours spent gambling, number of active days, deposit amounts and frequency, the number of times a responsible gambling tool (such as deposit limit) were removed by the gamblers themselves, number of cancelled withdrawals, number of third-party requests, number of registered credit cards, and frequency of requesting bonuses through customer service (i.e., the number of instances of 'bonus begging'). The study was given ethical approval by the research team's university ethics committee. Analysis of all data was carried

out using SPSS Version 27. The data were all anonymised so that no customer profiles were identifiable to the researchers.

7.5 Data Analysis

The behavioural data measures noted in the aforementioned section were identified for all the gamblers in the anonymised sample. For each behavioural measure, the data were extracted, and descriptive statistics are presented below. In order to ensure comparability, these measures were applied to a z-normalisation. The identification of these groups was based on two-step cluster analysis, which helped to identify natural groupings within a large dataset. The two-step clustering system represents an algorithm which is scalable and allows large datasets to be handled. Two-step clustering was used which measures distance based on the likelihood of participants being combined together (Melia & Heckerman, 1998). This approach is advantageous as it reduces the distance between all potential matches, but disadvantageous in that it does not consider the number of cases (Conry et al., 2011). The clusters were named in an objective manner based on the findings per cluster. For each DSM-5 criterion, descriptive statistics on each criterion are presented.

7.6 Results

7.6.1 Preoccupation

This criterion was examined in four different ways. The first way that preoccupation was assessed was the number of hours that the gamblers spent on their gambling account. In the span of three months, the average number of hours that a gambler spent online was 126 h, which would correspond to just above five days. Therefore, on average customers spent five days online out of three months. This ranged from 11 h to one gambler spending 853 h online (equivalent to almost 36 days). The second way preoccupation was assessed was the total number of days during this period when the individuals were active on their gambling account. On average, gamblers were active for 50 days out of the three-month period, which corresponds

to slightly more than half the number of days of the days sampled. The fewest number of active gambling days was 21 days, but this was due to the fact that one of the inclusion criteria to be included in the study was having at least three weeks' activity. The highest number of days was one gambler who accessed his account every day. The third way of assessing preoccupation was examining the amount of money deposited into the account. When looking at the depositing days only, on average £142 per gambler was deposited daily. The minimum daily deposit was £5 and the maximum was £15,499.06.

Finally, gamblers' communication with customer services (CS) was examined. For each gambler a unique identifier was given, and this was matched with their communication with CS. For this study, only live chat correspondence was analysed. For each gambler, the number of CS contacts was recorded during the period analysed. On average, customer service was contacted 1.4 times per gambler, but this varied significantly. Most gamblers did not contact customer service at all (N = 658; 67%), whereas there were a number of gamblers who contacted customer service more than 20 times in the space of three months (N = 12, 1.2%), with one gambler contacting customer service 82 times.

7.6.2 Tolerance

For this criterion, two potential indicators were assessed: increase in the number of active days over time and the increase in the number of monetary deposits over time. For each criterion, the totals were calculated on a weekly basis, and then the increase in the totals were calculated. When comparing the total number of days where the gambler was active on the gambling website during the first week of activity, compared to the total number of days where the gambler was active on the gambling website during the last week of activity. Over four-fifths of the sample (82.28%) increased their number of active playing days from one day in the first week of the study period to six active days in the final week of the study period (i.e., a six-fold increase for most players over time). For a much smaller group of gamblers, this did not

increase at all and the number of active days stayed constant week-on-week throughout the three-month period. When observing the increase in the number of monetary deposits done on a weekly basis, on average, the number of monetary deposits per week was also observed. When comparing the total number of deposits made in the first week to the total number of deposits made in the last week, the number of deposits either did not increase at all or ranged from one to seven (for example, the score would be an increase by seven if a gambler deposited three times in the first week, in the last week there were 21 deposits). Therefore, some gamblers had a constant number of deposits week-on-week, whereas some gamblers increased the number of deposits sevenfold by the end of the study period. On average, the number of deposits increased fourfold.

7.6.3 Withdrawal Symptoms

Given that withdrawal symptoms cannot directly be assessed using account-based data, the authors examined communication incidents where the gambler was abusive with one of the customer service representatives (i.e., making the assumption that frustration, moodiness and/or irritability might be indicative of withdrawal symptoms). Any communication which included personal attack on the customer service agent, was of a threatening nature, or was an insulting communication was noted. Most gamblers did not engage in this type of communication apart from 11 gamblers, and the incidents ranged from one to 13 incidents. Out of these 11 gamblers, five gamblers displayed abusive communication once. The highest recorded number of abusive communication incidents was nine by one gambler and 13 by another.

7.6.4 Loss of Control

The loss of control criterion was operationalised as a gambler deciding to stop using a responsible gambling tool that they had voluntarily set up. These are cases where gamblers had controlled their gambling by activating an RG tool but then later deciding to remove it. Such an example would include a gambler who chose to set a daily wagering limit of L10 and then

removing this limit so that they can deposit more than originally planned (albeit after a cooling-off period). Only nine gamblers removed an RG tool twice or more over the study period. Another measure which was considered for loss of control was cancelled withdrawals. The reason for including cancelled withdrawals is because this behaviour shows a lack of restraint and potential loss of control. Gamblers can request to withdraw funds (typically winnings) from their gambling account back into their personal financial account, and this process is typically quick (with gamblers receiving their money on the same day). However, gamblers may cancel this withdrawal request. Such funds are then returned back to their gambling account for the money to be used to gamble. The average number of cancelled withdrawals was 1.57 per gambler. Whereas the majority of gamblers did not cancel withdrawals, there were 39 gamblers (3.97%) that cancelled their withdrawals. The highest number of cancelled withdrawals among the gamblers were 65, 92, and 179 by three of the gamblers.

7.6.5 Escapism

As aforementioned, escapism is difficult to detect unless the gambler discloses that gambling is being used as a form of escapism to other gamblers in a chatroom or to CS. Through the analysis of the communication of this sample of gamblers, no instance of escapism was mentioned by a gambler.

7.6.6 Chasing

In order to examine chasing, each financial deposit per gambler was observed and the change in amount was recorded. In this case, for each gambler, the first initial monetary deposit was recorded. Then, the highest monetary deposit was recorded during the study period. These two values were then compared. On average, gamblers increased their initial deposit threefold (therefore, if a gambler's first deposit was of £50, their highest deposit during the study period was £150), although almost 30% of the gamblers (n = 281) did not increase their initial deposit at all.

7.6.7 Lying

Lying is one of the most difficult criteria to spot in online gambling, especially since this criterion is to conceal the extent of gambling from others. No data from any metric collected found any instance of lying.

7.6.8 Risking Significant Relationships

In order examine this criterion, the researchers examined correspondence where a third-party contacted customer services in an attempt to close the individual's gambling account. Although rather uncommon, and the gambling operator cannot do much due to data protection issues, the operator still recorded these instances. There were four third-party contacts for different cases (concerning a unique gambler every time), whereas in one case, two third-party individuals contacted customer services concerning the same gambler.

7.6.9 Bailout

Since credit cards may result in gamblers getting credit to fund their gambling and potentially using this credit to continue gambling in an attempt to relieve their financial credit cards, the majority of gamblers (n = 851; 86.7%) had used a credit card at some point during the period examined. The majority of the gamblers (n = 616; 62.7%) had only registered one credit card on their account. The highest number of registered credit cards was eight which was for one gambler only. Requesting a bonus was also examined as bailout because money/credit is being asked for by the gambler to a third party (in this case, the gambling operator). In these instances, the gambler asks for free money in order to gamble with it online, probably due to being a desperate state of finding ways of funding their gambling but also to potentially win back some of the money that they have lost gambling. At the time of the study, requests by gamblers for a bonus were usually declined by the operator, especially if the requests were repetitive because such actions are flagged as a potential indicator of problem gambling by the operator. With regards to bonus begging, this was recorded by examining every customer

correspondence and recording the number of times a gambler requested a bonus. The average number of requests for bonuses was 0.5 per gambler but this was heavily skewed. The maximum number of requests for a bonus was 62 times. Compared to the whole population, only 12 gamblers requested bonuses more than 10 times, with the highest number of requests being 35, 46, and 62 by three gamblers.

7.7 Cluster Profiles

The data were analysed by using SPSS (Version 27.0). The clusters were identified amongst 982 participants using the SPSS two-step clustering algorithm. This algorithm is best used for large amounts of data, and it identifies which combinations are most logical. In the initial step of the cluster analysis, the data are sorted into pre-clusters. These can be found in Table 7.1. The SPSS the algorithm examines the cases based on the distance measures between the z-scores to determine whether a new cluster should be formed or if the case should be included in an already existing cluster. For each gambler, each aforementioned behavioural variable mentioned was calculated, and in order to ensure that the values could be compared, these were converted to z-scores.

Table 7.1. Initial clusters formed based on the gambling metrics assessed

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Communication with customer services	-0.293	-0.087	-0.087	-0.293
Hours spent gambling	-0.589	0.198	1.147	0.035
Number of active days gambling	-0.208	1.058	0.080	-0.151
Daily deposit amount	-0.073	24.379	0.001	-0.193

Increase in number of days gambling over time	0.500	0.500	0.500	0.500
Increase in number of deposits over time	-0.952	0.015	1.467	0.015
Removal of RG tools	-0.248	-0.248	2.650	-0.248
Cancelled withdrawals	22.130	-0.068	-0.068	-0.068
Abusive communication with customer services	-0.072	-0.072	24.067	-0.072
Chasing losses	-0.077	23.846	0.103	-0.137
Third-party calls	-0.068	-0.068	-0.068	22.130
Number of registered credit cards	-0.228	0.963	3.343	-0.228
Frequency of bonus begging	-0.151	-0.151	6.720	0.148

Four clusters emerged, with samples sizes of 646 participants (65.78%; non-problem gamblers), three participants (0.31%; financially vulnerable gamblers), nine participants (0.92%; emotionally vulnerable gamblers), and 324 participants (32.99%; at-risk gamblers). Part of the two-step cluster analysis, Table 7.2 shows the final clusters formed. The findings show is that there were four distinct clusters. Cluster 1 contained two-thirds of the gamblers in the present sample. All the gamblers in Cluster 1 had lower mean values on all the metrics compared to all the other gamblers in the present sample (i.e., they were gambling at much safer and non-problematic levels compared to the other three groups). The remaining three other clusters comprised gamblers who had elevated scores on some or most of the gambling metrics.

The specific differences are discussed below. The figures in Tables 7.1 and 7.2 both show z-scores.

Table 7.2. Final clusters formed based on the gambling metrics assessed

	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Communication with customer services	-0.141	0.050	-0.110	0.283
Hours spent gambling	-0.455	2.260	0.178	0.881
Number of active days gambling	-0.479	1.077	0.291	0.937
Daily deposit amount	-0.058	13.801	-0.151	-0.009
Increase in number of days gambling over time	-0.231	0.500	-0.109	0.458
Increase in number of deposits over time	-0.341	0.661	0.338	0.665
Removal of RG tools	-0.082	-0.248	0.074	0.164
Cancelled withdrawals	-0.016	-0.068	-0.068	0.035
Abusive communication with customer services	-0.069	-0.072	5.705	-0.020
Chasing losses	-0.060	14.803	-0.106	-0.014
Third-party calls	-0.033	-0.068	-0.068	0.070
Number of registered credit cards	-0.051	1.360	0.830	0.066
Frequency of bonus begging	-0.081	-0.151	8.080	-0.061

7.7.1 Cluster 1—Non-problem Gamblers

The non-problem gambling cluster (n = 646, 65.78%) comprised the majority of the gamblers examined in the present study. The scores where all converted to z-scores, where negative scores refer to values that are below the mean for the whole group. When looking at each DSM-5 criterion, gamblers in this group scored negatively on all the criteria. More specifically, compared to all the other gamblers in the present sample, the gamblers in this cluster had lower mean scores on all the gambling metrics. Each of the following tables shows the z-scores along the y-axis with each DSM-5 criterion for gambling disorder along the x-axis (Fig. 2).

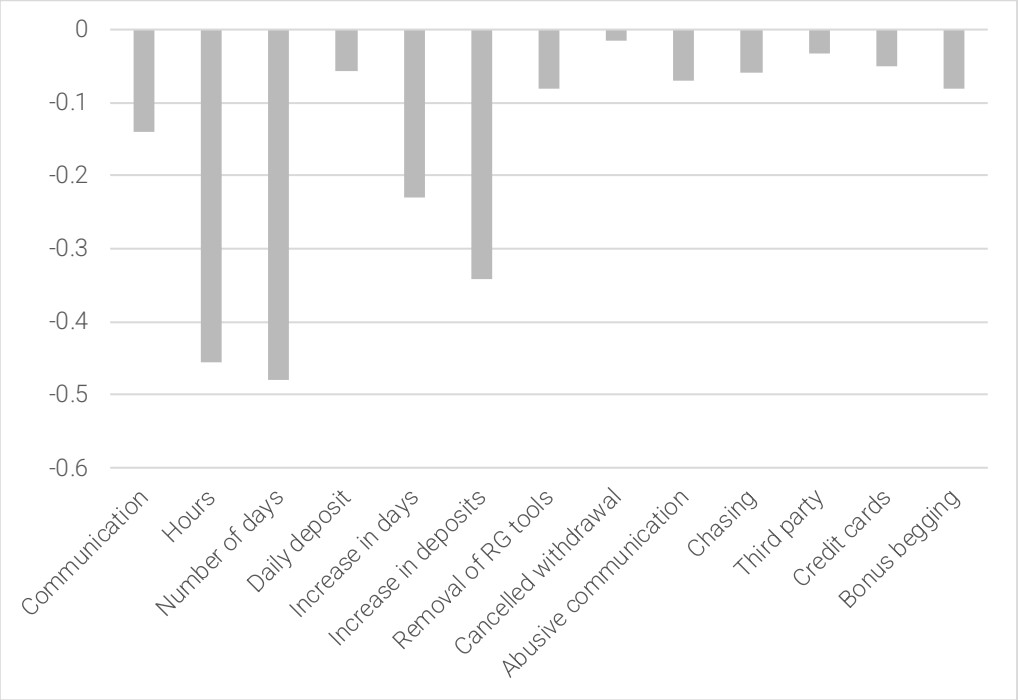

Figure 7.1. Behavioural metrics of the non-problem gambler cluster

7.7.2 Cluster 2—Financially Vulnerable Gamblers

The financially vulnerable cluster comprised only three gamblers (0.31%) and this consisted of gamblers who predominantly displayed higher values on the criteria related to gambling expenditure such as the number of daily money deposits and the increase in daily money deposits over time on the chasing criteria. The number of hours spent gambling per day,

the number of different active days gambled on, and the number of registered credit cards on the account were all higher compared to other clusters. Other criteria (e.g., removal of RG tools, cancelled withdrawals, abusive communication with customer services, third-party calls, and frequency of bonus begging) were lower than the mean for the total gamblers in the present sample (Fig. 3).

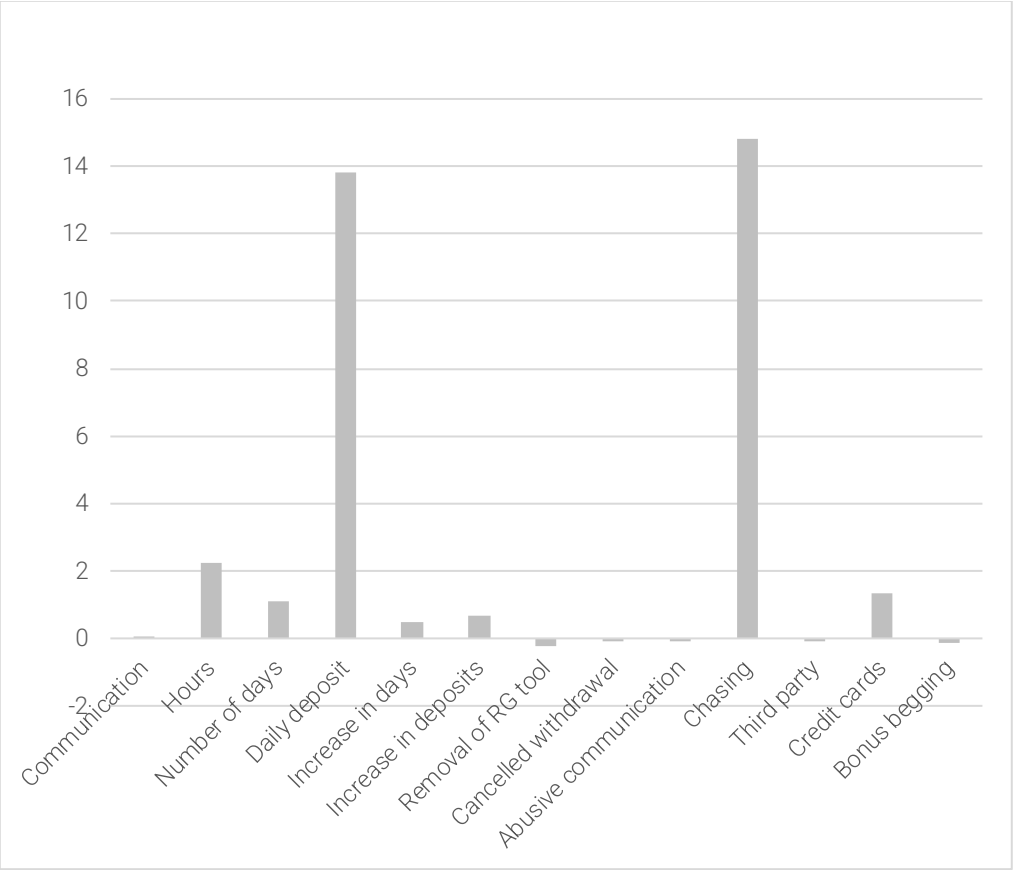

Figure 7.2. Behavioural metrics of the financially vulnerable gambler cluster

7.7.3 Cluster 3—Emotionally Vulnerable Gamblers

The emotionally vulnerable cluster comprised nine gamblers (0.92%) and consisted of gamblers who scored most highly in relation to abusive communication with customer service staff and frequency of bonus begging. This appears to be a group of gamblers that experienced more emotional (rather than financial) problems. Out of the other criteria, six of these were lower than mean values in the total sample (communication with customer services, amount of daily

deposit, increase in days, cancelled withdrawals, chasing and third-party calls) and seven were above average (hours, number of days, increase in deposits, removal of RG tools, abusive communication with customer services, number of registered credit cards, and frequency of bonus begging) (Fig. 4).

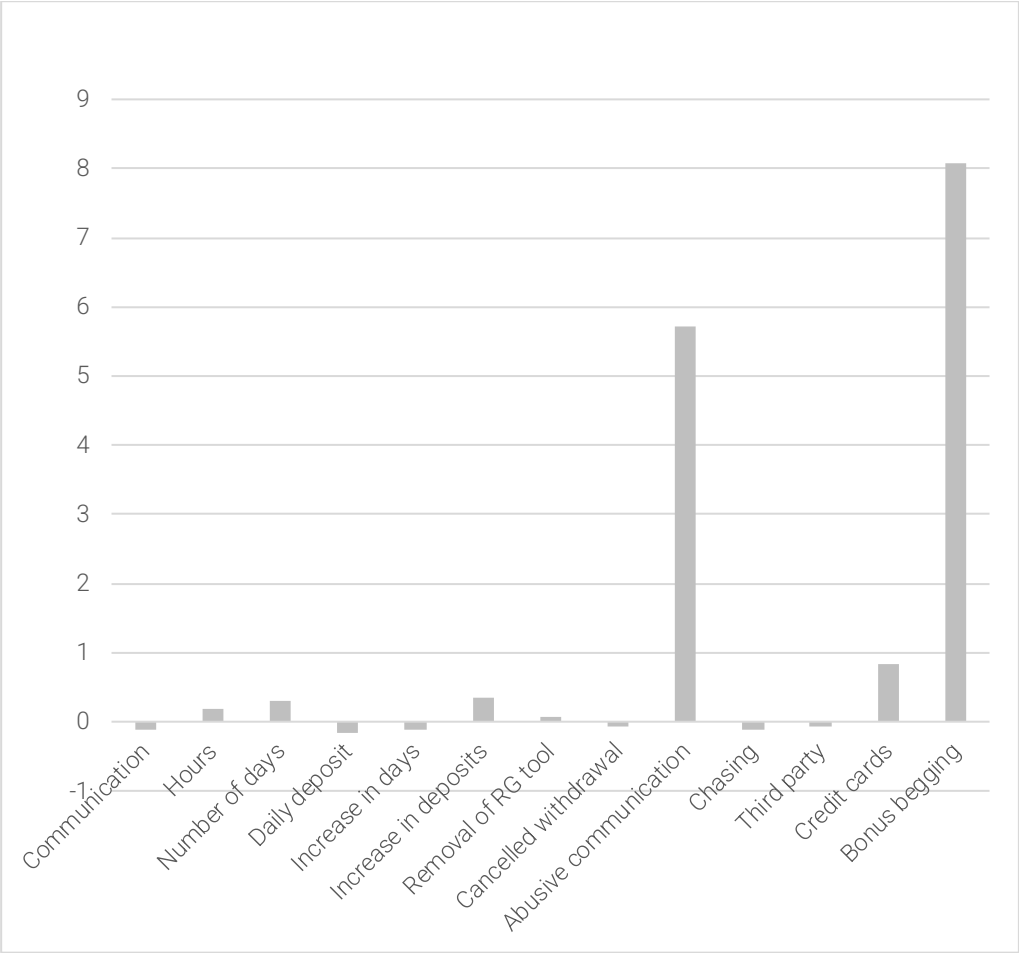

Figure 7.3. Behavioural metrics of the emotionally vulnerable cluster

7.7.4 Cluster 4—At-Risk Gamblers

The at-risk cluster comprised 324 gamblers (32.99%). This group had higher mean values than the rest of the sample on communication with customer services, hours spent gambling, number of active days gambling, increase in number of active days gambling over time, increase in number of deposits over time, removal of RG tools, cancelled withdrawals, third-party calls, and number of registered credit cards. Compared to the other clusters, four criteria had the

highest value compared to all the other clusters in this cluster. These were communication with customer services, increase in deposits, removal of RG tools, and third-party calls (Fig. 5).

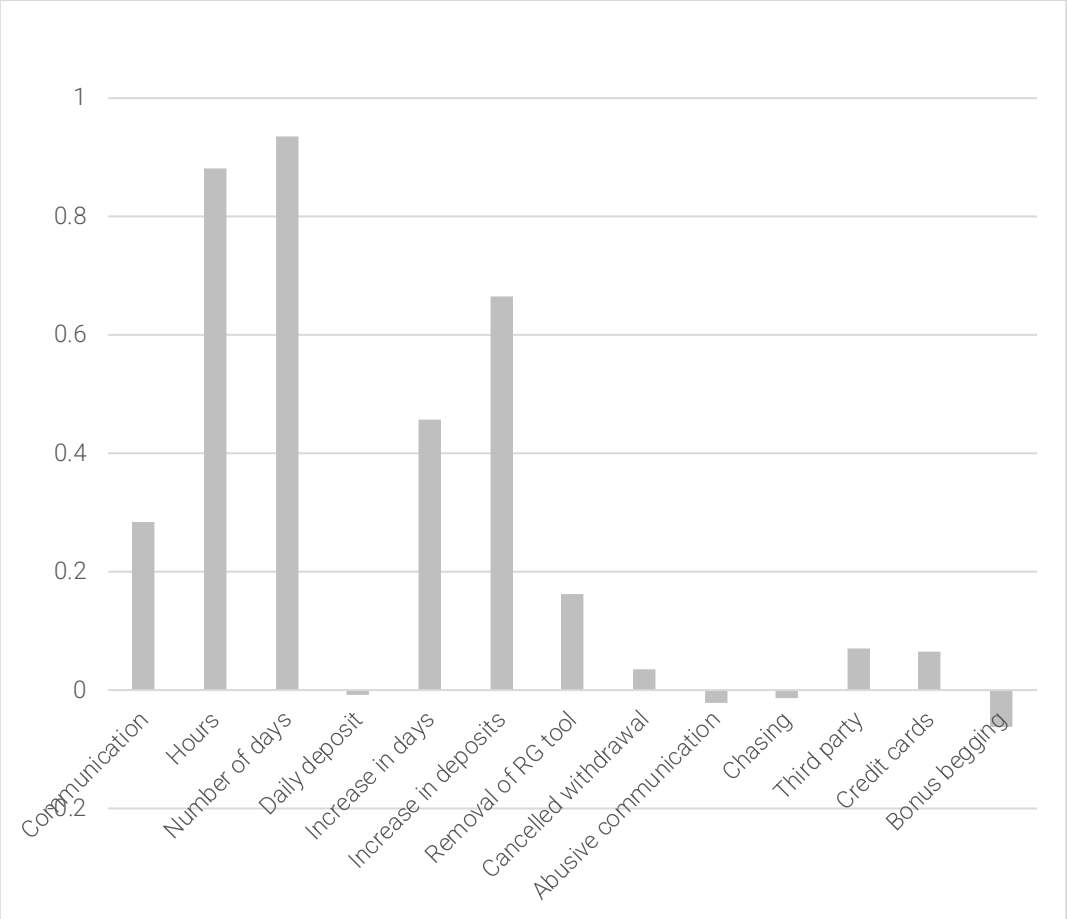

Figure 7.4 – Behavioural metrics of the at-risk gambling cluster

7.8 Discussion

To the authors' knowledge, the present study is the first to ever examine the application of the DSM-5 criteria of gambling disorder (APA, 2013) to actual gambling behaviour using online gambling transaction data. Initially (in the Introduction), each of the nine DSM-5 criteria were examined to see how these could be operationalized using account-based tracking data. This was done by consulting with experts from the online gambling industry, regulatory bodies, reformed problem gamblers, and other gambling researchers., as well as utilizing examples from the gambling studies literature After the DSM-5 criteria had been operationalized, the gambling behavioural indicators were analysed utilizing a sample of gamblers who had

registered with the gambling operator *Unibet* from September 1 to December 31, 2018. For each gambler, the gambling activity in their first three months was analysed and operationalized in relation to the DSM-5 criteria for gambling disorder.

Initially, all the operationalized gambling disorder criteria were observed in the sample and the data were presented descriptively. In the second stage, the data were z-normalised to allow comparability and a two-step cluster analysis was performed. Four clusters emerged: non-problem gamblers (646 participants; 65.78%), financially vulnerable gamblers (three participants; 0.31%), emotionally vulnerable gamblers (nine participants; 0.92%), and at-risk gamblers (324 participants; 32.99%). In the first cluster (non-problem gamblers), all the gamblers had a negative z-score for all the proposed gambling disorder criteria. This showed that the majority of the population had values that were smaller than the means when compared to the other clusters.

The second cluster (financially vulnerable gamblers) comprised only three gamblers. In this cluster, it was evident that the number of daily deposits and the increase in daily deposits over time (i.e., chasing behaviour) were at much higher than compared to the mean values of the other clusters. The number of hours spent gambling online, the number of different active days gambled on, and the number of registered credit cards on the account were also higher than the mean values of the other clusters, but not as high as the number of daily deposits and the increase in daily deposits over time. On the other criteria, they were all close to the other cluster mean values, and in some measures (removal of RG tools, cancelled withdrawals, abusive communication, third-party calls, and frequency of bonus begging) were lower than the mean.

The third cluster (emotionally vulnerable gamblers) comprised nine gamblers. In this cluster, the most distinctive behavioural attributes were abusive communication with customer services staff and frequency of bonus begging. Six of the other criteria were negative z-scores,

showing that the values were lower than the mean for the other clusters, whereas five of the criteria showed positive z-scores.

The final cluster (at-risk gamblers) comprised one-third of the gamblers. This cluster had no distinctive criteria, and all the values ranged from + 1 to − 1, and four of the criteria (number of daily deposits, abusive communication with customer services, chasing losses, and frequency of bonus begging) had negative z-scores, therefore the values were much lower to the total sample's means. Frequency of bonus begging, abusive communication with customer services, number of daily deposits, and the increase in daily deposits over time were all lower than the mean of the other clusters. The other criteria had a positive z-score, with the number of active gambling days having the highest value of 0.937, showing that the z-score was almost one standard deviation greater than the mean of the total sample.

The benefits in the approach taken in the present study is that the whole population was observed and not just gamblers that chose voluntary self-exclusion (VSE) which has been the case in previous studies (e.g., Braverman & Shaffer, 2012; Haefeli et al., 2011; Percy et al., 2016). Griffiths and Auer (2016) highlighted that there are limitations in this latter approach because gamblers may not be using self-exclusion for problem gambling reasons. A recent study by Catania and Griffiths (2021b) analysed 7732 gamblers who had used VSE. They reported almost one-fifth of the gamblers used the VSE option even though the players had less than 24 h of activity on their account. Moreover, gamblers who use VSE are treated by most researchers as a homogenous group despite the several differences present.

The majority of the sample in the present study were either in the non-problem gambling cluster (65.78%) or the at-risk gambling cluster (32.99%) comprising 98.77% the participants. In both groups, there were no distinctive criteria that were much higher than the means of the total sample which would be expected because the two clusters comprised a high percentage of the total population studied. This may show that these gamblers were playing within their

financial means and not problematically. The remaining two clusters that did display elevated values on DSM-5 criteria for gambling disorder comprised 1.23% of the total sample. In the UK, the most recent British Gambling Prevalence Study reported that 0.9% of the population were problem gamblers using the DSM-IV criteria (Wardle et al., 2011). Therefore, the two clusters which comprise 1.23% of the total sample in the present study may reflect the individuals who are problem gamblers given the similarities in prevalence.

The financially vulnerable gambler cluster showed higher than average means in the number of daily deposits, increase in daily deposits over time (i.e., chasing behaviour), number of hours spent gambling, number of different active days spent gambling, and number of registered credit cards on the account. This group appeared to show much greater levels of preoccupying gambling behaviour based on the amount of time and money spent (Griffiths, 2012). Overall engagement and increase in time spent gambling are key predictors of gambling harm (Gainsbury et al., 2019). A high amount of deposited money has also been associated with gamblers that self-excluded for problem gambling reasons (Ukhov et al., 2021). The gamblers that were in this cluster also showed more indicators of chasing behaviour compared to the other clusters, and this may result in relying on others to provide money to relieve desperate financial situations that were caused by gambling (bailout). Gamblers may use bailout money by depositing it on their online gambling account, in order to chase their losses. In the present study, the number of registered credit cards on the gambling account may be an indicator for bailout, and was also higher compared to the mean of the total sample.

The emotionally vulnerable gambler cluster included two behaviours which were higher than the means of the total sample. These were abusive communication with customer services staff and frequency of bonus begging. These two behaviours may be signs of withdrawal and bailout. Gamblers may use aggressive communication in online gambling chatrooms (Griffiths, 2012), and gamblers may use abusive communication due to psychological and/or emotional

strain that occurs due to problem gambling (Haefeli et al., 2011). This strain may be due to the losses being out of control for the gambler, or financial funds running out and therefore not being able to continue gambling. Bonus begging may be used in order for the gambler to get 'free money' on their account to be able to chase their losses and use this 'free money' as means to gamble when the financial means to do so are running low. The findings presented here may help gambling operators in minimising harm caused by gambling, because online behavioural tracking identify potentially problematic gambling behaviour (Haeusler, 2016). Additionally, using objective data collected by tracking technology, may overcome the weaknesses that are present with self-report data such as lying or the social desirability effect (Griffiths, 2009c).

7.9 Limitations

Although the present study may help in the discussion of operationalizing online behavioural tracking data and potential gambling disorder indicators, it does have a number of limitations. The dataset is from only one gambling operator, and this may be limited view since most gamblers use more than one gambling operator, and therefore generalisation to all online gamblers may be difficult to conclude (Auer & Griffiths, 2019; Auer et al., 2020). Some of the indicators developed are arguably quite novel (e.g., frequency of bonus begging) and therefore further research should be performed in relation to their reliability as indicators of potential gambling harm indicators. Another limitation could be that some of the operational definitions of each DSM-5 criterion were arguably narrow. For instance, in the present study chasing was simply defined as an increase in deposits over time. Further research should look at longitudinal aspects to see how these potential problem gambling indicators develop over time. Another approach could be to use self-report data in combination with these potential problem gambling indicators to better understand their prevalence with gambling-related harm.

7.10 Conclusions

Despite its limitations, the present study creates a foundation of potential new problem gambling indicators that may be used in conjunction with the collecting of online behavioural tracking data. Furthermore, through analysing a whole gambling population and not limiting it to voluntary self-exclusion as a proxy measure for problem gambling, can further help gambling operators to prevent disordered gambling.

Chapter 8 - Summary and integration of the studies' findings

8.1 Introduction

For the majority of the population, gambling is a form of entertainment and enjoyable (Gainsbury et al., 2012). Gambling participation occurs over a continuum where on one end some individuals do not gamble, whereas on the other end, there are individuals who experience serious harm because of gambling problems (Cowlishaw et al., 2018). Through the expansion of internet gambling, these innovative online approaches have allowed for gambling to infiltrate our everyday life through innovative technology (Gainsbury et al., 2015). Nonetheless, although online gambling has been deemed of high risk for gamblers to develop a problem (Ladd & Petry, 2002; Wood & Williams, 2007), there are several advantages in the realm of responsible gambling (RG) due to the online nature of gambling (Dragicevic et al., 2011).

RG considers the processes and initiatives that are done so to minimise gambling-related harm. Different stakeholders are involved to make this possible, including the regulators, governments, policymakers, treatment centres, and the online gambling provider (Blaszczynski et al., 2004). Since online gambling has expanded swiftly, regulators have found it difficult to keep up, and therefore some companies are based in jurisdictions like Malta (Auer & Griffiths, 2013a). For these companies, the regulatory framework applied is that of Malta, but the gambling provider may have players from across the globe. The online gambling industry had initially started to self-regulate in this area (Monaghan, 2009). This has drawn criticism as it may be perceived that online gambling operators would not jeopardise their financial gain so to protect consumers. The initiatives that are viewed from a corporate social responsibility (CSR) perspective to view the industry as engaging in good initiatives centered around RG may be window dressing, and therefore are being done just to have a better external image to the public (Livingstone & Woolley, 2007). The first two empirical studies presented in this thesis

examined gambling consumer protection practices and how this is presented in real life to gamblers to provide further insight on this topic. The examination of the RG tools present by individual operators but also how specific communication is done was examined to provide insight on these assumptions. The key findings of these studies are discussed in the next section.

Online gambling has allowed an important field of studies to emerge and that is online behavioural tracking (Auer et al., 2021). This type of methodology is much more favourable when compared to previous methodologies used. Prior to the possibility of online behavioural tracking, self-report methodologies were utilised (Auer & Griffiths, 2017). Although these studies still managed to provide insight to gambling, self-report has its own limitations such as social desirability effect, memory recall bias, and confirmation bias, but also samples sizes that are often small to modest in size. By examining online behavioural tracking data, this has made possible studies that investigate a myriad of topics and ensured harm minimisation (Joinson et al., 2008). Through online behavioural tracking, researchers have access to large samples of anonymised data which can be revisited at any time and reduces the chances of participant bias since the data are objective (Griffiths, 2014). Through online behavioural tracking, three out of the five empirical studies in the thesis were made possible and these studies provide insight into real gambling data and how gamblers play. Such an example is in Chapter 6, comprising an empirical study on how voluntary use of RG tools and the influence of age and gender. The key findings of these three studies are discussed in the next section.

Furthermore, online behavioural tracking data can be used to challenge specific approaches in research that were previously adopted. In a number of studies (e.g., Deng et al., 2019; Dragicevic et al., 2015; Haeusler, 2016; LaBrie et al., 2007; LaPlante et al., 2008), self-exclusion has been used as a proxy measure for problem gambling. By using this proxy measure, studies have focused on analysing gamblers that have self-excluded and then

compared these gamblers to the ones that did not self-exclude as a control group. Understandably, in the online gambling world, self-exclusion has less shame and stigma because it is in the online environment, does not involve human interaction, and is easily done online (Hayer & Meyer, 2011). The study presented in Chapter 7 highlights how this proxy measure may not be the most ideal, and this was possible by using real life gambling data through online behavioural tracking. The last study presented in this thesis considered the DSM-5 diagnostic criteria for gambling disorder and how these may be translated into online markers of harm. This was then applied to an anonymised data sample again through the use of online behavioural tracking data. Therefore, it could be argued that online gambling may be impose a higher risk on individuals for the development of gambling problems, but the possibility of analysing such data and contributing to understanding and minimising gambling-related harm is only possible through this medium. Furthermore, the main goal of the research in the thesis was to further enrich the research in the topic of online gambling and RG, as well as to create empirical studies that can help gambling operators better understand this complex topic and contribute to minimising harm.

8.2 Key findings in the thesis

One of the main aims for the thesis was to carry out empirical research that can be applied to online gambling and that can appeal to different stakeholders involved in the minimising harm from gambling (Blaszczynski et al., 2008). This is also reflected in the different literature reviews presented at the beginning of this thesis, where Chapter 1 examined the literature published on the psychology of gambling disorder and Chapter 2 explored the literature on corporate social responsibility. In Chapter 1, gambling was introduced with information on how gambling, although it can be a form of entertainment for most gamblers, can result in a gambling disorder for a minority of individuals. The behavioural aspect of gambling disorder was

highlighted and how different models determine the acquisition, development, and maintenance of gambling disorder. Such aspects include the biological model that takes into account the neurobiological abnormalities associated with the disorder, whereas social perspectives on gambling consider attributes such as age of start of gambling and how this raises potential future problematic gambling. Furthermore, psychological perspectives on gambling were presented such as psychological relief, and cognitive perspectives can attribute to this. Chapter 2 considered corporate social responsibility (CSR) among gambling operators and presented how CSR frameworks in organisations are presented and achieved. The concept of responsible gambling (RG) was presented with different aspects that encapsulated RG such as gambling regulation, the online nature of gambling, and age restrictions. This third chapter also briefly examined gambling advertising, the RG tools that are available in the online gambling field, and how online behavioural tracking is possible. In addition to this, the concept of RG messaging to assist gamblers to prevent gambling-related harm was also overviewed. Overall, Chapter 2 highlighted how consumer protection is only possible through a collaboration with different stakeholders, namely gambling operators, researchers, treatment providers, and gambling regulators.

In the first empirical study (Chapter 3), the 50 most advertised online gambling operators with a "dot-com" suffix were chosen and evaluated. The evaluation considered an analysis of options provided by the online gambling operator and how RG-oriented the communication with customer service was. This study was carried out in 2017. The second study of this thesis is a replication study of the first study and was conducted in 2021 (Chapter 4). Gambling regulation and enforcement has been continuously increasing, and therefore it was expected that there would be improvements in consumer protection (Wohl et al., 2014). When comparing the results from both studies, it was evident that some practices improved but others either

remained the same or performed worse than before. In order to better present this, the below table has been formulated:

Table 8.1 provides a comparison of the key results in assessing the gambling operators from 2017 study and the 2021 study. The last column in the table illustrates whether the change between the 2017 study findings and the 2021 study findings were for the better (positive) or for the worse (negative).

Table 8.1. Comparisons between 2017 and 2021 study findings

Responsible gambling tool/initiative	2017	2021	Change
RG dedicated page	*n* = 50; 100%	*n* = 48; 96%	Negative
- Statement of commitment to RG	*n* = 50; 100%	*n* = 48; 96%	Negative
- Information about gambling harm	*n* = 50; 100%	*n* = 48; 96%	Negative
- Mention of gambling help organisation(s)	*n* = 42; 84%	*n* = 46; 92%	Positive
- Self-assessment	*n* = 32; 64%	*n* = 42; 84%	Positive
- Information about RG tools	*n* = 42; 84%	*n* = 46; 92%	Positive
- No promotional material	*n* = 6; 12%	*n* = 46; 92%	Positive
- Gambling blocking software links	*n* = 30; 60%	*n* = 27; 54%	Negative
Age checks	*n* = 34; 68%	*n* = 44; 88%	Positive
Link to RG in first email communication	*n* = 22; 44%	*n* = 21; 42%	Negative
Account history	*n* = 47; 94%	*n* = 48; 96%	Positive
Availability to limit setting	*n* = 45; 90%	*n* = 49; 98%	Positive

Cooling off functionality	*n* = 36; 72%	*n* = 48; 96%	Positive
Self-exclusion option	*n* = 43; 86%	*n* = 48; 96%	Positive
Customer services communication regarding limits	*n* = 30; 60%	*n* = 43; 86%	Positive
Customer services communication regarding RG breaks	*n* = 22; 44%	*n* = 39; 78%	Positive
Customer services communication for problem gamblers	*n* = 25; 50%	*n* = 31; 62%	Positive

Such explorative studies are important as they provide insight into what different online gambling operators offer and what is present for consumer protection and responsible gambling. It is important and a responsibility for online gambling operators to prevent harm resulting from gambling (Monaghan, 2009), and the RG tools and initiatives examined in these exploratory studies are the least that these operators can do. Gambling operators that provide a fair and responsible gambling practice are not only operators in accordance to gambling regulations but will also benefit as gambling operators because ethical practices lead to higher customer retention and consequently higher profits (Gainsbury et al., 2012).

These exploratory studies were unique because they provided greater insight by examining active communication with customer service representatives. Through this methodology, a glimpse of first-hand support that problem gamblers receive was achieved. It was evident that although customer communication was better in the 2021 study when compared to the 2017 study, further improvement is needed for the consumers to be more protected. This may highlight that the companies involved were not committed to RG and therefore the consumer communication was not deemed as important enough that it needed an

intervention. Another explanation could have been that the customer service representatives needed more training in consumer protection and RG practices.

As mentioned in the previous chapters, online behavioural tracking provides a new niche for examining and analysing real gambling data which was not possible prior to the emergence of online gambling (Auer & Griffiths, 2014). In the three tracking studies in this thesis, online behavioural tracking data were used which allowed great benefits such as data that can be revisited at a later stage and enabled large sample sizes, but the main limitation was that the data were only observed from one gambling operator (Harris & Griffiths, 2017). In the third study (Chapter 5), a sample of 18,365 customers from *Unibet.com* was used to examine the use of the first voluntary RG tool in the first 12 months after the customer activated their gambling account. The study examined if there were preferences in the RG tool activation in relation to gender and age. The study also examined at which point customers voluntarily used an RG tool after the account creation. Predominantly, deposit limit was the most preferred RG tool. There was a difference when it came to the youngest group of customers (i.e., those aged 18-25 years of age) because they preferred short-term self-exclusion which was followed by an equal preference for long-term self-exclusion and product blocking. A significant association was found for this younger age group with regards short-term self-exclusion and product blocking. Similarly, there was a significant association for customers between the ages of 26 to 45 years for using long-term self-exclusion.

The majority of the voluntary RG tools were set on the same day as when the account was registered, and on these cases, deposit limit-setting was the preferred RG tool. When examining long-term self-exclusion, this was not as popular on the day of account registration but was more popular as time passed from account registration. Although significant associations were present among different age groups, this was not the case with gender groups.

There is a chance that this occurred because males were over-represented in this anonymised sample. This study provided insight into an area which has not been as extensively researched which is the use of voluntary RG tools when considering age, gender, and days from activation of the online gambling account. Such a study can assist gambling operators and policymakers to better understand what the best possible RG tools are based on the customers' preferences.

What is evident in examining studies that have used online behavioural tracking is that voluntary self-exclusion (VSE) has been continually used as a proxy measure for problem gambling (e.g., Deng et al., 2019; Haefeli et al., 2011; Haeusler, 2016; Ladouceur et al., 2000). Although VSE is an essential RG tool to offer customers, this tool has its limitations when used as a proxy measure for problem gambling. In Study 4 of the thesis (Chapter 6), an anonymised sample of 7732 customers who chose self-exclusion and another anonymised sample of 141 self-reported gambling addiction customers were analysed. The period from registering the gambling account to the activation of VSE or closure of account due to self-reported gambling addiction was also provided. The gambling expenditure of these customers was also available for analysis.

It was notable through the analysis that the VSE group in itself was inherently heterogeneous and therefore it would be limiting to consider this as one group, let alone as a proxy measure for problem gambling. Approximately one-fifth of the anonymised sample used VSE without having engaged in any gambling activity, followed by the majority of the sample (50.38%) using VSE in the first week after registering their online gambling account. This supports the claim that VSE is not a good proxy measure of problem gambling. This study presented novel information when compared to other researched studies because the groups that used VSE were categorised by the days leading to VSE from account creation and their gambling expenditure. Furthermore, this group of customers that used VSE was compared to a

group of customers that had confirmed that they had a gambling disorder to which they reported to customer service representatives of the online gambling company.

Notably, if VSE was a good proxy measure for problem gambling, the VSE group should have been similar or correlated with the group who self-reported gambling disorder. The VSE group was split in different time periods and compared with the group who self-reported gambling disorder. Nonetheless, statistical differences were found with all the VSE groups when compared to the customers that closed their account for gambling disorder. Inherently as a group, when examining gambling expenditure, this was significantly different. The self-reported individuals with problem gambling had the largest mean expenditure when compared to all the VSE groups. The customers that used VSE in the first three months after account creation had a higher mean gambling expenditure when compared to the customers who used VSE after three months. Statistically significant differences were also found between the customers who used VSE in the first three months when compared to the customers who used VSE after three months.

This study not only confirmed that VSE should not be used as a proxy measure for problem gambling but also highlights that some customers use VSE as a way of closing their account due to non-RG reasons (Dragicevic et al., 2015). This may be due to some RG tools being pushed as a result of replicating land-based RG initiatives, and therefore not keeping in mind that there are specific online characteristics that need to be considered when examining regulations and policymaking. Therefore, although VSE should always be offered by the online gambling operators, there are innovative aspects that should be explored so to assist consumer protection even more. One of these initiatives would be examining markers of harm and how these can be identified so to help consumers before substantial harm is done.

Consequently, the last study of the thesis (Chapter 7) considered the markers of harm and how these can not only be identified but how they are represented when applying them to online behavioural tracking. This study looked into how the DSM-5 criteria for gambling disorder can be operationalised by using account-based gambling behaviour data. Using online behavioural tracking, limitations that may be present in the diagnostic criteria may be avoided such include the social desirability effect which is present when self-reporting is used (Griffiths, 2009c). The approach in using online behavioural tracking to identify markers of harm has been used before (e.g. Braverman & Shaffer; Haefeli et al., 2011), but here VSE was employed as the proxy measure for problem gambling. As highlighted in Study 4, using VSE as a proxy measure is not always ideal, because these customers may be using VSE to close their gambling account for non-RG reasons (Griffiths & Auer, 2016). This study has its own uniqueness because previous studies have looked into the application of the DSM (albeit DSM-IV) but from a theoretical perspective, and therefore Study 5 utilises a direct application of the markers of harm to an anonymised population.

An anonymised sample of 982 customers was obtained and for each of these participants, the account history for the first three months after their online gambling account creation was provided. The only inclusion criterion was that these customers had to have at least three weeks of gambling activity in the first three months so that the research could focus on the more regularly active customers. Each DSM-5 criterion was operationalised to identify how this would be present as an online marker of harm. Then for each of the behavioural measure mentioned, these were extracted from the sample of customers and descriptive statistics was presented for each one.

To ensure that the behavioural measures could be comparable, these were applied to a z-normalisation and then a two-step cluster analysis was employed to ensure natural grouping of

this large dataset. Four clusters emerged. The first cluster that contained the majority of the gamblers (n = 646, 65.78%) and were named as the non-problem gamblers. In this group, the gamblers scored negatively on all the criteria examined. The second cluster contained a very small number of customers (n = 3, 0.31%) and this group of customers showed predominantly higher values in the criteria that encompassed gambling expenditure and were named as financially vulnerable gamblers The third group of customers were named as emotionally vulnerable gamblers (n = 9; 0.92%). This group of customers showed more markers of harm that were more emotional rather than financial. The final group of customers were named as at-risk gamblers, comprised almost 30% of the whole sample. This group of customers had specific criteria which were higher mean values when compared to the rest of the group.

This study the first ever to examine the DSM-5 criteria for gambling disorder (APA, 2013) with actual online gambling account-based tracking data. Through this approach, the DSM criteria were operationalised, and these can be used as markers of harm in the real online gambling world so that harm is minimised. The approach used in this study was also unique because it employed discussions with different stakeholders including representatives from the online gambling industry, regulators, gambling researchers and reformed problem gamblers. As identified in the Reno Model, it is vital that in order to have a proper RG policy and procedures, cohesion amongst these different stakeholders should be employed.

8.3 Implications, limitations, and future research

When considering this thesis as a whole, the five empirical studies can be applied to minimise gambling-related harm. The findings from these studies can help online gambling operators to apply the findings in beneficial and productive ways to reduce the incidence of harm. As was shown in Study 1 (Chapter 3) and Study 2 (Chapter 4), exploratory studies can provide insight into what consumer protection is currently available for online gamblers but can

also assist regulators and policymakers on what the necessary areas are to examine and evaluate in the online gambling industry. Study 3 (Chapter 5) examined how voluntary RG tools are preferred for different age groups and gender and provides practical information on what gamblers prefer. Therefore, this information can help in assisting operators to promote these RG tools to these demographic groups, knowing that there may be more 'buy-in' and adherence to setting up these tools. Study 4 (Chapter 6) examined whether VSE was a good proxy measure for problem gambling and found that it was not. Such a study was online possible by using online behavioural tracking data but also engaged with members from the online gambling industry to identify concerns that they might have expressed on previous research that utilised VSE as a proxy measure for problem gambling. Finally, Study 5 (Chapter 7) had several novel aspects that had not been examined previously, but also was also developed by consulting different stakeholders highlighting the need for such discussions. The aim was also to operationalise scientific concepts using real gambling data, which can be easily be applied by gambling operators to minimise harm. The initial intention of the thesis was to carry out empirical research to answer questions in various research gaps as well as to make the application of these findings easily for online gambling operators, regulators, and policymakers.

Although the research studies in this thesis are innovative and aimed at minimising harm for different stakeholders, especially the online gambling industry, there are limitations present. For Studies 1 and 2, which examined 50 online gambling operators and their approach towards consumer protection, although they provided insight into what consumers are presented with, the number of gambling websites observed is relatively small compared to the number of online gambling websites available globally (although the most major ones were sampled). A further unique approach to this study was the interaction with customer service. Although it provided rich data and observations for the purpose of the study, only one interaction per online operator took place. For these type of studies, future research should look at doing replication studies

but with a larger sample of online gambling operators. Furthermore, a greater number of interactions per operator could be included and analysis amongst different gambling regulations can also be examined and evaluated.

With Study 3 that examined the preference of voluntary RG tool usage, this study is essential for consumer protection and policymakers. Moreover, to the author's knowledge there are no previous similar studies that have examined these types of data, but then again, limitations are present for this study. As with most online behavioural tracking data-based research, the data that were examined were only from one operator, and therefore it gives a limited view of the gambler's total online gambling behaviour. Additionally, the data did not include gambling expenditure or provide insight into the gamblers' behaviour that could have enriched the study. Future studies into this topic should examine further data points, such as gambling expenditure. This research gives the possibility for more personalised messaging centered around consumer protection and harm minimisation which pushes for RG tools that have been found to be preferred by specific age groups. Future studies could also examine this area.

Study 4 examined VSE as a proxy measure for problem gambling which could further help the gambling industry in understanding their clientele which could subsequently help in harm minimisation. Although this was the first study to examine VSE closures and gambling addiction closures using online gambling data, there are a number of limitations to be considered. The VSE groups were split into unequal time intervals, and therefore future research could examine equal time intervals prior to VSE. Similar to the previous study, a limitation of the research was that the data only comprised that from one online gambling operator. The sample that included the gambling disorder closures was relatively small, and therefore this can also be considered as a limitation. Future research should utilise larger sample

sizes. Future studies should also examine other data points to support the examination of this VSE group such as gambling expenditure, socioeconomic status, and the direct communication of the customer with the operator.

Study 5 examined the DSM-5 criteria for gambling disorder and how these can be operationalised using account-based tracking data so that online gambling operators can identify markers of harm and help prevent and reduce problem gambling. Limitations were also present in this study because some indicators had not been previously presented or published, and therefore further research should be carried out to understand the reliability of these indicators. Another potential limitation of this study was that the criteria in some cases were narrow and simplified, and therefore further research needs to examine how to optimise these markers of harm. Further studies could include combining online behavioural tracking data with self-report data to better understand gambling-related harm.

Gambling operators can benefit from the findings in this thesis because all the studies included can be applied to help gambling operators improve their current policies and procedures. As aforementioned, the studies have a direct impact on the changes that can be utilised to improve procedures, such as the optimisation of markers of harm, the importance of customer service interactions, the display of RG-related information online, and the use of data from customers who closed their account for gambling disorder (among others). Nonetheless, the gambling operators need to embark and take on this research and apply it to their current policies. Furthermore, some of the concepts mentioned in this thesis would help regulators in examining specific aspects and monitoring the uptake of the online gambling operator initiatives. Only through collaboration among different stakeholders, such as regulators, policymakers, gambling operators, and researchers, it is essentially possible to lead the way to reducing gambling-related harm and ensuring better consumer protection.

Throughout this thesis, it is evident that academics working with the industry can really benefit from real-life gambling data, which is objective, albeit with limitations, but also in turn, academics can help operators achieve better results which are empirically based. The studies in this thesis were all original and can form basis for future research to ensure harm minimisation across different stakeholders. Therefore, the recommendations may be used by other stakeholders such as policy makers and regulators. A list of recommendations for each study has been provided in the table below.

Table 8.2 List of recommendations based on the presented studies.

Study	Recommendations
Study 1	• There needs to be consistency and highest level of consumer protection across all gambling operators. • Age verification checks should be provided by gambling operators in order to prevent minors from gambling. • Sign-posting to treatment centres and blocking software can be easily provided by the gambling operator and this can help individuals seeking help. • Operators should engage in ethical practices such as having no commercial information on an RG dedicated page and no commercial information should be sent to individuals confirming that they have a problem. • Customer service training is needed to ensure proper help and assistance to individuals who may be experiencing harm.
Study 2	• Since this is a replication study to the first one, the previous recommendations also still apply.

	• Operators need to be cautious that regulatory sanctions may not be the only negative consequence they may be impacted with, but also negative media. This highlights the importance of the recommendations above.
Study 3	• Deposit limit is a preferred RG tool by consumers and therefore it is easier to promote. • Younger people (18-25 years of age) prefer short self-exclusion and product blocking, and therefore it is easier to promote these tools. • Since the majority of gamblers preferred setting up voluntary RG tools on the first day of account creation, consideration should be placed in positive messaging during account creation around RG tools.
Study 4	• VSE group is inherently different and heterogeneous and therefore cannot be used as a single proxy measure for problem gambling. • More analysis should be done on the group using VSE either without gambling activity or in the first week of activity to better understand this behaviour.
Study 5	• Markers of harm can be used to minimise gambling-related harm. • Behavioural markers of harm can be used to precede financial markers of harm and therefore decrease financial harm on potential problematic gamblers.

- Markers of harm in this study were novel so further research on these markers should be carried out.

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Appendix A

List of online gambling websites examined in the study 1 (Chapter 3)

Website	Website domain
32red	www.32red.com
7red	www.7red.com
888	www.888.com
Bet-at-home	www.bet-at-home.com
Bet365	www.bet365.com
Betfair	www.betfair.com
Betfred	www.betfred.com
Betsafe	www.betsafe.com
Betsson	www.betsson.com
Bingo for Money	www.bingoformoney.ag
Break the Bank Bingo	www.breakthebankbingo.com
Bwin	www.bwin.com
Casino Euro	www.casinoeuro.com
Cheeky Bingo	www.cheekybingo.com
Cherry Casino	www.cherrycasino.com
Come On	www.comeon.com
Coral	www.coral.ac.uk
Costa Bingo	www.costabingo.com
Dotty Bingo	www.dottybingo.com
EuroCasino Bet	www.eurocasinobet.com
Euro Grand	www.eurogrand.com

Europa Casino	www.europacasino.com
Expekt	en.expekt.com
Foxy Bingo	www.foxybingo.com
Gala Casino	www.galacasino.com
Guts	www.guts.com
Inter Casino	www.intercasino.com
Ladbrokes	www.ladbrokes.com
Leo Vegas	www.leovegas.com
Little Miss Bingo	www.littlemissbingo.com
Lucky Red Casino	www.luckyredcasino.com
Mansion	www.mansion.com
Casino Club	www.casinoclub.com
mFortune	www.mfortune.co.uk
Moon Bingo	www.moonbingo.com
Mr Green	www.mrgreen.com
Nordic Bet	www.nordicbet.com
Paddy Power	www.paddypower.com
Paf	www.paf.com
Party Casino	Casino.partycasino.com/en/
Poker Stars	www.pokerstars.com
Polo Bingo	www.polobingo.com
Redbet	www.redbet.com
Safer Gambling	www.safergambling.com
Sporting Bet	www.sportingbet.com

Super Casino	www.supercasino.com
Tipico	www.tipico.com
TitanBet	www.titanbet.com
William Hill	www.williamhill.com
Wow Bingo	www.wowbingo.co.uk

Appendix B

List of online gambling websites examined in the study 2 (Chapter 4)

Website	Website domain
888 ladies	www.888ladies.com
Bet-at-home	www.bet-at-home.com
Bet365	www.bet365.com
Betfair	www.betfair.com
Betsafe	www.betsafe.com
Betsson	www.betsson.com
Betway	www.betway.com
Boom Casino	www.boomcasino.com
Bwin	www.bwin.com
Casino Chan	www.casinochan.com
Casino Gods	www.casinogods.com
Casino Euro	www.casinoeuro.com
Casumo	www.casumo.com
Cheeky Bingo	www.cheekybingo.com
Cherry Casino	www.cherrycasino.com
Come On	www.comeon.com
Coral	www.coral.ac.uk
Costa Bingo	www.costabingo.com
Dream Vegas	www.dreamvegas.com
Energy Bet	www.energybet.com
Euro Grand	www.eurogrand.com

Expekt	www.expekt.com
Fans Bet	www.fansbet.com
Foxy Bingo	www.foxybingo.com
Gala Casino	www.galacasino.com
Jackpot City	www.jackpotcity.com
King Billy	www.kingbilly.com
Ladbrokes	www.ladbrokes.com
Leo Vegas	www.leovegas.com
Lucky Red Casino	www.luckyredcasino.com
LV Bet	www.lvbet.com
Mansion Casino	www.mansioncasino.com
Mr Green	www.mrgreen.com
Multi Lotto	www.multilotto.com
Net Bet	www.netbet.com
Nordic Bet	www.nordicbet.com
Paddy Power	www.paddypower.com
Play Jojo	www.playjojo.com
Poker Stars	www.pokerstars.com
Queen Vegas	www.queenvegas.com
Redbet	www.redbet.com
Riverbelle Casino	www.riverbellecasino.com
Rizk	www.rizk.com
Sloty	www.sloty.com
Spin Casino	www.spincasino.com

Super Casino	www.supercasino.com
Sts Bet	www.stsbet.com
Tipico	www.tipico.com
Titan Bet	www.titanbet.com
William Hill	www.williamhill.com